

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT6365160

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
Name		Execution Date
KT CORPORATION		09/21/2020
RECEIVING PARTY DATA		
Name:	GOLDEN EYE TECHNOLOGIES LLC	
Street Address:	1000 HERITAGE CENTER CIRCLE, SUITE 508	
Internal Address:	SUITE 508	
City:	ROUND ROCK	
State/Country:	TEXAS	
Postal Code:	78664	
PROPERTY NUMBERS Total: 28		
Property Type	Number	
Patent Number:	9462609	
Patent Number:	9980221	
Patent Number:	10341951	
Patent Number:	9717037	
Patent Number:	10051556	
Patent Number:	9913162	
Patent Number:	10299156	
Patent Number:	9756554	
Patent Number:	10743244	
Patent Number:	9591566	
Patent Number:	10321480	
Patent Number:	8862154	
Patent Number:	8947299	
Patent Number:	9661600	
Patent Number:	9918297	
Patent Number:	9380472	
Patent Number:	8812022	
Patent Number:	8942737	
Patent Number:	9077548	

Property Type	Number
Patent Number:	8730830
Patent Number:	9055451
Patent Number:	9271243
Patent Number:	9253718
Patent Number:	9344978
Patent Number:	9918236
Patent Number:	10555186
Patent Number:	9635606
Patent Number:	10219213

CORRESPONDENCE DATA

Fax Number:
Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Email: info@harfangip.com

Correspondent Name: HARFANG IP INVESTMENT CORP

Address Line 1: 1000 HERITAGE CENTER CIRCLE

Address Line 2: SUITE 508

Address Line 4: ROUND ROCK, TEXAS 78664

NAME OF SUBMITTER:	CHRISTIAN DUBUC
SIGNATURE:	/christian dubuc/
DATE SIGNED:	10/23/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 9
source=KT W-Fi Assignment#page1.tif
source=KT W-Fi Assignment#page2.tif
source=KT W-Fi Assignment#page3.tif
source=KT W-Fi Assignment#page4.tif
source=KT W-Fi Assignment#page5.tif
source=KT W-Fi Assignment#page6.tif
source=KT W-Fi Assignment#page7.tif
source=KT W-Fi Assignment#page8.tif
source=KT W-Fi Assignment#page9.tif

Exhibit 2.5

PATENT ASSIGNMENT AGREEMENT

This Patent Assignment Agreement (the "Agreement") is made and entered into this 21st day of September 2020 (the "Effective Date") by and between **KT Corporation**, a Korean company, of 90 Buljeong-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13606, Korea (the "**Assignor**") and Golden Eye Technologies LLC, a Texas company, of 1000 Heritage Center Circle, Suite 508, Round Rock TX 78664, USA ("**Assignee**").

RECITALS

Assignor and Assignee have agreed by way of a purchase agreement (the "Purchase Agreement") dated September 21, 2020, by and between Assignor and Assignee, the terms of which are incorporated herein by reference, that Assignor shall sell, transfer, and assign and set over unto Assignee and Assignee shall accept, all rights, title and interest in and to the Patents listed in Appendix A attached hereto. In the event of any conflict between the terms of this Patent Assignment Agreement and the referenced Purchase Agreement, the terms of the Purchase Agreement shall prevail.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing premises, and the covenants and agreements in this Assignment, Assignor and Assignee agree as follows:

1. Assignor does hereby sell, transfer, convey, assign and deliver to Assignee all of Assignor's right, privilege, title and interest in, to and under the Patents and in the case of patent applications in and to any patents that may issue therefrom, including, in all instances, any counterparts of any of the foregoing in any jurisdiction throughout the world, and any and all divisions, continuations, reissues or reexaminations of any of the foregoing, and, further, all applications for industrial property protection, including without limitation, all applications for patents, utility models, copyright, and designs which may hereafter be filed for any inventions described in said Patents in any country or countries, together with the right to file such applications and the right to claim for the same the priority rights derived from the inventions and the Patents under the laws of the United States, the International Convention for the Protection of Industrial Property, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable, in each instance the same to be held by Assignee for Assignee's own use and enjoyment, and for the use and enjoyment of Assignee's successors, assigns and other legal representatives, as fully and entirely as the same would have been held and enjoyed by Assignor if this Assignment and sale had not been made; together with all claims for damages, information, rendering of accounts, destruction of infringing goods, payments, royalties, income or other remuneration (hereinafter "**Damages**") now or hereafter due or payable with respect thereto, and all causes of action (whether in law or equity) by reason of past, present and future infringements of the Patents or other rights being assigned hereunder, along with the right to sue for, counterclaim, recover and collect such Damages for the use and benefit of Assignee and its successors, assigns and other legal representatives. Assignee hereby accepts this assignment.

2. Insofar as this assignment concerns European patents and patent applications, Assignor hereby agrees that the assignment will be recorded in the register with the European Patent Office and/or national patent offices; and Assignee hereby declares that Assignee has agreed to the assignment of the aforementioned Patents to it and that Assignee will simultaneously apply for recording of the assignment in the register with the European Patent Office and/or national patent offices.

3. Assignor hereby authorizes and requests the Commissioner for Patents of the United States, and any officer of any country or countries foreign to the United States, whose duty it is to issue patents or other evidence or forms of intellectual property protection or applications as aforesaid, to issue the same to Assignee and its successors, assigns and other legal representatives in accordance with the terms of this instrument.

4. Assignor agrees that, whenever reasonably requested by Assignee, Assignor will execute all papers, take all rightful oaths, and do all acts which may be reasonably necessary for securing and maintaining the Patents in any country and for vesting title thereto in Assignee, its successors, assigns and legal representatives or nominees.

5. Assignor authorizes and empowers Assignee, its successors, assigns and legal representatives or nominees, to invoke and claim for any application for patent or other form of protection for the inventions, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable, and to invoke and claim such right of priority without further written or oral authorization from Assignor.

6. Assignor hereby consents that a copy of this Agreement shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document that may be required in any country for any purpose and more particularly in proof of the right of Assignee or nominee to claim the aforesaid benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

Signature Page Follows

IN WITNESS WHEREOF, the Parties have executed this Assignment on the Effective Date.

Assignor: KT Corporation

By: 
Name: Sang-Kyu Woo
Title: Team leader

Assignee: Golden Eye Technologies LLC

By: 
Name: Christian Dubuc
Title: President

APPENDIX A

THE PATENTS

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20120394US	U.S.A.	13/912,924	6/7/2013	US 9,462,609	Method For Connecting Wireless Channel And Apparatus For Performing The Method
P20130197	KR	1020130063604	6/3/2013		Method For Connecting Wireless Channel And Apparatus For Performing The Method
P20120394	KR	1020120061045	6/7/2012		Method For Connecting Wireless Channel And Apparatus For Performing The Method
P20120767	KR	1020120103397	9/18/2012		Method For Connecting Wireless Channel And Apparatus For Performing The Method
P20120416EP	E.P.O	13803889.8	6/11/2013	EP2862292B1	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP DE	E.P.O	13803889.8	6/11/2013	EP2862292(D E) / 60 2013 035 827.3	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP FR	E.P.O	13803889.8	6/11/2013	EP2862292(FR)	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP GB	E.P.O	13803889.8	6/11/2013	EP2862292(G B)	Method For Communicating Encoded Traffic Indication Map Information

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20120416EP IT	E.P.O	13803889.8	6/11/2013	EP2862292(IT)	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP D1DE	E.P.O	18159297.3	6/11/2013	EP3355487(D E) / 60 2013 061 139.4	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP D1FR	E.P.O	18159297.3	6/11/2013	EP3355487(FR)	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP D1GB	E.P.O	18159297.3	6/11/2013	EP3355487(G B)	Method For Communicating Encoded Traffic Indication Map Information
P20120416EP D1IT	E.P.O	18159297.3	6/11/2013	EP3355487(IT)	Method For Communicating Encoded Traffic Indication Map Information
P20120416JP	JAPAN	2015-517175	6/11/2013	5925963	Method For Communicating Encoded Traffic Indication Map Information
P20120416JP D1	JAPAN	2016-081790	4/15/2016	6400624B2	Method For Communicating Encoded Traffic Indication Map Information
P20120416US	U.S.A.	14/406,576	12/9/2014	9980221	Method For Communicating Encoded Traffic Indication Map Information
P20120416US C1	U.S.A.	15/959,639	4/23/2018	10341951B2	Method Fro Communicating Encoded Traffic Indication Map Information
P20120969P1	KR	1020140121105	9/12/2014	101932112B1	Method For Communicating Of Information Of Traffic Indication Map Encoded
P20120969	KR	1020130025959	3/12/2013	101561114B1	Method For Communicating Of Information Of Traffic Indication Map Encoded
P20120416	KR	1020120063372	6/13/2012		Method For Communicating Of Information Of Traffic Indication Map Encoded
P20120416PC	WO	WOKR13005104	6/11/2013		Method For Communicating Encoded Traffic Indication Map Information
P20120454US	U.S.A.	14/411,278	12/24/2014	9,717,037	Method For Scanning For Access Point In Wireless Lan System
P20120454US C1	U.S.A.	15/618,443	6/8/2017	10,051,556	Method For Scanning For Access Point In Wireless Lan System
P20130200	KR	1020130063860	6/4/2013	102055865B1	Method for Scanning Access Point in Wireless Local Area Network
P20120454	KR	1020120070043	6/28/2012		Method For Scanning Access Point in Wireless Local Area Network System

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20120454PC	WO	WOKR13005733	6/27/2013		Method For Scanning For Access Point in Wireless LAN System
P20120482CN	CHINA	201380034845.6	6/28/2013	104412631B	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482CN D1	CHINA	201810790395	6/28/2013		Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482JP	JAPAN	2015-520045	6/28/2013	5982571	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482JP D1	JAPAN	2016-149338	7/29/2016	6215411	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482JP D2	JAPAN	2017-179842	9/20/2017	6386644	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482US	U.S.A.	14/411,302	12/24/2014	9913162	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120482US C1	U.S.A.	15/875,075	1/19/2018	10,299,156	Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20130322	KR	1020130075006	6/28/2013	101553858B1	Method For Reassignment Of Association Identification And Apparatus For Performing The Method
P20130322P1	KR	1020140121116	9/12/2014	101991482B1	Method For Reassignment Of Association Identification And Apparatus For Performing The Method
P20120482	KR	1020120069980	6/28/2012		Method For Reassignment Of Association Identification And Apparatus For Performing The Method
P20120482PC	WO	WOKR13005756	6/28/2013		Aid Reassignment Method, And Apparatus For Performing Said Aid Reassignment Method
P20120545CN	CHINA	201380038530.9	7/18/2013	104541551B	Active Scanning Method in Wireless Lan System
P20120545CN D1	CHINA	201810195660.8	7/18/2013		Active Scanning Method in Wireless Lan System
P20120545JP	JAPAN	2015-523011	7/18/2013	5982572	Active Scanning Method in Wireless Lan System

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20120545JP D1	JAPAN	2016-149339	7/29/2016	6392277	Active Scanning Method in Wireless Lan System
P20120545US	U.S.A.	14/415,476	1/16/2015	9,756,554	Active Scanning Method in Wireless Lan System
P20120545US C1	U.S.A.	15/667,146	8/2/2017		Active Scanning Method in Wireless Lan System
P20130202	KR	1020130084911	7/18/2013	101561116B1	Method For Active Scanning in Wireless Local Area Network System
P20130202P1	KR	1020140121143	9/12/2014		Method For Active Scanning in Wireless Local Area Network System
P20120545	KR	1020120078036	7/18/2012		Method For Active Scanning in Wireless Local Area Network System
P20120545PC	WO	WOKR13006412	7/18/2013		Active Scanning Method in Wireless Lan System
P20120594US	U.S.A.	14/422,309	7/25/2013	9,591,566	Channel Access Method in Wireless Lan System
P20120594US D1	U.S.A.	15/407,843	1/17/2017	10321480	Channel Access Method in Wireless Lan System
P20121016	KR	1020130063670	6/3/2013	101553857B1	Method For Channel Access in Wireless Local Area Network System
P20121016P1	KR	1020140121151	9/12/2014	101962429B1	Method For Channel Access in Wireless Local Area Network System
P20120594	KR	1020120089531	8/16/2012		Method For Channel Access in Wireless Local Area Network System
P20120594PC	WO	WOKR13006671	7/25/2013		Channel Access Method in Wireless Lan System
P20100053US	U.S.A.	13/230,408	9/12/2011	8862154	Location Measuring Method And Apparatus Using Access Point For Wireless Local Area Network Service
P20100053	KR	1020100031505	4/6/2010	101260319	Method And Apparatus For Measuring Location Using Access Point
P20100051	KR	1020100031506	4/6/2010	101188194	Method And Apparatus For Measuring Location Using Access Point
P20100053PC	WO	WOKR11007545	10/11/2011		Method And Apparatus For Measuring Location Using Access Point
P20100877US	U.S.A.	13/308,130	11/30/2011	8,947,299	Location Measuring Method And Apparatus Using Access Point For Wireless Local Area Network Service

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20100877	KR	1020100121494	12/01/2010	101280290B1	Method And Apparatus For Measuring Location Using Access Point
P20100877PC	WO	WOKR11009260	12/1/2011		Position Measuring Method And Position Measuring Apparatus Using Access Points For A Wireless Lan Service
P20101217US	U.S.A.	13/310,142	12/2/2011	9,661,600	Location Measuring Method And Apparatus Using Access Point For Wireless Local Area Network Service And Method For Estimating Location Coordinate Of Access Point
P20101217US C1	U.S.A.	15/488,741	4/17/2017	9,918,297	Location Measuring Method And Apparatus Using Access Point For Wireless Local Area Network Service And Method For Estimating Location Coordinate Of Access Point
P20101217	KR	1020100131606	12/21/2010	101301979B1	Method And Apparatus For Measuring Location Using Access Point, And Method For Estimating Location Coordinate Of Access Point
P20101217P1	KR	1020130009194	01/28/2013	101270012B1	Method And Apparatus For Measuring Location Using Access Point, And Method For Estimating Location Coordinate Of Access Point
P20101217PC	WO	WOKR11009387	12/6/2011		Method And Device For Measuring Position Using Access Points For Wireless Lan Service And Method For Estimating Position Coordinates Of Access Points
P20101218US	U.S.A.	13/310,072	12/2/2011	9,380,472	Method And Apparatus For Updating Access Point Information For Location Measurement
P20101218	KR	1020100131608	12/21/2010	101293659B1	Method And Apparatus For Updating Information Of Access Point
P20101218PC	WO	WOKR11009388	12/6/2011		Method For Controlling Uplink Transmission In Mobile Communication Network And Apparatus Therefor
P20101219US	U.S.A.	13/311,197	12/5/2011	8,812,022	Method And Apparatus For Indoor Location Measurement
P20101219	KR	1020100140370	12/31/2010	101292690B1	Method And Apparatus For Sectorising Indoor Area for Indoor Position Measurement
P20101222	KR	1020100140374	12/31/2010	101318369B1	Method And Apparatus For Sectorising Indoor Area for Indoor Position Measurement

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20101219PC	WO	WOKR11009412	12/7/2011		Device And Method For Measuring Indoor Location
P20101221US	U.S.A.	13/311,163	12/5/2011	8,942,737	Location Measuring Method And Apparatus Using Access Point And Lamp
P20101221	KR	1020100140371	12/31/2010	101277277B1	Method And Apparatus For Measuring Location Using Access Point And Lamp
P20101221PC	WO	WOKR11009474	12/8/2011		Method And Device Using Access Point And Lighting For Measuring Location
P20110005US	U.S.A.	13/441,665	4/6/2012	9,077,548	Method And Apparatus For Providing Differential Location-Based Service Using Access Point
P20110005	KR	1020110032702	4/8/2011	101436542B1	Method And Apparatus For Providing Differential Location Based Service Using Access Point
P20110005PC	WO	WOKR12002640	4/6/2012		Method For Opening Wireless Internet Service Online And System Thereof
P20110007US	U.S.A.	13/337,834	12/27/2011	8,730,830	Indoor Location Measuring Method And Apparatus Using Access Point
P20110007	KR	1020110009597	1/31/2011	101422251B1	Method For Measuring Position Using Access Point And Apparatus Therefor
P20110007PC	WO	WOKR12000478	1/19/2012		Method And Device For Measuring An Indoor Location By Using An Access Point
P2009450US	U.S.A.	13/512,532	11/26/2010	9,055,451	Indoor Position Determination Method And System Based On Wlan Signal Strength
P2009450	KR	1020090115913	11/27/2009	100904840B1	Position Determination Method And System Based On Wlan Rssi Value
P2009450PC	WO	WOKR10008460	11/26/2010		Indoor Positioning Method And System Based On Wireless Lan (Wlan) Received Signal Strength Indication (Rssi) Value
P20110524US	U.S.A.	14/123,672	10/19/2011	9,271,243	Wireless Access Point And Method And Device For Controlling Wireless Access Point
P20110524	KR	1020110054124	6/3/2011	101343565B1	Wireless Access Point, Method And Apparatus For Controlling Thereof
P20110524PC	WO	WOKR11007792	10/19/2011		Wireless Access Point And Method And Device For Controlling Wireless Access Point
P20110900US	U.S.A.	13/668,310	11/4/2012	9,253,718	Establishing Wireless Connection Based On Network Status

REF-NO	Country	Appl. No.	Filing Date	Patent No.	Title
P20110900	KR	10-2011-0085199	8/25/2011	10-1806854	Method And System For Connecting Access Point Using Network Status Information
P20110900P1	KR	10-2016-0152173	11/15/2016	10-1867523	Method And System For Connecting Access Point Using Network Status Information
P20111023US	U.S.A.	13/668,313	11/4/2012	9,344,978	Access Point Having Multichannel And Multi Transmission Power, Cell Formation Method
P20111023US C1	U.S.A.	15/149,050	5/6/2016	9,918,236682	Access Point Having Multichannel And Multi Transmission Power, Cell Formation Method
P20111023US C1C1	U.S.A.	15/893,564	2/9/2018	10,555,186	Access Point Having Multichannel And Multi Transmission Power, Cell Formation Method
P20111023	KR	1020110126956	11/30/2011	101723214	Access Point Having Multi Channel And Multi Transmission Power Cell Formation Method
P20111023PC	WO	WOKR12009223	11/5/2012		Access Point Having Multiple Channels And Multiple Transmission Powers, And Cell Forming Method
P20111023P1	KR	1020170039280	3/28/2017	10-1771235	Access Point having multi channel and multi transmission power, cell formation method
P20130787US	U.S.A.	14/547,108	11/18/2014	9,635,606	Access Point Selection And Management
P20130787US C1	U.S.A.	15/453,033	3/8/2017	10,219,213	Access Point Selection And Management
P20130787	KR	1020130139730	11/18/2013	102103457	Method For Searching Access Point Managing Linkage In Wireless LAN System



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	07/25/2017	9717037	Q216623	1058
23373	7590	07/03/2017		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 24 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Byung Wan Yoon, Seoul, KOREA, REPUBLIC OF;
KT Corporation, Seongnam-si, KOREA, REPUBLIC OF;
Su Hwan Rim, Seoul, KOREA, REPUBLIC OF;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

IR103 (Rev. 10/09)

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(571) 273-2885

or **Fax**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS

(Note: Use Block 1 for any change of address)

23373

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, NW
SUITE 800
WASHINGTON, DC 20037

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan YOON	Q216623	1058

TITLE OF INVENTION: METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	Undiscounted	\$960	\$0	\$0	\$960	06/09/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
CATTUNGAL, AJAY P	2467	370-338000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached.
Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Sughrue Mion, PLLC

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

KT Corporation

Seongnam-si, REPUBLIC OF KOREA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

- ☐ A check is enclosed.
☒ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 19-4880 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
☐ Applicant asserting small entity status. See 37 CFR 1.27
☐ Applicant changing to regular undiscounted fee status

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature	/ Nataliya Dvorson /	Date	June 9, 2017
Typed or Printed Name	Nataliya Dvorson	Registration No.	56,616

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		14411278		
Filing Date:		24-Dec-2014		
Title of Invention:		METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
First Named Inventor/Applicant Name:		Byung Wan Yoon		
Filer:		J. Lytle/Konata George		
Attorney Docket Number:		Q216623		
Filed as Large Entity				
Filing Fees for U.S. National Stage under 35 USC 371				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				960

Electronic Acknowledgement Receipt	
EFS ID:	29443969
Application Number:	14411278
International Application Number:	
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan Yoon
Customer Number:	23373
Filer:	J. Lytle/Konata George
Filer Authorized By:	J. Lytle
Attorney Docket Number:	Q216623
Receipt Date:	09-JUN-2017
Filing Date:	24-DEC-2014
Time Stamp:	09:25:31
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$960
RAM confirmation Number	060917INTEFSW09255800
Deposit Account	194880
Authorized User	Konata George
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.20 (Post Issuance fees)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Q219923IssueFeeTransmittal.pdf	34449	no	1
			8b95154ecec2d95e5cd0683b6c317bb60b5e2322		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30833	no	2
			21a2538c768144b305f1a74577eee5a4ca086bdc		
Warnings:					
Information:					
Total Files Size (in bytes):			65282		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

23373 7590 03/09/2017
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
CATTUNGAL, AJAY P	
ART UNIT	PAPER NUMBER
2467	

DATE MAILED: 03/09/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058

TITLE OF INVENTION: METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/09/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23373 7590 03/09/2017
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058

TITLE OF INVENTION: METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/09/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
CAITUNGAL, AJAY P	2467	370-338000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058
23373 7590 03/09/2017 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CATTUNGAL, AJAY P	
			ART UNIT	PAPER NUMBER
			2467	

DATE MAILED: 03/09/2017

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/411,278 Examiner AJAY CATTUNGAL	Applicant(s) YOON ET AL. Art Unit 2467 AIA (First Inventor to File) Status Yes
-------------------------------	---	--

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/17/17.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-15 and 17. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
 a) ☐ All b) ☐ Some *c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____ .	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
---	--

/A. C./ Primary Examiner, Art Unit 2467	
--	--

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 7-11, filed 12/21/16, with respect to claims 1-17 have been fully considered and are persuasive. The rejection of 10/21/16 has been withdrawn.

Allowable Subject Matter

2. Claims 1-15, and 17 are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJAY CATTUNGAL whose telephone number is (571)270-7525. The examiner can normally be reached on Monday- Friday 7:30 - 5:00, Alternating Fridays OFF.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan A. Phillips can be reached on 571-272-3940. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/AJAY CATTUNGAL/
Primary Examiner, Art Unit 2467

Notice of References Cited	Application/Control No. 14/411,278		Applicant(s)/Patent Under Reexamination YOON ET AL.	
	Examiner AJAY CATTUNGAL		Art Unit 2467	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2005/0227623 A1	10-2005	Su, Wei-Kun	H04W16/10	455/62
*	B	US-2009/0046633 A1	02-2009	THOMSON; Allan	H04W64/00	370/328
*	C	US-2010/0118830 A1	05-2010	Stephenson; David Sheldon	H04L63/10	370/331
*	D	US-2012/0044914 A1	02-2012	Chen; John Anthony	H04W84/02	370/338
*	E	US-2012/0044862 A1	02-2012	Chen; John Anthony	H04W36/00	370/328
*	F	US-2012/0108173 A1	05-2012	Hahm; Seong-Il	H04W76/02	455/41.2
*	G	US-2013/0086665 A1	04-2013	Filippi; Geoff	H04L63/0272	726/7
*	H	US-2013/0231151 A1	09-2013	KNECKT; Jarkko Lauri Sakari	H04W40/246	455/515
*	I	US-2013/0294354 A1	11-2013	Zhang; Guodong	H04W72/04	370/329
*	J	US-2015/0098358 A1	04-2015	Park; Giwon	H04W48/16	370/254
*	K	US-2015/0189673 A1	07-2015	Park; Giwon	H04W48/08	370/329
*	L	US-2016/0007386 A1	01-2016	PARK; Giwon	H04W48/14	370/329
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 20170306A

Issue Classification 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION														
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED									
						H	0	4	W	48 / 14 (2009.01.01)										
CROSS REFERENCE(S)																				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																			

NONE		Total Claims Allowed:	
		16	
(Assistant Examiner)	(Date)		
/AJAY CATTUNGAL/ Primary Examiner.Art Unit 2467	03/06/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	9	17												
2	2														
3	3														
4	4														
5	5														
6	6														
7	7														
8	8														
10	9														
11	10														
12	11														
13	12														
14	13														
15	14														
16	15														
	16														

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 16	
/AJAY CATTUNGAL/ Primary Examiner.Art Unit 2467 (Primary Examiner) _____ (Date) _____		O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No. 20170306A

<i>Index of Claims</i> 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47									
CLAIM		DATE							
Final	Original	01/25/2016	10/17/2016	03/06/2017					
	1	✓	✓	=					
	2	✓	✓	=					
	3	✓	✓	=					
	4	✓	✓	=					
	5	✓	✓	=					
	6	✓	✓	=					
	7	✓	✓	=					
	8	✓	✓	=					
	9	✓	✓	=					
	10	✓	✓	=					
	11	✓	✓	=					
	12	✓	✓	=					
	13	✓	✓	=					
	14	✓	✓	=					
	15	✓	✓	=					
	16		✓	-					
	17		✓	=					

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S16	74	probe request frame with signal strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:18
S17	10	probe request frame with signal strength (information or data)	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:18
S18	1	probe request frame with signal strength with uplink	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:18
S19	3	probe request frame with signal strength (information or data) and probe response same time	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:18
S20	1	probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:50
S21	1	probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:51
S22	0	probe request frame with signal strength with uplink same wait with time	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:51
S23	6156	H04W48/14.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:58
S24	50901	H04W84/12.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:58
S25	55171	S23 or S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S26	48	S25 and probe request frame with signal strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S27	1	S25 and probe request frame with signal strength with uplink	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59

S28	5	S25 and probe request frame with signal strength (information or data)	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S29	1	S25 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S30	1	S25 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S31	1	S25 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S32	0	S25 and probe request frame with signal strength with uplink same wait with time	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 00:59
S33	5	((("Byung Wan") near2 (Yoon)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/03/06 01:04
S34	1	((("Su Hwan") near2 (Rim)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/03/06 01:05
S35	5	S33 or S34	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/03/06 01:05
S36	1	S35 and probe request frame with signal strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S37	1	S35 and probe request frame with signal strength with uplink	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S38	1	S35 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S39	1	S35 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S40	1	S35 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S41	1	S35 and probe request frame with signal strength (information or data) and probe response same time same wait	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:05
S42	0	S35 and probe request frame with signal strength with uplink same wait with time	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2017/03/06 01:06

EAST Search History (Interference)

Ref	Hits	Search Query	DBs	Default	Plurals	Time
-----	------	--------------	-----	---------	---------	------

#				Operator		Stamp
S43	0	(active scan) and (performed) and (station) and (active scan) and (generating) and (probe request frame) and (signal strength information) and (station) and (transmitting) and (probe request frame) and (access points) and (receiving) and (probe response frame) and (probe request frame) and (certain access point) and (access points) and (accessing) and (certain) and (access point) and (maximum probe response time) and (maximum probe response time) and (preset maximum time period) and (station) and (required) and (wait) and (probe response frames) and (access points)	US-PGPUB; USPAT	ADJ	ON	2017/03/06 01:09

3/ 6/ 2017 1:10:39 AM

C:\ Users\ acattungal\ Documents\ EAST\ Workspaces\ 14411278.wsp

Search Notes 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

CPC- SEARCHED		
Symbol	Date	Examiner
H04W48/14.cpc.	3/6/2017	AC
H04W84/12.cpc.	3/6/2017	AC

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor search	1/25/2016	AC
East search, history attached	1/25/2016	AC
Inventor search	3/6/2017	AC
Interference search	3/6/2017	AC
CPC search	3/6/2017	AC
EAsT search, History attached	3/6/2017	AC

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
H04W	ALL	3/6/2017	AC

	/A.C./ Primary Examiner.Art Unit 2467
--	--

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/411,278		Filing Date 12/24/2014		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*			X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL				
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	02/17/2017	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X \$80 =	0		
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =	0		
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL							
Application Number	14/411,278	Filing Date	December 24, 2014	Confirmation Number	1058	Docket Number	Q216623
First Named Inventor	Byung Wan YOON	Examiner Name	CATTUNGAL, AJAY P			Art Unit	2467
Title	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM						
This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.							
SUBMISSION REQUIRED UNDER 37 CFR 1.114							
<small>Note: If the RCE is proper, any previously filed unentered amendments and amendments attached with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).</small>							
☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked. <div style="margin-left: 20px;"> ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____ </div> <div style="margin-left: 20px;"> ☒ Other Amendment under 37 C.F.R. §1.116 filed December 21, 2016 </div>							
☐ Do NOT consider the amendment(s)/reply under 37 CFR 1.116 previously filed on _____							
☒ Attached <div style="margin-left: 20px;"> ☐ Amendment/Reply </div> <div style="margin-left: 20px;"> ☐ Information Disclosure Statement (IDS) </div> <div style="margin-left: 20px;"> ☐ Affidavit(s)/Declaration(s) </div> <div style="margin-left: 20px;"> ☒ Other Petition for Extension of Time </div>							
MISCELLANEOUS							
☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)							
☐ Other _____							
FEES							
The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.							
☒ Payment by credit card.							
☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.							
CORRESPONDENCE ADDRESS							
<p style="text-align: center;"><i>Direct all correspondence to the address for SUGHRUE MION, PLLC filed under the Customer Number listed below:</i></p> <div style="text-align: center;"> <small>WASHINGTON OFFICE</small> 23373 <small>CUSTOMER NUMBER</small> </div>							
SIGNATURE OF REGISTERED U.S. PATENT PRACTITIONER							
Signature <u>/ Douglas E. Agopsowicz /</u>				Date <u>February 17, 2017</u>			
Name <u>Douglas E. Agopsowicz</u>				Registration No. <u>56,792</u>			

Electronic Patent Application Fee Transmittal				
Application Number:		14411278		
Filing Date:		24-Dec-2014		
Title of Invention:		METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
First Named Inventor/Applicant Name:		Byung Wan Yoon		
Filer:		Seok-Won Stuart Lee/Milly Cabrera		
Attorney Docket Number:		Q216623		
Filed as Large Entity				
Filing Fees for U.S. National Stage under 35 USC 371				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

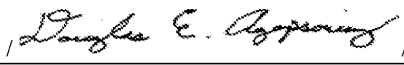
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	1251	1	200	200
Miscellaneous:				
RCE- 1st Request	1801	1	1200	1200
Total in USD (\$)				1400

Electronic Acknowledgement Receipt	
EFS ID:	28389209
Application Number:	14411278
International Application Number:	
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan Yoon
Customer Number:	23373
Filer:	Seok-Won Stuart Lee/Milly Cabrera
Filer Authorized By:	Seok-Won Stuart Lee
Attorney Docket Number:	Q216623
Receipt Date:	17-FEB-2017
Filing Date:	24-DEC-2014
Time Stamp:	12:12:18
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$1400
RAM confirmation Number	021717INTEFSW00010102194880
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Q216623RCEandEOT.pdf	58856 5fa051ea29c1643a3e9b4e6bf230d31c991c9512	yes	2
Multipart Description/PDF files in .zip description					
	Document Description		Start	End	
	Extension of Time		2	2	
	Request for Continued Examination (RCE)		1	1	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32805 4445effa73c26e3ab4db81b5e044cd0ebd7261a5e	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			91661		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number Q216623 Confirmation Number 1058	
Application Number	14/411,278	Filed	December 24, 2014
For	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
Art Unit	2467	Examiner	CATTUNGAL, AJAY P
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application. The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
		<u>Fee</u>	<u>Small Entity Fee</u>
			<u>Micro Entity Fee</u>
☒	One month (37 CFR 1.17(a)(1))	\$200.00	\$100.00
☐	Two month (37 CFR 1.17(a)(2))	\$600.00	\$300.00
☐	Three month (37 CFR 1.17(a)(3))	\$1400.00	\$700.00
☐	Four month (37 CFR 1.17(a)(4))	\$2200.00	\$1100.00
☐	Five month (37 CFR 1.17(a)(5))	\$3000.00	\$1500.00
☐	Previous Payment Amount	Date Submitted	
☐	Applicant asserts small entity status. See 37 CFR 1.27.		
☐	Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be attached or have been submitted previously.		
☐	A check in the amount of the fee is attached.		
☒	Payment by credit card.		
☐	The Director has already been authorized to charge fees in this application to a Deposit Account.		
☒	The Director is hereby authorized to charge any fees, except for the Issue Fee and the Publication Fee , or credit any overpayment, to Deposit Account Number 19-4880.		
☒	Payment made via EFS-Web.		
I am the ☐ applicant/inventor. ☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is attached (Form PTO/SB/96). ☒ attorney or agent of record. Registration Number <u>56,792</u> ☐ attorney or agent under 37 CFR 1.34. Registration number <u> </u>			
<small>WASHINGTON OFFICE</small> 23373 <small>CUSTOMER NUMBER</small>			
 _____ Signature		_____ February 17, 2017 Date	
_____ Douglas E. Agopsowicz Typed or printed name		_____ 202.293.7060 Telephone Number	
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.			
☒	*Total of <u>1</u> form is submitted.		



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058
23373 7590 01/26/2017 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CATTUNGAL, AJAY P	
			ART UNIT 2467	PAPER NUMBER
			NOTIFICATION DATE 01/26/2017	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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

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

PPROCESSING@SUGHRUE.COM
sughrue@sughrue.com
USPTO@sughrue.com

Advisory Action Before the Filing of an Appeal Brief	Application No. 14/411,278	Applicant(s) YOON ET AL.	
	Examiner AJAY CATTUNGAL	Art Unit 2467	AIA (First Inventor to File) Status Yes

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

THE REPLY FILED 21 December 2016 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires _____ months from the mailing date of the prior Advisory Action or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because

a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);

b) ☐ They raise the issue of new matter (see NOTE below);

c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: See *Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

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

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See *Continuation Sheet*.

13. ☐ Note the attached Information *Disclosure Statement(s)*. (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____

Claim(s) objected to: _____

Claim(s) rejected: 1-17.

Claim(s) withdrawn from consideration: _____

	/AJAY CATTUNGAL/ Primary Examiner, Art Unit 2467
--	---

Continuation of 3. NOTE: The newly filed amendment would require further search and consideration as such the current rejection is maintained. .

Continuation of 12. does NOT place the application in condition for allowance because: Applicant arguments are regarding the newly amended calims which is not entered, as such the rejection is maintained. .

<h2 style="margin: 0;">AFCP 2.0 Decision</h2>	Application No. 14/411,278	Applicant(s) YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

This is in response to the After Final Consideration Pilot request filed 21 December 2016.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

- ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.
- ☐ A non-broadening amendment to at least one independent claim was not submitted.
- ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.
- ☐ Other:

2. **Proper Request**

A. After final amendment submitted with the request will not be treated under AFCP 2.0.
 The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

☒ The after final amendment will be treated under pre-pilot procedure.

B. Updated search and/or completed additional consideration.
 The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

- ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.
- ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.
- ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.
- ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.
- ☐ 5. Other:

Examiner Note: Please attach an interview summary when necessary as described above.

Applicant's request for entry into AFCP 2.0 is acknowledged, but is denied because the response cannot be reviewed and a search conducted in the limited amount of time authorized for this pilot program. Therefore, the response is being reviewed under pre-pilot practice.

AMENDMENT UNDER 37 C.F.R. § 1.116
Appln. No.: 14/411,278

Attorney Docket No.: Q216623

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An active scan method performed by a station, the active scan method comprising:

generating a probe request frame including signal strength information of the station;

transmitting the probe request frame to access points;

receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; and

accessing the certain access point based on the probe response frame and a maximum probe response time,

wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

2. (previously presented) The active scan method of claim 1, wherein the signal strength information includes information about transmission power of the station.

3. (previously presented) The active scan method of claim 1,

wherein the certain access point is an access point satisfying a predetermined standard for an uplink quality with respect to the station.

4. (previously presented) The active scan method of claim 3, wherein the accessing of the certain access point comprises accessing the certain access point before the maximum probe response time elapses.

5. (previously presented) The active scan method of claim 1, further comprising:
acquiring a downlink path loss based on a signal strength of the probe response frame;
and
accessing the certain access point in response to determining that the downlink path loss satisfies a predetermined standard.

6. (original) The active scan method of claim 5, wherein the probe response frame includes target path loss information as the predetermined standard.

7. (previously presented) The active scan method of claim 5, wherein the accessing of the certain access point comprises accessing the certain access point before the maximum probe response time elapses.

8. (original) The active scan method of claim 5, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the station.

9. (currently amended) An active scan method performed by a station, the active scan method comprising:

- transmitting a probe request frame to access points;
- receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points;
- acquiring information about downlink quality based on a signal strength of the probe response frame; and
- accessing the certain access point based on whether the downlink quality satisfies a predetermined standard and further based on a maximum probe response time,
wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

10. (previously presented) The active scan method of claim 9, wherein the information about downlink quality includes downlink path loss information.

11. (original) The active scan method of claim 9, wherein the probe response frame includes target path loss information as the predetermined standard.

12. (currently amended) An active scan method performed by an access point, the active scan method comprising:

- receiving a probe request frame from a station, the probe request frame including signal strength information of the station;

acquiring information about uplink quality based on the signal strength information included in the probe request frame;

transmitting a probe response frame to the station based on whether the uplink quality satisfies a predetermined standard; and

granting access to the station based on the probe response frame and a maximum probe response time,

wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

13. (previously presented) The active scan method of claim 12, wherein the signal strength information includes transmission power of the station.

14. (previously presented) The active scan method of claim 12, wherein the information about uplink quality includes uplink path loss information.

15. (previously presented) The active scan method of claim 12, wherein the transmitting of the probe response frame comprises transmitting the probe response frame including target path loss information.

16. (cancelled)

17. (currently amended) The active scan method of claim ~~46~~1, wherein the accessing of the certain access point comprises accessing the certain access point immediately after receiving the probe response frame and before the preset maximum time period elapses.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An active scan method performed by a station, the active scan method comprising:

generating a probe request frame including signal strength information of the station;

transmitting the probe request frame to access points;

receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; and

accessing the certain access point based on the probe response frame and a maximum probe response time,

wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

2. (previously presented) The active scan method of claim 1, wherein the signal strength information includes information about transmission power of the station.

3. (previously presented) The active scan method of claim 1,

wherein the certain access point is an access point satisfying a predetermined standard for an uplink quality with respect to the station.

4. (previously presented) The active scan method of claim 3, wherein the accessing of the certain access point comprises accessing the certain access point before the maximum probe response time elapses.

5. (previously presented) The active scan method of claim 1, further comprising:
acquiring a downlink path loss based on a signal strength of the probe response frame;
and
accessing the certain access point in response to determining that the downlink path loss satisfies a predetermined standard.

6. (original) The active scan method of claim 5, wherein the probe response frame includes target path loss information as the predetermined standard.

7. (previously presented) The active scan method of claim 5, wherein the accessing of the certain access point comprises accessing the certain access point before the maximum probe response time elapses.

8. (original) The active scan method of claim 5, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the station.

9. (currently amended) An active scan method performed by a station, the active scan method comprising:

- transmitting a probe request frame to access points;
- receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points;
- acquiring information about downlink quality based on a signal strength of the probe response frame; and
- accessing the certain access point based on whether the downlink quality satisfies a predetermined standard and further based on a maximum probe response time,
wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

10. (previously presented) The active scan method of claim 9, wherein the information about downlink quality includes downlink path loss information.

11. (original) The active scan method of claim 9, wherein the probe response frame includes target path loss information as the predetermined standard.

12. (currently amended) An active scan method performed by an access point, the active scan method comprising:

- receiving a probe request frame from a station, the probe request frame including signal strength information of the station;

acquiring information about uplink quality based on the signal strength information included in the probe request frame;

transmitting a probe response frame to the station based on whether the uplink quality satisfies a predetermined standard; and

granting access to the station based on the probe response frame and a maximum probe response time,

wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points.

13. (previously presented) The active scan method of claim 12, wherein the signal strength information includes transmission power of the station.

14. (previously presented) The active scan method of claim 12, wherein the information about uplink quality includes uplink path loss information.

15. (previously presented) The active scan method of claim 12, wherein the transmitting of the probe response frame comprises transmitting the probe response frame including target path loss information.

16. (cancelled)

17. (currently amended) The active scan method of claim ~~46~~1, wherein the accessing of the certain access point comprises accessing the certain access point immediately after receiving the probe response frame and before the preset maximum time period elapses.

REMARKS

Status of the Application

Claims 1-17 are pending and rejected.

By entry of this Amendment, claims 1, 9, 12, and 17 are amended, and claim 16 is cancelled. Thus, claims **1-15 and 17** will be pending. Support for the amendments is provided, for example, in the specification at page 12, lines 19-25 (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the claims in any way).

Applicants respectfully request the Examiner to indicate that the Drawings are accepted.

Claim Rejections - 35 U.S.C. §103

Claim 1-17 are rejected under 35 U.S.C. § 103 as being unpatentable over Park et al. (US 2016/0007386 A1) (hereinafter, “Park”) in view of Thomson et al. (US 2009/0046633 A1) (hereinafter, “Thomson”).

Applicants respectfully traverse based on the points set forth below.

Claim 1 is directed towards an active scan method and recites:

1. An active scan method performed by a station, the active scan method comprising:

generating a probe request frame including signal strength information of the station;

transmitting the probe request frame to access points;

receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; and

accessing the certain access point based on the probe response frame and **a maximum probe response time**,

wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points. (emphasis added)

As emphasized above, claim 1 recites, *inter alia*, the features of: “accessing the certain access point based on the probe response frame and a maximum probe response time” and “wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points”.

Park and Thomson, even if combined as proposed in the Office Action, still would fail to teach or suggest the above-emphasized features of claim 1.

First, with respect to the feature of: “accessing the certain access point based on the probe response frame and a maximum probe response time”, the Office Action acknowledges that Park fails to teach this feature of claim 1. (*see* Office Action, pg. 3).

To cure this deficiency of Park, the Office Action asserts that Thomson teaches this feature of claim 1, specifically citing to paragraphs [0054]-[0061] of Thomson. (*see* Office Action, pg. 3).

Applicants respectfully disagree.

Thomson is directed towards a technique of determining the location of wireless devices. (*see* Thomson, paragraph [0002]).

Paragraphs [0054]-[0061] of Thomson describe a methodology 600 for a location based server to determine the location of a wireless client. The methodology 600 is shown in FIG. 6 of Thomson, reproduced immediately below:

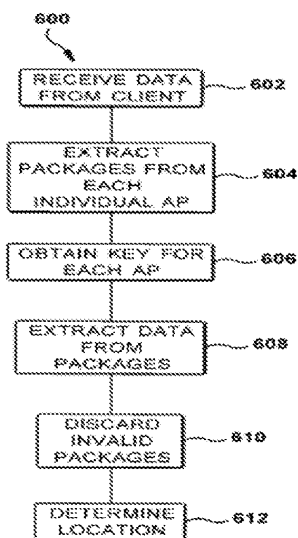


FIG. 6

As shown above, the methodology 600 includes, *inter alia*, the step 610 “Discard Invalid Packages”. Specifically, Thomson discloses that data packages may be discarded if “...the timestamp is not within a predetermined range or is not consistent with timestamps from other data packages”. (see Thomson, paragraph [0059]).

However, even assuming *arguendo* that the predetermined timestamp range of Thomson corresponds to the “maximum probe response time” of claim 1, Thomson nevertheless fails to teach or suggest “accessing the certain access point based on the probe response frame and a maximum probe response time”, as claimed. In contrast, according to the technique of Thomson, the Location Based Server (LBS) accesses each of the access points (APs) at step 604, which is before the step of discarding invalid packages (i.e., step 608). In other words, the LBS of Thomson *necessarily* accesses each of the APs to obtain the packages, before analyzing any timestamps. Therefore, the step of discarding invalid data packages based on a predetermined

timestamp range is irrelevant to the step of accessing the APs. Thus, the technique disclosed by Thomson is significantly different from the above-emphasized features of claim 1.

Accordingly, Applicants respectfully submit that Park and Thomson, even if combined as proposed in the Office Action, still would fail to teach or suggest the above-emphasized features of claim 1, and allowance of claim 1 and all claims dependent therefrom is warranted for these reasons.

Second, with respect to the feature “wherein the maximum probe response time comprises a preset maximum time period during which the station is required to wait for probe response frames from the access points”, Applicant submits that neither Park nor Thomson teaches or suggests this feature of claim 1. In contrast, as explained above with respect to claim 1, Thomson merely discloses discarding invalid data packages based on a predetermined timestamp range, but does not disclose that the predetermined timestamp range is a “preset maximum time period during which the station is **required to wait for probe response frames from the access points**”, as claimed. Moreover, Park fails to cure these deficiencies of Thomson.

Accordingly, allowance of claim 1 and all claims dependent therefrom is warranted for these reasons as well.

Claims 9 and 12 recite similar features as those distinguishing method claim 1 over Park and Thomson, though do so with respect to other methods. Accordingly, allowance of claims 9 and 12 and all claims dependent therefrom is warranted for reasons similar to those of claim 1.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Douglas E. Agopsowicz
Registration No. 56,792

SUGHRUE MION, PLLC
Telephone: 202.293.7060
Facsimile: 202.293.7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: December 21, 2016

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0			
Practitioner Docket No.:	Q216623	Application No.:	14/411,278
First Named Inventor:	Byung Wan YOON	Filing Date:	December 24, 2014
Title:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.			
<ol style="list-style-type: none"> 1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (<i>e.g.</i>, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c). 2. The above-identified application contains an outstanding final rejection. 3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect. 4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection. 5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response. 6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web). 7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, <i>e.g.</i>, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.] 8. By filing this certification and request, applicant acknowledges the following: <ul style="list-style-type: none"> • Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0. • The examiner will verify that the AFCP 2.0 submission is compliant, <i>i.e.</i>, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions: <ul style="list-style-type: none"> ○ The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, <i>e.g.</i>, by mailing an advisory action. ○ If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview. <ul style="list-style-type: none"> • The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate. • If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116. 			
Signature / Douglas E. Agopsowicz /		Date December 21, 2016	
Name Douglas E. Agopsowicz		Practitioner Reg No. 56,792	
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.			
☒ *Total of <u> 1 </u> forms are submitted.			

Electronic Acknowledgement Receipt	
EFS ID:	27868606
Application Number:	14411278
International Application Number:	
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan Yoon
Customer Number:	23373
Filer:	Douglas Eugene Agopsowicz
Filer Authorized By:	
Attorney Docket Number:	Q216623
Receipt Date:	21-DEC-2016
Filing Date:	24-DEC-2014
Time Stamp:	16:38:29
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Q216623Amendment116andA FCPRequestasfiled.pdf	370575 ca84fe4657b34875cab9acbf4d67ec3f08363600a	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Response After Final Action	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	11
	After Final Consideration Program Request	12	12
Warnings:			
Information:			
Total Files Size (in bytes):		370575	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/411,278		Filing Date 12/24/2014		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*			X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL				
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	12/21/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$		=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$		=	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058
23373 7590 10/21/2016 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CATTUNGAL, AJAY P	
			ART UNIT 2467	PAPER NUMBER
			NOTIFICATION DATE 10/21/2016	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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

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

PPROCESSING@SUGHRUE.COM
sughrue@sughrue.com
USPTO@sughrue.com

Office Action Summary	Application No. 14/411,278	Applicant(s) YOON ET AL.	
	Examiner AJAY CATTUNGAL	Art Unit 2467	AIA (First Inventor to File) Status Yes

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

Period for Reply

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

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

Status

1) ☒ Responsive to communication(s) filed on 05/02/16.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5) ☒ Claim(s) 1-17 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☒ Claim(s) 1-17 is/are rejected.

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

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

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

Application Papers

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

11) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a) ☒ All b) ☐ Some** c) ☐ None of the:

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

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

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

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

Attachment(s)

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

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____

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

4) ☐ Other: _____

DETAILED ACTION

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

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Response to Arguments

3. Applicant's arguments, see pages 7-9, filed 05/02/16, with respect to the rejection(s) of claim(s) 1-17 under 102(a)(1) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Thomson et al. (US 2009/0046633 A1).

Claim Rejections - 35 USC § 103

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

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1-17 is/are rejected under 35 U.S.C. 103 as being unpatentable over by Park et al. (US 2016/0007386 A1) in view of Thomson et al. (US 2009/0046633 A1).

Regarding claim 1, Park et al. discloses an active scan method performed at a station, the active scan method comprising: generating a probe request frame including signal strength information of the station; and transmitting the probe request frame to access points (Para 106-124). Park et al. does not explicitly disclose a method, receiving probe response frame corresponding to the probe request frame from a certain access point among the access points; and accessing the certain access point based on the probe response frame and a maximum probe response time. However Thomson et al. discloses a method, receiving probe response frame corresponding to the probe request frame from a certain access point among the access points; and accessing the certain access point based on the probe response frame and a maximum probe response time (Para 54-61). It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to use the method of having a response frame and a time limit to receive the response frame of Thomson et al. with the system of Park et al. in order to provide a client-based location tracking solution where the client itself determines location.

Regarding claim 2, Park et al. discloses an active scan method, wherein the signal strength information includes information about transmission power of the station (Para 106-124).

Regarding claim 3, Park et al. discloses an active scan method, wherein the certain access point is an access point satisfying a predetermined standard for an uplink quality with respect to the station (Para 106-124).

Regarding claim 4, Park et al. discloses an active scan method, wherein the

accessing of to the certain access point comprises accessing to the certain access point before the maximum probe response time elapses (Para 106-124).

Regarding claim 5, Park et al. discloses an active scan method, further comprising: acquiring a downlink path loss based on signal strength of the probe response frame; accessing the certain access point in response to determining that the downlink path loss satisfies a predetermined standard (Para 106-124).

Regarding claim 6, Park et al. discloses an active scan method, wherein the probe response frame includes target path loss information as the predetermined standard (Para 106-124).

Regarding claim 7, Park et al. discloses an active scan method, wherein the accessing the certain access point, comprises accessing the certain access point before the maximum probe response time elapses (Para 106-124).

Regarding claim 8, Park et al. discloses an active scan method, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the station. (Para 106-124).

Regarding claim 9, Park et al. discloses an active scan method performed at a station, the active scan method comprising: transmitting a probe request frame to access points; receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; acquiring information about downlink quality based on signal strength of the probe response frame; and accessing the certain access point based on whether the downlink quality satisfies predetermined standard and further based on a maximum probe response time (Para 106-124).

Regarding claim 10, Park et al. discloses an active scan method, wherein the information about downlink quality includes downlink path loss information (Para 106-124).

Regarding claim 11, Park et al. discloses an active scan method, wherein the probe response frame 5 includes target path loss information as the predetermined standard (Para 106-124).

Regarding claim 12, Park et al. discloses an active scan method performed at an access point, the active scan method comprising: receiving a probe request frame from a station the probe request frame including signal strength information of the station; 10 acquiring information about uplink quality based on signal strength information of the station included in the probe request frame; and transmitting a probe response frame to the station if the uplink quality satisfies a predetermined standard. (Para 106-124). Park et al. does not explicitly discloses a method, granting access to the station based on the probe response frame and a maximum probe response time. However Thomson et al. discloses a method, granting access to the station based on the probe response frame and a maximum probe response time (Para 54-61). It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to use the method of having a response frame and a time limit to receive the response frame of Thomson et al. with the system of Park et al. in order to provide a client-based location

Regarding claim 13, Park et al. discloses an active scan method, wherein the signal strength information includes transmission power of the station (Para 106-124).

Regarding claim 14, Park et al. discloses an active scan method, wherein the information about uplink quality includes uplink path loss information (Para 106-124).

Regarding claim 15, Park et al. discloses an active scan method, wherein in the transmitting of the probe response frame, comprises transmitting the probe response frame including target path loss information (Para 106-124).

Regarding claim 16 and 17, Thomson et al. discloses a method, wherein the maximum probe response time comprises a preset maximum time period during which the station is required to receive probe response frame from the access points(Para 54-61).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJAY CATTUNGAL whose telephone number is

(571)270-7525. The examiner can normally be reached on Monday- Friday 7:30 - 5:00, Alternating Fridays OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan A. Phillips can be reached on 571-272-3940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/AJAY CATTUNGAL/
Primary Examiner, Art Unit 2467

Notice of References Cited	Application/Control No. 14/411,278		Applicant(s)/Patent Under Reexamination YOON ET AL.	
	Examiner AJAY CATTUNGAL		Art Unit 2467	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2016/0007386 A1	01-2016	PARK; Giwon	H04W48/14	370/329
*	B	US-2009/0046633 A1	02-2009	THOMSON; Allan	H04W64/00	370/328
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant										☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE													
Final	Original	01/25/2016	10/17/2016												
	1	✓	✓												
	2	✓	✓												
	3	✓	✓												
	4	✓	✓												
	5	✓	✓												
	6	✓	✓												
	7	✓	✓												
	8	✓	✓												
	9	✓	✓												
	10	✓	✓												
	11	✓	✓												
	12	✓	✓												
	13	✓	✓												
	14	✓	✓												
	15	✓	✓												
	16		✓												
	17		✓												

Search Notes 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor search	1/25/2016	AC
East search, history attached	1/25/2016	AC

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

--	--

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Docket No: Q216623
Byung Wan YOON, et al.	
Appln. No.: 14/411,278	Group Art Unit: 2467
Confirmation No.: 1058	Examiner: CATTUNGAL, AJAY P
Filed: December 24, 2014	
For: METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM	

AMENDMENT UNDER 37 C.F.R. § 1.111

MAIL STOP AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated February 2, 2016, please amend the above-identified application as follows on the accompanying pages.

TABLE OF CONTENTS

AMENDMENTS TO THE CLAIMS	2
REMARKS	7

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An active scan method performed ~~by~~^{at} a station, the active scan method comprising:

generating a probe request frame including signal strength information of the station; ~~and~~

transmitting the probe request frame to access points;

~~receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; and~~

~~accessing the certain access point based on the probe response frame and a maximum probe response time.~~

2. (currently amended) The active scan method of claim 1, wherein the signal strength information includes information about transmission power (~~Tx power~~) of the station.

3. (currently amended) The active scan method of claim 1, ~~further comprising:~~
~~receiving a probe response frame corresponding to the probe request frame from a certain access point; and~~

~~performing an access to the certain access point;~~

wherein the certain access point is an access point satisfying a predetermined standard for an uplink quality with respect to the station.

4. (currently amended) The active scan method of claim 3, wherein ~~in the performing the accessing of the access to the~~ certain access point, ~~comprises accessing an access to the~~ certain access point is performed before ~~the~~ a maximum probe response time elapses.

5. (currently amended) The active scan method of claim 1, further comprising:
~~receiving a probe response frame corresponding to the probe request frame from a certain access point;~~
acquiring a downlink path loss based on a signal strength of the probe response frame;
and
~~performing an access to~~ accessing the certain access point in response to determining ~~that if~~ the downlink path loss satisfies a predetermined standard.

6. (original) The active scan method of claim 5, wherein the probe response frame includes target path loss information as the predetermined standard.

7. (currently amended) The active scan method of claim 5, wherein ~~in the performing of access to~~ accessing the certain access point, ~~comprises accessing the access to the~~ certain access point is performed before ~~the~~ a maximum probe response time elapses.

8. (original) The active scan method of claim 5, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the station.

9. (currently amended) An active scan method performed ~~by~~^{at} a station, the active scan method comprising:

- transmitting a probe request frame to access points;
- receiving a probe response frame corresponding to the probe request frame from a certain access point ~~among the access points~~;
- acquiring information about downlink quality based on ~~a~~^{the} signal strength of the probe response frame; and
- ~~performing an access to~~^{accessing} the certain access point ~~based on whether if the~~
downlink quality satisfies a predetermined standard ~~and further based on a maximum probe~~
~~response time.~~

10. (currently amended) The active scan method of claim 9, wherein the information
about downlink quality ~~information~~ includes downlink path loss information.

11. (original) The active scan method of claim 9, wherein the probe response frame includes target path loss information as the predetermined standard.

12. (currently amended) An active scan method performed ~~by~~^{at} an access point, the active scan method comprising:

- receiving a probe request frame from a station, the probe request frame including signal
strength information of the station;

acquiring information about uplink quality based on the signal strength information ~~of the station~~ included in the probe request frame; and

transmitting a probe response frame to the station based on whether ~~if~~ the uplink quality satisfies a predetermined standard; and

granting access to the station based on the probe response frame and a maximum probe response time.

13. (currently amended) The active scan method of claim 12, wherein the signal strength information includes transmission power ~~(Tx power)~~ of the station.

14. (currently amended) The active scan method of claim 12, wherein the information about uplink quality ~~information~~ includes uplink path loss information.

15. (currently amended) The active ~~scan~~ scan method of claim 12, wherein ~~in~~ the transmitting of the probe response frame, comprises transmitting the probe response frame including target path loss information ~~is transmitted~~.

16. (new) The active scan method of claim 1, wherein the maximum probe response time comprises a preset maximum time period during which the station is required to receive probe response frames from the access points.

17. (new) The active scan method of claim 16, wherein the accessing of the certain access point comprises accessing the certain access point immediately after receiving the probe response frame and before the preset maximum time period elapses.

REMARKS

Status of the Application

By entry of this Amendment, claims 1-5, 7, 9-10, and 12-15 are amended, and claims 16 and 17 are added. Support for the amended and new claims is provided, for example, in the specification at page 10, lines 11-14, page 14, lines 1-8, and FIG. 6. (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the claims in any way). No new matter is added.

The Drawings are not objected to, although the Examiner has not indicated acceptance of the Drawings. Accordingly, Applicants respectfully request that the Examiner indicate acceptance of the Drawings in the next Office communication.

Claim Rejections - 35 U.S.C. §102

Claims 1-15 are rejected under 35 U.S.C. § 102(a)(2) as being anticipated by Park et al. (US 2016/0007386 A1) (hereinafter, "Park").

To the extent that these rejections might be deemed applicable to the amended and new claims presented herein, Applicants respectfully traverse based on the points set forth below.

Claim 1 is directed towards an active scan method and recites:

1. An active scan method performed by a station, the active scan method comprising:

generating a probe request frame including signal strength information of the station;

transmitting the probe request frame to access points;

receiving a probe response frame corresponding to the probe request frame from a certain access point among the access points; and

accessing the certain access point based on the probe response frame and a maximum probe response time. (emphasis added)

Applicants respectfully submit that Park fails to disclose, either expressly or inherently, the above-emphasized features of claim 1.

Park is directed towards a method and an apparatus for filtering-based scanning in a WLAN system. (*see* Park, Abstract). Paragraphs [0106]-[0124] of Park, relied upon in the rejection of claim 1, disclose, *inter alia*, the following:

[0107] When the STA transmits the probe request frame, the STA may include an information element (IE) with respect to signal strength in the probe request frame to provide the predetermined reference value used for an AP to determine whether to transmit the probe response frame. (emphasis added)

As shown above, Park generally discloses that a station (STA) may include an information element (IE) with respect to signal strength in a probe request frame, and an access point (AP) may use the information element (IE) to determine whether to transmit a probe response frame back to the station (STA).

However, even assuming *arguendo* that the station (STA) and access point (AP) of Park correspond to the “station” and “certain access point” of claim 1, Park nevertheless fails to disclose that the station (STA) accesses the certain access point (AP) based on a maximum probe response time. Park is silent with respect to this claimed feature. In contrast, as noted above, Park simply discloses that the access point (AP) uses the information element (IE) with respect to signal strength, to determine whether to transmit a probe response frame back to the station (STA), which is significantly different from this feature of claim 1.

Accordingly, Applicants respectfully submit that Park fails to disclose, either expressly or inherently, the above-emphasized features of claim 1, and allowance of claim 1 and all claims dependent therefrom is warranted for these reasons. Claims 9 and 12 recite similar features as

those distinguishing method claim 1 over Park, though do so with respect to other methods.

Accordingly, allowance of claims 9 and 12 and all claims dependent therefrom is warranted for reasons similar to those of claim 1.

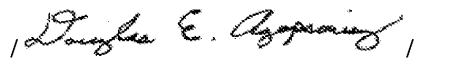
Finally, allowance of new claims 16 and 17 is warranted both for their dependence on claim 1, as well as for their separate recitation of subject matter which forms an independent basis for allowability. In particular, Park fails to disclose the details of the claimed “maximum probe response time” (claims 16-17). Accordingly, allowance of claims 16 and 17 is warranted for these additional reasons.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Douglas E. Agopsowicz
Registration No. 56,792

SUGHRUE MION, PLLC
Telephone: 202.293.7060
Facsimile: 202.293.7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: May 2, 2016

Electronic Acknowledgement Receipt	
EFS ID:	25659301
Application Number:	14411278
International Application Number:	
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan Yoon
Customer Number:	23373
Filer:	Douglas Eugene Agopsowicz/Fatimah Wilson
Filer Authorized By:	Douglas Eugene Agopsowicz
Attorney Docket Number:	Q216623
Receipt Date:	02-MAY-2016
Filing Date:	24-DEC-2014
Time Stamp:	16:55:54
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Q216623Amendment111asfile d.pdf	56575 4e64f4cd0690d73822a7daf6517a41468e8fa a106	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	9
Warnings:			
Information:			
Total Files Size (in bytes):		56575	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/411,278		Filing Date 12/24/2014		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)		FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A					
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		X \$		=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		X \$		=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL					
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	05/02/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 17	Minus	** 20	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$420 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
					TOTAL ADD'L FEE		0		
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$		=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$		=	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
					TOTAL ADD'L FEE				
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/411,278	12/24/2014	Byung Wan Yoon	Q216623	1058
23373 7590 02/02/2016 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CATTUNGAL, AJAY P	
			ART UNIT 2467	PAPER NUMBER
			NOTIFICATION DATE 02/02/2016	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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

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

PPROCESSING@SUGHRUE.COM
sughrue@sughrue.com
USPTO@sughrue.com

Office Action Summary	Application No. 14/411,278	Applicant(s) YOON ET AL.	
	Examiner AJAY CATTUNGAL	Art Unit 2467	AIA (First Inventor to File) Status Yes

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

Period for Reply

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

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

Status

1) ☒ Responsive to communication(s) filed on 12/24/14.
 ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

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

Disposition of Claims*

5) ☒ Claim(s) 1-15 is/are pending in the application.
 5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☒ Claim(s) 1-15 is/are rejected.

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

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

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

Application Papers

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

11) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a) ☒ All b) ☐ Some** c) ☐ None of the:

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

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

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

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

Attachment(s)

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

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
 Paper No(s)/Mail Date 12/24/14.

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

4) ☐ Other: _____.

DETAILED ACTION

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

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

4. Claims 1-15 rejected under 35 U.S.C. 102(a)(2) as being anticipate by Park et al. (US 2016/0007386 A1).

Regarding claim 1, Park et al. discloses an active scan method performed at a station, the active scan method comprising: generating a probe request frame including signal strength information of the station; and transmitting the probe request frame to

access points (Para 106-124).

Regarding claim 2, Park et al. discloses an active scan method, wherein the signal strength information includes information about transmission power (Tx power) of the station (Para 106-124).

Regarding claim 3, Park et al. discloses an active scan method, further comprising: receiving a probe response frame corresponding to the probe request frame from a certain access point; and performing an access to the certain access point, wherein the certain access point is an access point satisfying a predetermined standard for an uplink quality with respect to the station (Para 106-124).

Regarding claim 4, Park et al. discloses an active scan method, wherein in the performing of the access to the certain access point, an access to the certain access point is performed before a maximum probe response time elapses (Para 106-124).

Regarding claim 5, Park et al. discloses an active scan method, further comprising: receiving a probe response frame corresponding to the probe request frame from a certain access point; acquiring a downlink path loss based on signal strength of the probe response frame; and performing an access to the certain access point if the downlink path loss satisfies a predetermined standard (Para 106-124).

Regarding claim 6, Park et al. discloses an active scan method, wherein the probe response frame includes target path loss information as the predetermined standard (Para 106-124).

Regarding claim 7, Park et al. discloses an active scan method, wherein in the performing of access to the certain access point, the access to the certain access point

is performed before a maximum probe response time elapses (Para 106-124).

Regarding claim 8, Park et al. discloses an active scan method, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the station. (Para 106-124).

Regarding claim 9, Park et al. discloses an active scan method performed at a station, the active scan method comprising: transmitting a probe request frame to access points; receiving a probe response frame corresponding to the probe request frame from a certain access point; acquiring information about downlink quality based on signal strength of the probe response frame; and performing an access to the certain access point if the downlink quality satisfies a 25 predetermined standard (Para 106-124).

Regarding claim 10, Park et al. discloses an active scan method, wherein the downlink quality information includes downlink path loss information. (Para 106-124).

Regarding claim 11, Park et al. discloses an active scan method, wherein the probe response frame 5 includes target path loss information as the predetermined standard (Para 106-124).

Regarding claim 12, Park et al. discloses an active scan method performed at an access point, the active scan method comprising: receiving a probe request frame from a station; 10 acquiring information about uplink quality based on signal strength information of the station included in the probe request frame; and transmitting a probe response frame to the station if the uplink quality satisfies a predetermined standard. (Para 106-124).

Regarding claim 13, Park et al. discloses an active scan method, wherein the signal strength information includes transmission power (Tx power) of the station (Para 106-124).

Regarding claim 14, Park et al. discloses an active scan method, wherein the uplink quality information includes uplink path loss information (Para 106-124).

Regarding claim 15, Park et al. discloses an active scan method, wherein in the transmitting of the probe response frame, the probe response frame including target path loss information is transmitted (Para 106-124).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJAY CATTUNGAL whose telephone number is (571)270-7525. The examiner can normally be reached on Monday- Friday 7:30 - 5:00, Alternating Fridays OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan A. Phillips can be reached on 571-272-3940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/AJAY CATTUNGAL/
Primary Examiner, Art Unit 2467

Notice of References Cited	Application/Control No. 14/411,278	Applicant(s)/Patent Under Reexamination YOON ET AL.	
	Examiner AJAY CATTUNGAL	Art Unit 2467	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2016/0007386 A1	01-2016	PARK; Giwon	H04W48/14	370/329
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 1058

SERIAL NUMBER 14/411,278	FILING or 371(c) DATE 12/24/2014 RULE	CLASS 370	GROUP ART UNIT 2467	ATTORNEY DOCKET NO. Q216623		
APPLICANTS KT Corporation, Seongnam-si, KOREA, REPUBLIC OF; INVENTORS Byung Wan Yoon, Seoul, KOREA, REPUBLIC OF; Su Hwan Rim, Seoul, KOREA, REPUBLIC OF; ** CONTINUING DATA ***** This application is a 371 of PCT/KR2013/005733 06/27/2013 ** FOREIGN APPLICATIONS ***** REPUBLIC OF KOREA 10-2012-0070043 06/28/2012 REPUBLIC OF KOREA 10-2013-0063860 06/04/2013 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 02/12/2015						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and /AJAY P CATTUNGAL/ Examiner's Signature Acknowledged		☐ Met after Allowance Initials	STATE OR COUNTRY KOREA, REPUBLIC OF	SHEETS DRAWINGS 11	TOTAL CLAIMS 15	INDEPENDENT CLAIMS 3
ADDRESS SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 UNITED STATES						
TITLE METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM						
FILING FEE RECEIVED 1480	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Search Notes 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor search	1/25/2016	AC
East search, history attached	1/25/2016	AC

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/A.C./ Primary Examiner. Art Unit 2467
--	---

<i>Index of Claims</i> 	Application/Control No. 14411278	Applicant(s)/Patent Under Reexamination YOON ET AL.
	Examiner AJAY CATTUNGAL	Art Unit 2467

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	01/25/2016								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	4	"14411278"	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:31
S2	19	("20080014934" "20100284303" "20110149766" "20110188486" "20110243013" "20120307685" "8509173").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:33
S3	8	S2 and probe request	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:33
S4	2	S2 and probe request and signal strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:34
S5	4	S2 and probe request and signal with strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:34
S6	0	S2 and probe request same signal with strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:34
S7	3	S2 and probe request same3 signal with strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:34
S8	3	S2 and probe request same3 (signal with strength) or RSSI)	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:36
S9	51	probe request frame with signal strength	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:39
S10	9	probe request frame with signal strength (information or data)	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:39
S11	1	S1 and probe request frame with signal strength (information or data)	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 22:41
S12	1	probe request frame with signal strength with uplink	US-PGPUB; USPAT; USOCR; FPRS; EPO; DERWENT; IBM_TDB	ADJ	ON	2016/01/20 23:27

EAST Search History

S13	4	((("Byung Wan") near2 (Yoon)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/01/25 18:03
S14	1	((("Su Hwan") near2 (Rim)).INV.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/01/25 18:03

1/ 25/ 2016 6:52:21 PM**C:\ Users\ acattungal\ Documents\ EAST\ Workspaces\ 14411278.wsp**

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	14/357,187
	Confirmation Number	6197
	Filing Date	May 8, 2014
	First Named Inventor	Masayuki HARA
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
Attorney Docket Number		Q210669

U.S. PATENTS						
Examiner Initials	Cite No	Patent Number	Kind Code	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	8,509,173	B2	2013-08-13	KIM et al.	

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initials	Cite No	Publication Number	Kind Code	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/A.C./	2.	2008/0014934	A1	2008-01-17	BALASUBRAMANIAN et al.	
/A.C./	3.	2010/0284303	A1	2010-11-11	CATOVIC et al.	
/A.C./	4.	2011/0149766	A1	2011-06-23	CHOI et al.	
/A.C./	5.	2011/0188486	A1	2011-08-04	KIM et al.	
/A.C./	6.	2011/0243013	A1	2011-10-06	LEE et al.	
/A.C./	7.	2012/0307685	A1	2012-12-6	KIM et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initials	Cite No	Foreign Document Number	Country Code	Kind Code	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	T

EXAMINER SIGNATURE			
Examiner Signature	/Ajay Cattungal/	Date Considered	01/25/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. 2 Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). 3 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 4 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 5 Applicant is to place a check mark here if English language translation is attached.

[Page 1 of 1]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.C./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	Not Yet Assigned
	Confirmation Number	Not Yet Assigned
	Filing Date	December 24, 2014
	First Named Inventor	Byung Wan YOON
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	Q216623

CERTIFICATION STATEMENT			
Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):			
☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).			
OR			
☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).			
That each item of information contained in the Information Disclosure Statement filed concurrently herewith: (i) was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement; or (ii) is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement. See 37 CFR 1.704(d).			
☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.			
☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.			
☐ None			
WASHINGTON OFFICE 23373 CUSTOMER NUMBER			
SIGNATURE			
A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.			
Signature	/ S. Stuart Lee /	Date (YYYY-MM-DD)	2014-12-24
Name/Print	S. Stuart Lee	Registration Number	61,124

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1. See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. 2. Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). 3. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 4. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 5. Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.C./

(Page 1 of 1)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/411,278	12/24/2014	Byung Wan Yoon	Q216623

CONFIRMATION NO. 1058

PUBLICATION NOTICE

23373
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037



OC000000075414693

Title:METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

Publication No.US-2015-0146704-A1

Publication Date:05/28/2015

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED INVENTOR	ATTY. DOCKET NO.
14/411,278	Byung Wan Yoon	Q216623

23373
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

INTERNATIONAL APPLICATION NO.	
PCT/KR2013/005733	
I.A. FILING DATE	PRIORITY DATE
06/27/2013	06/28/2012

CONFIRMATION NO. 1058
371 ACCEPTANCE LETTER



0000000073414742

Date Mailed: 02/19/2015

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office, in its capacity as a Designated / Elected Office (37 CFR 1.495), has ACCEPTED the above identified international application for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above. A Filing Receipt will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE "FILING DATE or 371(c) DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1) and (c)(2) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN BELOW.** The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363)

12/24/2014
DATE OF RECEIPT OF 35 U.S.C.
371(c)(1) and (c)(2) REQUIREMENTS

The following items have been received:

- Copy of the International Application filed on 12/24/2014
- Copy of the International Search Report filed on 12/24/2014
- Information Disclosure Statements filed on 12/24/2014
- Inventor's Oath or Declaration filed on 12/24/2014
- Request for Immediate Examination filed on 12/24/2014
- U.S. Basic National Fees filed on 12/24/2014
- Priority Documents filed on 12/24/2014
- Power of Attorney filed on 12/24/2014
- Specification filed on 12/24/2014
- Claims filed on 12/24/2014
- Abstracts filed on 12/24/2014
- Drawings filed on 12/24/2014
- Authorization to Permit Access filed on 12/24/2014
- Application Data Sheet (37 CFR 1.76) filed on 12/24/2014

page 1 of 2

FORM PCT/DO/EO/903 (371 Acceptance Notice)

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

DEBORAH D WILLIAMS

Telephone: (571) 272-0466

page 2 of 2

FORM PCT/DO/EO/903 (371 Acceptance Notice)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/411,278	12/24/2014		1480	Q216623	15	3

CONFIRMATION NO. 1058

FILING RECEIPT



OC000000073414741

23373
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

Date Mailed: 02/19/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Byung Wan Yoon, Seoul, KOREA, REPUBLIC OF;
Su Hwan Rim, Seoul, KOREA, REPUBLIC OF;

Applicant(s)

KT Corporation, Seongnam-si, KOREA, REPUBLIC OF

Assignment For Published Patent Application

KT Corporation, Seongnam-si, KOREA, REPUBLIC OF

Power of Attorney: The patent practitioners associated with Customer Number 23373**Domestic Priority data as claimed by applicant**

This application is a 371 of PCT/KR2013/005733 06/27/2013

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)

REPUBLIC OF KOREA 10-2012-0070043 06/28/2012

REPUBLIC OF KOREA 10-2013-0063860 06/04/2013

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 02/12/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/411,278**

Projected Publication Date: 05/28/2015**Non-Publication Request:** No

page 1 of 3

Early Publication Request: No
Title

METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: Yes

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/411,278	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	480
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	15	minus 20 = *				x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL	1480
APPLICATION AS AMENDED - PART II							
AMENDMENT A	(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		OTHER THAN SMALL ENTITY
	Total (37 CFR 1.16(i))	*	Minus **	=	x	=	OR
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x	=	OR
	Application Size Fee (37 CFR 1.16(s))						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR
			TOTAL			TOTAL	
AMENDMENT B	(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		OTHER THAN SMALL ENTITY
	Total (37 CFR 1.16(i))	*	Minus **	=	x	=	OR
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x	=	OR
	Application Size Fee (37 CFR 1.16(s))						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR
			TOTAL			TOTAL	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371		ATTORNEY DOCKET NO. Q216623
		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) Not Yet Assigned
INTERNATIONAL APPLICATION NO. PCT/KR2013/005733	INTERNATIONAL FILING DATE June 27, 2013	PRIORITY DATE CLAIMED June 28, 2012
TITLE OF INVENTION METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
FIRST NAMED INVENTOR Byung Wan YOON		
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.</p> <ol style="list-style-type: none"> 1. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). NOTE: The express request under 35 U.S.C. 371(f) will not be effective unless the requirements under 35 U.S.C. 371(c)(1), (2), and (4) for payment of the basic national fee, copy of the International Application and English translation thereof (if required), and the oath or declaration of the inventor(s) have been received. 2. ☐ A copy of the International Application (35 U.S.C. 371(c)(2)) is attached hereto (not required if the International Application was previously communicated by the International Bureau or was filed in the United States Receiving Office (RO/US)). 3. ☒ An English language translation of the International Application (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. ☒ is attached hereto. b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4). 4. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) <ol style="list-style-type: none"> a. ☒ is attached. b. ☐ was previously filed in the international phase under PCT Rule 4.17(iv). <p>Items 5 to 8 below concern amendments made in the international phase.</p> <p><u>PCT Article 19 and 34 amendments</u></p> <ol style="list-style-type: none"> 5. ☐ Amendments to the claims under PCT Article 19 are attached (not required if communicated by the International Bureau) (35 U.S.C. 371(c)(3)). 6. ☐ English translation of the PCT Article 19 amendment is attached (35 U.S.C. 371(c)(3)). 7. ☐ English translation of annexes (Article 19 and/or 34 amendments only) of the International Preliminary Examination Report is attached (35 U.S.C. 371(c)(5)). <p><u>Cancellation of amendments made in the international phase</u></p> <ol style="list-style-type: none"> 8a. ☐ Do not enter the amendment made in the international phase under PCT Article 19. 8b. ☐ Do not enter the amendment made in the international phase under PCT Article 34. <p>NOTE: A proper amendment made in English under Article 19 or 34 will be entered in the U.S. national phase application absent a clear instruction from applicant not to enter the amendment(s).</p> <p>The following items 9 to 17 concern a document(s) or information included.</p> <ol style="list-style-type: none"> 9. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 10. ☐ A preliminary amendment. 11. ☒ An Application Data Sheet under 37 CFR 1.76. 12. ☐ A substitute specification. NOTE: A substitute specification cannot include claims. See 37 CFR 1.125(b). 13. ☐ A power of attorney and/or change of address letter. 14. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.3 and 37 CFR 1.821- 1.825. 15. ☐ Assignment papers (<i>cover sheet and document(s)</i>). Name of Assignee: KT Corporation 16. ☐ 37 CFR 3.73(c) Statement (<i>when there is an Assignee</i>). 		

U.S. APPLN NO. (if known, see 37 CFR 1.5) Not Yet Assigned		INTERNATIONAL APPLICATION NO. PCT/KR2013/005733		ATTORNEY DOCKET NO. Q216623	
17. ☒ Other items or information: PTO/SB/08 (modified), PCT/IB/301, PCT/IB/304, PCT/IB/308, PCT/IB/311, PCT/ISA/202, PCT/ISA/210, PCT/ISA/237, PCT/RO/101, PCT/RO/106, .					
The following fees have been submitted.				CALCULATIONS PTO USE ONLY	
☒ Basic national fee (37 CFR 1.492(a))..... \$280				\$280	
☒ Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) \$0 All other situations \$720				\$720	
☒ Search fee (37 CFR 1.492(b)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) \$0 Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority \$120 International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB \$480 All other situations... \$600				\$480	
TOTAL OF 18, 19 and 20 =				\$1,480	
☐ Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)). Fee for each additional 50 sheets of paper or fraction thereof..... \$400					
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole number)	RATE		
35 - 100 =	0/50 =	0	x \$400	\$0	
Surcharge of \$140.00 for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).				\$	
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
Total claims		15 - 20 =	0	x \$80	\$0
Independent claims		3 - 3 =	0	x \$420	\$0
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$780	\$0	
Processing fee of \$140.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)).				\$	
TOTAL OF ABOVE CALCULATIONS =				\$1,480	
☐ Applicant asserts small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2					
☐ Applicant certifies micro entity status. See 37 CFR 1.29. Fees above are reduced by 3/4. Applicant must attach form PTO/SB/15A or B or equivalent.					
TOTAL NATIONAL FEE =				\$1,480	
Fee for recording the attached assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +					
Fee for Extension of Time					
TOTAL FEES ATTACHED =				\$1,480	
				Amount to be refunded:	\$
				Amount to be charged	\$

- a. ☐ A check in the amount of \$ _____ to cover the above fees is attached.
- b. ☐ Please charge my Deposit Account No. 19-4880 in the amount of \$ _____ to cover the above fees.
- c. ☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.
- d. ☒ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

ADVISORY: If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is not recommended and by doing so **your credit card information may be displayed via PAIR**. To protect your information, it is recommended to pay fees online by using the electronic payment method.

NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013, and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE 1: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

NOTE 2: A U.S. national stage application may not claim priority to the international application of which it is the national phase. The filing date of a U.S. national stage application is the international filing date. See 35 U.S.C. 363.

SEND ALL CORRESPONDENCE TO:

The address associated with Customer Number:

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

SIGNATURE	/ S. Stuart Lee /	DATE	December 24, 2014
NAME (Print/Type)	S. Stuart Lee	REGISTRATION NO. (Attorney/Agent)	61,124

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371
ADDITIONAL PAGE

Priority is claimed from:

Country	Application No	Filing Date
KR	10-2012-0070043	2012-06-28
KR	10-2013-0063860	2013-06-04

Attorney Docket No.		Q216623
CORRESPONDENCE ADDRESS		
☒ The address associated with Customer Number:	<small>WASHINGTON OFFICE</small> 23373 <small>CUSTOMER NUMBER</small>	OR ☐ Correspondence address below

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	Q216623
		Application Number	
Title of Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor 1 Remove				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Byung Wan		YOON	
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service				
City	Seoul	Country of Residence i	KR	
Mailing Address of Inventor:				
Address 1		KT Research Development Center		
Address 2		17 Woomyeong-dong, Seocho-gu		
City	Seoul	State/Province		
Postal Code	137-140	Country i	KR	
Inventor 2 Remove				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Su Hwan		RIM	
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service				
City	Seoul	Country of Residence i	KR	
Mailing Address of Inventor:				
Address 1		KT Research Development Center		
Address 2		17 Woomyeong-dong, Seocho-gu		
City	Seoul	State/Province		
Postal Code	137-140	Country i	KR	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

EFS Web 2.2.11

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	Q216623
		Application Number	
Title of Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ An Address is being provided for the correspondence information of this application.

Customer Number	23373		
Email Address	sughrue@sughrue.com	<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
Attorney Docket Number	Q216623	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	23373		

EFS Web 2.2.11

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	Q216623
		Application Number	
Title of Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCT/KR2013/005733	2013-06-27
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) ⁱthe information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2012-0070043	KR	2012-06-28	
Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2013-0063860	KR	2013-06-04	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	Q216623
		Application Number	
Title of Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

<p>This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.</p> <p>☐ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.</p>
--

Authorization to Permit Access:

<p>☒ Authorization to Permit Access to the Instant Application by the Participating Offices</p> <p>If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>
--

Applicant Information:

<p>Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.</p>
--

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	Q216623
	Application Number	
Title of Invention METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		

Applicant 1 Remove			
<small>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</small>			
Clear			
☒ Assignee	☐ Legal Representative under 35 U.S.C. 117	☐ Joint Inventor	
☐ Person to whom the inventor is obligated to assign.		☐ Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor : 			
If the Applicant is an Organization check here. ☒			
Organization Name	KT Corporation		
Mailing Address Information:			
Address 1	90 Bulljeong-ro, Bundang-gu		
Address 2	Gyeonggi-do		
City	Seongnam-si	State/Province	
Country ⁱ	KR	Postal Code	463-711
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

<small>Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.</small>	
Assignee 1	
<small>Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.</small>	
Remove	
If the Assignee or Non-Applicant Assignee is an Organization check here. ☒	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	Q216623	
		Application Number		
Title of Invention	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM			
Organization Name	KT Corporation			
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1		90 Bulljeong-ro, Bundang-gu		
Address 2		Gyeonggi-do		
City		Seongnam-si	State/Province	
Country i	KR	Postal Code	463-711	
Phone Number			Fax Number	
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/ Seok-Won Lee /		Date (YYYY-MM-DD)	2014-12-24	
First Name	Seok-Won	Last Name	Lee	Registration Number	61124
Additional Signature may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

CLAIM FOR PRIORITY

This application claims priority to Korean Patent Application No. 2012-0070043 filed
5 on June 28, 2012 and No. 2013-0063860 filed on June 4, 2013 in the Korean Intellectual
Property Office (KIPO), the entire contents of which are hereby incorporated by reference.

BACKGROUND

1. Technical Field

10 Example embodiments of the present invention relate in general to the field of an
access point scan method, and more particularly, to an access point scan method using an
active scan scheme in a wireless LAN system.

2. Related Art

15 Various wireless communication technologies have been developed together with
information communication technologies. Wireless local area network (WLAN) belonging
to the wireless communication technologies is a technology allowing wireless internet access
at home or business or at a designated service providing region by using a portable terminal,
such as a personal digital assistant (PDA), a laptop computer, and a portable multimedia
20 player (PMP) based on wireless frequency technologies.

As the standard of the WLAN, Institute of Electrical and Electronics Engineers
(IEEE) 802.11 standards have been developed. IEEE 802.11a provides a transmission speed
of 54 Mbps by using an unlicensed band of 5 GHz. IEEE 802.11b provides a transmission
speed of 11 Mbps by using direct sequence spread spectrum (DSSS) at 2.4 GHz. IEEE
25 802.11g provides a transmission speed of 54 Mbps by using orthogonal frequency division
multiplexing (OFDM) at 2.4 GHz. IEEE 802.11n provides a transmission speed of 300

Mbps with respect to two spatial streams by using multiple input multiple output-OFDM (MIMO-OFDM). IEEE 802.11n supports a channel bandwidth of 40 MHz at the maximum, and provides a transmission speed of 600 Mbps.

As the propagation of the WLAN becomes more active and applications using the
5 WLAN are diversified, there is an increasing need for a new WLAN technology capable of supporting a throughput higher than the data processing speed supported by IEEE 802.11n. WLAN technology for very high throughput (VHT) is one of the IEEE 802.11 WLAN technologies suggested to support a data processing speed of 1 Gps or more. As one of the VHT WLAN technologies, IEEE 802.11ac is developed as a standard for supporting a VHT
10 at a frequency band of 5 GHz or below, and IEEE 802.11ad is developed as a standard for supporting a VHT at a frequency band of 60 GHz.

In a system based on the WLAN technology, an access point scan method includes an active scan method and a passive scan method. According to the active access point scan method, a station transmits a probe request frame, and an access point having received the
15 probe request frame transmits a probe response frame in response to the received probe request frame.

Upon requesting responses from a plurality of undesignated access points by setting a service set identifier (SSID) of a probe request frame in a state of null, the station receives a probe response frame from the access points during a maximum probe response time
20 Max_Probe_Response_Time, and requests access at an access point whose wireless environment is the most superior among the access points having transmitted probe response frames. That is, even after a probe response frame is received from an access point having a superior wireless environment, the station waits for the maximum probe response time to pass, and then requests an access at the access point, thereby causing waste of time.

25 In the position of an access point, the access point needs to respond in the form of a probe response frame at each of the probe request frames being received, so the response is

unconditionally made without consideration of a wireless environment, thereby causing waste of wireless resources.

SUMMARY

5 Accordingly, example embodiments of the present invention are provided to substantially obviate one or more problems due to limitations and disadvantages of the related art.

Example embodiments of the present invention provide an access point scan method capable of performing an active scan by using a probe request frame including output
10 information of a station.

Example embodiments of the present invention also provide an access point scan method capable of performing an active scan by using a probe response frame including output information of an access point.

In some example embodiments, an active scan method performed at a station includes
15 generating a probe request frame including signal strength information of the station, and transmitting the probe request frame to access points.

The signal strength information may include information about transmission power of the station.

The active scan method may further include: receiving a probe response frame
20 corresponding to the probe request frame from a certain access point; and performing an access to the certain access point, wherein the certain access point may be an access point satisfying a predetermined standard for an uplink quality with respect to the station.

In the performing of the access to the certain access point, an access to the certain access point may be performed before a maximum probe response time elapses.

25 The active scan method may further include: receiving a probe response frame corresponding to the probe request frame from a certain access point; acquiring a downlink

path loss based on signal strength of the probe response frame; and performing an access to the certain access point if the downlink path loss satisfies a predetermined standard.

The probe response frame may include target path loss information as the predetermined standard.

5 In the performing of access to the certain access point, the access to the certain access point may be performed before a maximum probe response time elapses.

The certain access point may be an access point satisfying the predetermined standard for the uplink quality with respect to the station.

In other example embodiments, an active scan method performed at a station
10 includes: transmitting a probe request frame to access points; receiving a probe response frame corresponding to the probe request frame from a certain access point; acquiring information about downlink quality based on signal strength of the probe response frame; and performing an access to the certain access point if the downlink quality satisfies a predetermined standard.

15 The downlink quality information may include downlink path loss information.

The probe response frame may include target path loss information as the predetermined standard.

In still other example embodiments, an active scan method performed at an access point include: receiving a probe request frame from a station; acquiring information about
20 uplink quality based on signal strength information of the station included in the probe request frame; and transmitting a probe response frame to the station if the uplink quality satisfies a predetermined standard.

The signal strength information may include transmission power of the station.

The uplink quality information may include uplink path loss information.

25 In the transmitting of the probe response frame, the probe response frame including target path loss information may be transmitted.

BRIEF DESCRIPTION OF DRAWINGS

Example embodiments of the present invention will become more apparent by describing in detail example embodiments of the present invention with reference to the accompanying drawings, in which:

FIG. 1 is a conceptual view illustrating the configuration of an IEEE 802.11 wireless LAN system according to an example embodiment of the present invention;

FIG. 2 is a conceptual view illustrating an association process of a station in an infrastructure basic service set (BSS);

FIG. 3 is a conceptual view illustrating a data transmission process of an access point according to an example embodiment of the present invention;

FIG. 4 is a conceptual view illustrating an active scan method according to an example embodiment of the present invention;

FIG. 5 is a flowchart showing an active scan method according to an example embodiment of the present invention;

FIG. 6 is a conceptual view illustrating the configuration of a probe request frame;

FIG. 7 is a flowchart showing an active scan method according to another example embodiment of the present invention;

FIG. 8 is a conceptual view illustrating the configuration of a probe response frame (1 to 14);

FIG. 9 is a conceptual view illustrating the configuration of a probe response frame (15 to 23);

FIG. 10 is a flowchart showing an active scan method according to still another example embodiment of the present invention;

FIG. 11 is a flowchart showing an active scan-based responding method according to an example embodiment of the present invention; and

FIG. 12 is a flowchart showing an active scan method of an access point according to an example embodiment of the present invention.

DESCRIPTION OF EXAMPLE EMBODIMENTS

5 Example embodiments of the present invention are disclosed herein. However, specific structural and functional details disclosed herein are merely representative for purposes of describing example embodiments of the present invention, and thus example embodiments of the present invention may be embodied in many alternate forms and should not be construed as limited to example embodiments of the present invention set forth herein.

10 Accordingly, while the invention is susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that there is no intent to limit the invention to the particular forms disclosed, but on the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit
15 and scope of the invention. Like numbers refer to like elements throughout the description of the figures.

 It will be understood that, although the terms first, second, etc. may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first element could
20 be termed a second element, and similarly, a second element could be termed a first element, without departing from the scope of the present invention. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

 It will be understood that when an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element or
25 intervening elements may be present. In contrast, when an element is referred to as being "directly connected" or "directly coupled" to another element, there are no intervening

elements present. Other words used to describe the relationship between elements should be interpreted in a like fashion (*i.e.*, "between" versus "directly between", "adjacent" versus "directly adjacent", etc.).

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises," "comprising," "includes," and/or "including," when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

Hereinafter, preferred example embodiments of the present invention will be described in detail with reference to the accompanying drawings. The same elements may have the same reference numerals to provide better understanding of the specification, and the details of elements identical will be omitted in order to avoid redundancy.

In this specification, a station (STA) represents a certain functional medium including a physical layer interface with respect to a medium access control (MAC) and a wireless medium according to provisions in IEEE 802.11 standards. The station STA is classified into a station serving as an access point (AP) and a station serving as a non-access point (non-AP). A station serving as an access point AP is referred to as an access point AP, and a

station serving as a non-access point AP is referred to as a terminal.

The station STA includes a processor and a transceiver, and may further include a user interface and a display device. The processor represents a unit that is designed to generate a frame to be transmitted through a wireless network, or designed to process a frame received
5 through a wireless network, and in order to control the station STA, the processor performs various functions. The transceiver represents a unit functionally connected to the processor, and designed to transmit and receive a frame for the station STA through a wireless network.

An access point AP may represent a centralized control device, a base station BS, a node-B, an e node-B, a base transceiver system (BTS), or a site control device, and may have
10 some or the entire functions thereof.

A station may represent a wireless transmit/receive unit (WTRU), user equipment (UE), a user terminal (UT), an access terminal (AT), a mobile station (MS), a mobile terminal, a subscriber unit, a subscriber station (SS), a wireless device, or a mobile subscriber unit, and may have some or the entire functions thereof.

15 A station may perform communication using a desktop computer, a laptop computer, a tablet PC, a wireless phone, a mobile phone, a smart phone, an e-book reader, a Portable Multimedia Player (PMP), a portable game console, a navigation system, a digital camera, a Digital Multimedia Broadcasting (DMB) player, a digital audio recorder, a digital audio player, a digital picture recorder, a digital picture player, a digital video recorder, and a digital
20 video player.

FIG. 1 is a conceptual view illustrating the configuration of an IEEE 802.11 wireless LAN system according to an example embodiment of the present invention.

Referring to FIG. 1, an IEEE 802.11 wireless LAN system includes at least one basic service set (BSS). BSS represents a set of stations STA 1, STA 2(AP 1), STA 3, STA 4, and

STA 5(AP 2), rather than representing a designated region.

BSS is divided into an infrastructure BSS and an independent BSS (IBSS), and BSS 1 and BSS 2 each represent the infrastructure BSS. BSS1 may include a station STA1, an access point STA2 (AP1) providing a distribution service, and a distribution system DS
5 connecting a plurality of access points STA2 (AP1) and STA5 (A2). In BSS1, the access point STA2 (AP1) manages the station STA1.

BSS2 may include stations STA3 and STA4, an access point STA5 (AP2) providing a distribution service, and the distribution system DS connecting the plurality of access points STA2 (AP1) and STA5 (A2). In BSS2, the access point STA5 (AP2) manages the stations
10 STA3 and STA4.

Meanwhile, the independent BSS is a BSS operating in an ad-hoc mode. Since an IBSS does not include an access point, a centralized management entity performing a management function is not present at the center of the IBSS. That is, stations in an IBSS are managed in a distributed manner. All of the stations in the IBSS may be provided as a
15 mobile station, and form a self-contained network since the stations are not allowed for an access to the DS.

The access points STA2 (AP1) and STA5 (AP2) each provide the stations STA1, STA3, and STA4 connected thereto with an access to a DS through a wireless medium. In general, communication between the stations STA1, STA3, and STA4 in the BSS1 or the
20 BSS2 is achieved through the access point STA 2(AP 1) and STA 5(AP 2). However, when a direct link is set, a direction communication between the stations STA1, STA3, and STA4 may be possible.

A plurality of infrastructure BSSs may be connected to each other through the distribution system DS. The plurality of BSSs connected through the distribution system
25 DS is referred to as an extended service set (ESS). Stations included in an ESS may communicate with each other, and a station in the same ESS may move from one BSS to

another BSS while performing seamlessly communication.

The distribution system DS is a mechanism for allowing one access point to communicate with another access point. The distribution system DS may allow an access point to transmit a frame provided for stations connected to a BSS that is managed by the
5 access point, or to transmit a frame provided for a station that has moved to another BSS. In addition, the access point may transmit a frame with an external network, such as a wired network. The distribution system DS does not need to be a network, and may be implemented in various forms as long as it provides a predetermined distribution service set on IEEE 802.11 standards. For example, the distribution system may be a wireless network,
10 such as a mesh network, or a physical structure connecting access points to each other.

An active scan method of an access point according to an example embodiment of the invention may be applied to the IEEE 802.11 wireless system described above, and further applied to various network, such as a WPAN (Wireless Personal Area Network) and a WBAN (Wireless Body Area Network), in addition to the IEEE 802.11 wireless system.

15 FIG. 2 is a conceptual view illustrating an association process of a station in an infrastructure basic service set (BSS).

In order for a station STA transmits and receives data in an infrastructure BSS, first, the station STA needs to be connected to an access point AP.

Referring to FIG. 2, an association process of a station STA in an infrastructure BSS is
20 largely divided into a probe step of finding out an access point AP, 2) an authentication step of authenticating the found access point, and 3) an association step of performing association with the authenticated access point AP.

The station STA may search for nearby access points through a probe process. The probe process is classified into a passive scan method and an active scan method. The
25 passive scan method is performed by overhearing a beacon transmitted by nearby access points APs. Meanwhile, the active scan method is performed by broadcasting probe request

frames. An access point having received the probe request frame may transmit a probe response frame corresponding to the probe request frame to a corresponding station STA. The station STA may determine existences of the nearby access points APs by receiving the probe response frame.

5 Thereafter, the station STA performs authentication with respect to the found access point AP, thereby performing authentication with respect to the plurality of detected access points APs. An authentication algorithm according to the IEEE 802.11 standard is classified into an open system algorithm exchanging two authentication frames and a shared key algorithm exchanging four authentication frames. By exchanging an authentication request
10 frame and an authentication response frame based on such an authentication algorithm, the station STA performs authentication with respect to access points AP.

 Finally, the station STA selects one access point among the plurality of authenticated access points APs, and performs an association with the selected access point AP. That is, the station STA transmits an association request frame to the selected access point AP, and the
15 access point AP having received the association request frame transmits an association response frame corresponding to the association request frame to the station STA. By the process of exchanging the association request frame and the association response frame, the station STA performs the association with the access point AP.

 FIG. 3 is a conceptual view illustrating a data transmission process of an access point
20 according to an example embodiment of the present invention.

 Referring to FIG. 3, an access point AP periodically broadcasts a beacon, and in this case, may broadcast a beacon including a delivery traffic indication message (DTIM) at an interval of three beacons. The stations STA1 and STA2 in a power save mode (PSM) may be periodically awake and receive beacons, and check a traffic indication map (TIM) or
25 DTIM included in the beacon, thereby determining whether data to be transmitted to the stations STA1 and STA2 is buffered in the access point. If buffered data exists in the access

point, the stations STA1 and STA2 are kept awake to receive the data from the access point AP. If buffered data does not exist in the access point, the stations STA1 and STA2 return to a power save mode (PSM) that is, a doze state.

That is, if a bit in a TIM corresponding AID of the stations STA1 and STA2 is set to 1,
5 the stations STA1 and STA2 send an access point AP a Power Save (PS)-Poll frame (or trigger frame) indicating that the stations STA1 and STA2 are awake and ready for receiving data, and the access point AP having received the PS-Poll frame verifies that the stations STA1 and STA2 are ready for receiving data, and transmits data or acknowledgement (ACK) to the stations STA1 and STA2. When ACK is transmitted to the stations STA1 and STA2,
10 the access point AP transmits data to the stations STA1 and STA2 at an adequate point of time. Meanwhile, if a bit in a TIM corresponding AID of the stations STA1 and STA2 is set to 0, the stations STA1 and STA2 return to a power save mode (PSM).

FIG. 4 is a conceptual view illustrating an active scan method according to an example embodiment of the present invention.

15 Referring to FIG. 4, the station STA may broadcast probe request frames, and access points AP1 and AP2 having received the probe request frames each may transmit a probe response frame in response to the probe request frame. If the station STA fails to receive a probe response frame during a minimum probe response time min_probe_response_time, the station STA may transmit probe request frames again. The station STA receives probe
20 response frames during a maximum probe response time max_probe_response_time, and requests an access at an access point having the most superior wireless environment among the access points AP1 and AP2 having transmitted probe response frames. That is, the station needs to wait for the maximum probe response time to elapse even after receiving a probe response frame from an access point having a superior wireless environment, , which
25 causes waste of time.

FIG. 5 is a flowchart showing an active scan method according to an example

embodiment of the present invention.

Referring to FIG. 5, an active scan method performed at a station includes generating a probe request frame including signal strength information of the station (S100), and transmitting the probe request frame to access points (S110). In addition, the active scan
5 method may further include receiving a probe response frame corresponding to the probe request frame from a certain access point (S120), and performing an access to the certain access point (S130).

In operation S100, the station may generate a probe request frame including signal strength information of the station, and the signal strength information may include
10 transmission power (Tx power) information. That is, the signal strength may represent transmission power.

FIG. 6 is a conceptual view illustrating the configuration of a probe request frame.

Referring to FIG. 6, the probe request frame may include transmission power 5 (Tx power). That is, the station may generate a probe request frame including transmission
15 power information as shown in FIG. 6.

Referring again to FIG. 5, in operation S110, the station may transmit the probe request frame to access points. In this case, the station may transmit a probe request frame to a designated access point, or an undesignated access point (that is, broadcasting).

In operation S120, the station may receive a probe response frame corresponding to
20 the probe request frame from a certain access point. The certain access point may represent one access point among access points having received the probe request frame. In addition, the certain access point may represent an access point satisfying a predetermined standard for uplink quality with respect to the station (for example, uplink path loss). The predetermined standard may represent a target path loss (uplink target path loss), and the certain access point
25 may represent an access point having an uplink path loss equal to or smaller than the target path loss.

In operation 130, the station may perform an access (that is, an authentication process and an association process) to the certain access point. The station may perform an access to the certain access point before a preset maximum probe response time elapses. That is, the station may perform an access to the certain access point instantly after receiving a probe response frame. If the uplink path loss satisfies the predetermined standard, it is determined that uplink quality between the certain access point and the station is fair, and thus the station may perform an access to the certain access point without receiving another probe response frame during the time remaining in the maximum probe response time.

FIG. 7 is a flowchart showing an active scan method according to another example embodiment of the present invention.

Referring to FIG. 7, an active scan method performed at a station includes generating a probe request frame including signal strength information of the station (S200), transmitting the probe request frame to access points (S210), receiving a probe response frame corresponding to the probe request frame from a certain access point (S220), acquiring a downlink path loss based on signal strength of the probe response frame (S230), and performing an access to the certain access point if the downlink path loss satisfies a predetermined standard (S240).

In operation S200, the station may generate a probe request frame including signal strength information of the station, and the signal strength information may include transmission power information. That is, the signal strength may represent transmission power.

In operation S210, the station may transmit the probe request frame to access points. The station may transmit a probe request frame to a designated access point, or an undesignated access point (that is, broadcasting).

In operation S220, the station may receive a probe response frame corresponding to the probe request frame from a certain access point. The certain access point may represent

one access point among access points having received the probe request frame. In addition, the certain access point may represent an access point satisfying a predetermined standard for uplink quality with respect to the station (for example, uplink path loss). The predetermined standard may represent a target path loss (uplink target path loss), and the certain access point
5 may represent an access point having an uplink path loss equal to or smaller than the target path loss.

In operation S230, the station may acquire a downlink path loss based on signal strength of the probe response frame. If transmission power of the certain access point is identified, the station may acquire the downlink path loss through a difference between the
10 transmission power of the certain access point and the received signal strength of the probe response frame. Alternatively, the station may acquire transmission power of the certain access point through the probe response frame. That is, the certain access point may generate a probe response frame including transmission power information of the certain access point, and transmit the probe response frame to the station, and the station may acquire
15 the transmission power of the certain access point through the probe response frame.

In operation S240, the station may perform an access to the certain access point if the downlink path loss satisfies a predetermined standard. The predetermined standard may represent a target path loss (downlink target path loss), and the target path loss may be transmitted to the station while included in the probe response frame.

20 FIGS. 8 and 9 are conceptual views illustrating the configuration of a probe response frame.

Referring to FIGS. 8 and 9, a probe response frame includes information about a target path loss 23. That is, a certain access point may generate a probe response frame including target path loss information as shown in FIGS. 8 and 9, and provide a station with
25 the generated probe response frame.

Referring again to FIG. 7, the station may perform an access (that is, an authentication

process and an association process) to the certain access point if a downlink path loss is equal to or smaller than the target path loss. The station may perform an access to the certain access point before a preset maximum probe response time elapses. That is, the station may perform an access to a certain access point instantly after receiving a probe response frame
5 satisfying a predetermined standard.

If the downlink path loss satisfies the predetermined standard, it is determined that downlink quality between the certain access point and the station is fair, and thus the station may perform an access to the certain access point without receiving another probe response frame during the time remaining in the maximum probe response time.

10 Meanwhile, the station may receive a probe response frame from another access point if the downlink path loss is larger than the target path loss.

FIG. 10 is a flowchart showing an active scan method according to still another example embodiment of the present invention.

Referring to FIG. 10, an active scan method performed at a station includes
15 transmitting a probe request frame to access points (S300), receiving a probe response frame corresponding to the probe request frame from a certain access point (S310), acquiring information about downlink quality based on signal strength of the probe response frame (S320), and performing an access to the certain access point if the downlink quality satisfies a predetermined standard (S330).

20 In operation S300, the station may transmit a probe request frame to access points. In this case, the station may transmit a probe request frame to a designated access point, or an undesignated access point (that is, broadcasting).

In operation S310, the station may receive a probe response frame corresponding to the probe request frame from a certain access point. The certain access point may represent
25 one access point among access points having received the probe request frame.

In operation S320, the station may acquire information about downlink quality based

on received signal strength of the probe response frame. The information about downlink quality may include information about downlink path loss. That is, the downlink quality may represent downlink path loss. When transmission power of a certain access point is identified, the station may acquire the downlink path loss through a difference between the
5 transmission power of the certain access point and received signal strength of the probe response frame. Alternatively, the station may acquire the transmission power of the certain access point through the probe response frame. That is, a certain access point may generate a probe response frame including transmission power information of the certain access point, and transmit the probe response frame to a station, and the station may acquire the
10 transmission power of the certain access point through the probe response frame.

In operation S330, if a downlink path loss satisfies a predetermined standard, the station may perform an access to the certain access point. The predetermined standard may represent a target path loss (downlink target path loss), and the target path loss may be transmitted to the station while included in the probe response frame.

15 The station may perform an access (that is, an authentication process and an association process) to the certain access point if the downlink path loss is equal to or smaller than the target path loss. The station may perform an access to the certain access point before a preset maximum probe response time elapses. That is, the station may perform an access to a certain access point instantly after receiving a probe response frame satisfying a
20 predetermined standard.

Meanwhile, the station may receive a probe response frame from another access point if the downlink path loss is larger than the target path loss.

FIG. 11 is a flowchart showing an active scan-based responding method according to an example embodiment of the present invention.

25 Referring to FIG. 11, an active scan-based responding method performed at an access point includes receiving a probe request frame from a station (S400), acquiring information

about uplink quality based on signal strength information of the station included in the probe request frame (S410), and transmitting a probe response frame to the station if the uplink quality satisfies a predetermined standard (S420).

In operation S400, the access point may receive a probe request frame from a station.

5 That is, an SSID included in the probe request frame corresponds to an SSID of the access point or sets in null, the access point may receive the probe request frame.

In operation S410, the access point may acquire uplink quality information based on signal strength information of the station included in the probe request frame. The signal strength information of the station represents transmission power information of the station, and the uplink quality information represents uplink path loss information. That is, the access point may acquire an uplink path loss through a difference between the transmission power of the station included in the probe request frame and received signal strength of the probe request frame.

In operation S420, the access point may transmit a probe response frame to the station if the uplink path loss satisfies a predetermined standard. The predetermined standard may represent a target path loss (uplink target path loss). That is, the access point may transmit a probe response frame to the station if uplink quality (that is, uplink path loss) is equal to or smaller than the target path loss. Meanwhile, the access point does not transmit a probe response frame to the station if the uplink quality (that is, uplink path loss) is larger than the target path loss.

When the access point transmits a probe response frame, the access point may transmit the probe response frame including target path loss information (downlink target path loss) to the station. The target path loss information included in the probe response frame may be used for the station to acquire downlink quality.

25 FIG. 12 is a flowchart showing an active scan method of an access point according to an example embodiment of the present invention.

Referring to FIG. 12, a station 10 may broadcast probe request frames (S500). Access points 20, 21, and 22 may calculate an uplink path loss based on the received probe request frame. That is, the uplink path loss may be calculated based on transmission power of the station 10 included in the probe request frame and received signal strength of the probe request frame. A corresponding access point may transmit a probe response frame to the station 10 if the uplink path loss is equal to or smaller than a predetermined standard (that is, uplink target path loss) (S510).

For example, a first access point 20 may transmit a probe response frame to the station 10 if an uplink path loss with respect to the first access point 20 is equal to or smaller than the predetermined standard.

The station 10 may receive the probe response frame from the first access point 20, and perform an access to the first access point 20 instantly after receiving the probe response frame, that is, perform an authentication process and an association process (S520). The station may perform an access to the first access point 20 before a preset maximum probe response time elapses. If the uplink path loss satisfies the predetermined standard, it is determined that an uplink quality between the first access point 20 and the station is fair, and thus the station may perform an access to the first access point 20 without receiving another probe response frame during the time remaining in the maximum probe response time.

As is apparent from the above, an access point transmits a probe response frame only to a station having an uplink path loss with respect to a probe request frame satisfying a predetermined standard, thereby preventing unnecessary wireless resources from being wasted.

Meanwhile, a station instantly performs association with respect to an access point without waiting for the maximum probe response time to pass, if a downlink path loss with respect to a probe response frame is satisfied with a predetermined standard, thereby preventing unnecessary time from being wasted.

While the example embodiments of the present invention and their advantages have been described in detail, it should be understood that various changes, substitutions, and alterations may be made herein without departing from the scope of the invention.

WHAT IS CLAIMED IS:

1. An active scan method performed at a station, the active scan method comprising:
5 generating a probe request frame including signal strength information of the station;
and
transmitting the probe request frame to access points.
2. The active scan method of claim 1, wherein the signal strength information
10 includes information about transmission power (Tx power) of the station.
3. The active scan method of claim 1, further comprising:
receiving a probe response frame corresponding to the probe request frame from a
certain access point; and
15 performing an access to the certain access point,
wherein the certain access point is an access point satisfying a predetermined standard
for an uplink quality with respect to the station.
4. The active scan method of claim 3, wherein in the performing of the access
20 to the certain access point, an access to the certain access point is performed before a
maximum probe response time elapses.
5. The active scan method of claim 1, further comprising:
receiving a probe response frame corresponding to the probe request frame from a
25 certain access point;
acquiring a downlink path loss based on signal strength of the probe response frame;

and

performing an access to the certain access point if the downlink path loss satisfies a predetermined standard.

5 6. The active scan method of claim 5, wherein the probe response frame includes target path loss information as the predetermined standard.

7. The active scan method of claim 5, wherein in the performing of access to the certain access point, the access to the certain access point is performed before a maximum
10 probe response time elapses.

8. The active scan method of claim 5, wherein the certain access point is an access point satisfying the predetermined standard for an uplink quality with respect to the
15 station.

9. An active scan method performed at a station, the active scan method comprising:
transmitting a probe request frame to access points;
20 receiving a probe response frame corresponding to the probe request frame from a certain access point;
acquiring information about downlink quality based on signal strength of the probe response frame; and
performing an access to the certain access point if the downlink quality satisfies a
25 predetermined standard.

10. The active scan method of claim 9, wherein the downlink quality information includes downlink path loss information.

11. The active scan method of claim 9, wherein the probe response frame
5 includes target path loss information as the predetermined standard.

12. An active scan method performed at an access point, the active scan method comprising:

receiving a probe request frame from a station;

10 acquiring information about uplink quality based on signal strength information of the station included in the probe request frame; and

transmitting a probe response frame to the station if the uplink quality satisfies a predetermined standard.

15 13. The active scan method of claim 12, wherein the signal strength information includes transmission power (Tx power) of the station.

14. The active scan method of claim 12, wherein the uplink quality information includes uplink path loss information.

20

15. The active scan method of claim 12, wherein in the transmitting of the probe response frame, the probe response frame including target path loss information is transmitted.

25

ABSTRACT OF THE DISCLOSURE

Disclosed is a method for scanning for an access point. An active scan method comprises the steps of: generating a probe request frame including information on the signal strength of a terminal; and transmitting the probe request frame to an access point. Thus, a
5 waste of time and radio resources can be prevented.

FIG. 1

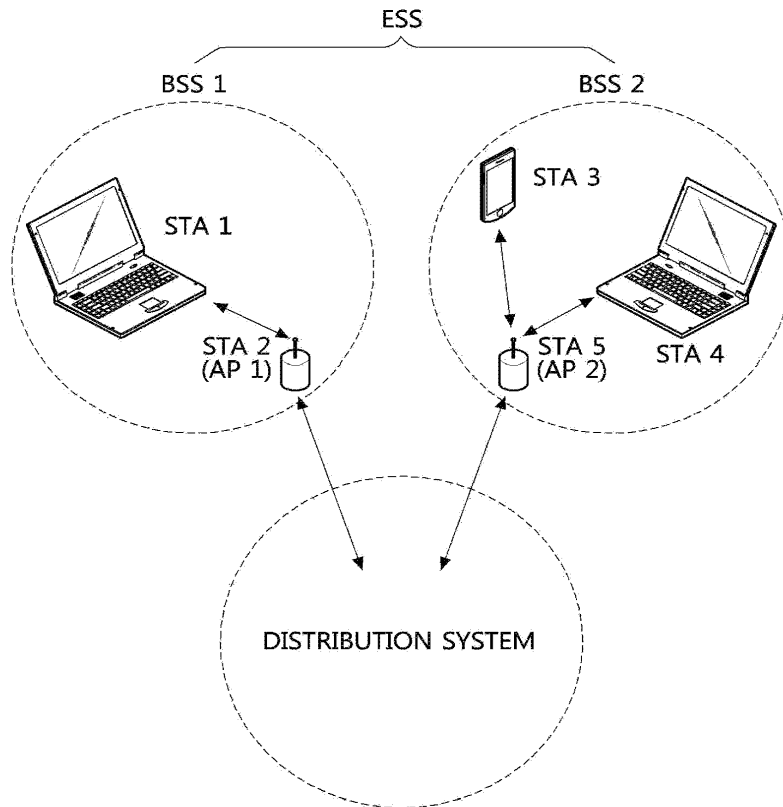


FIG. 2

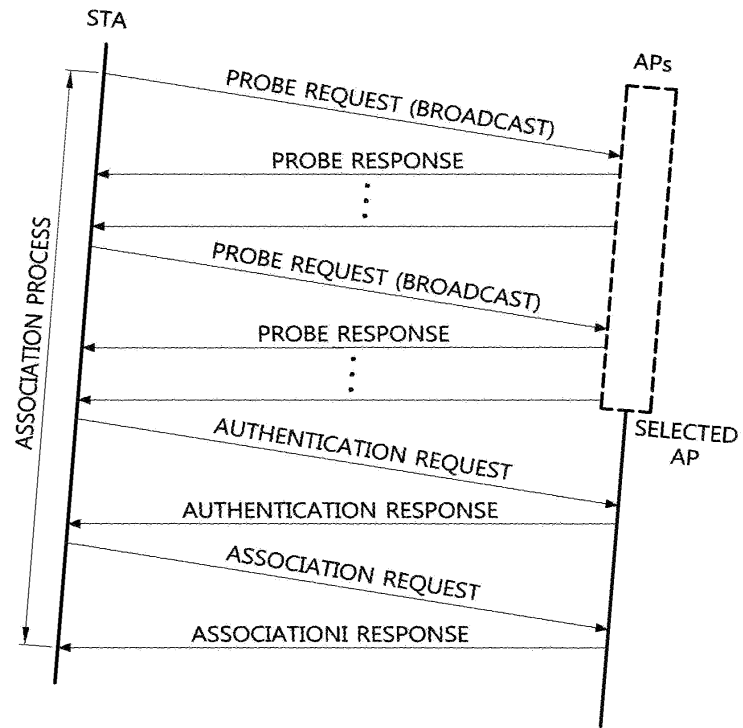


FIG. 3

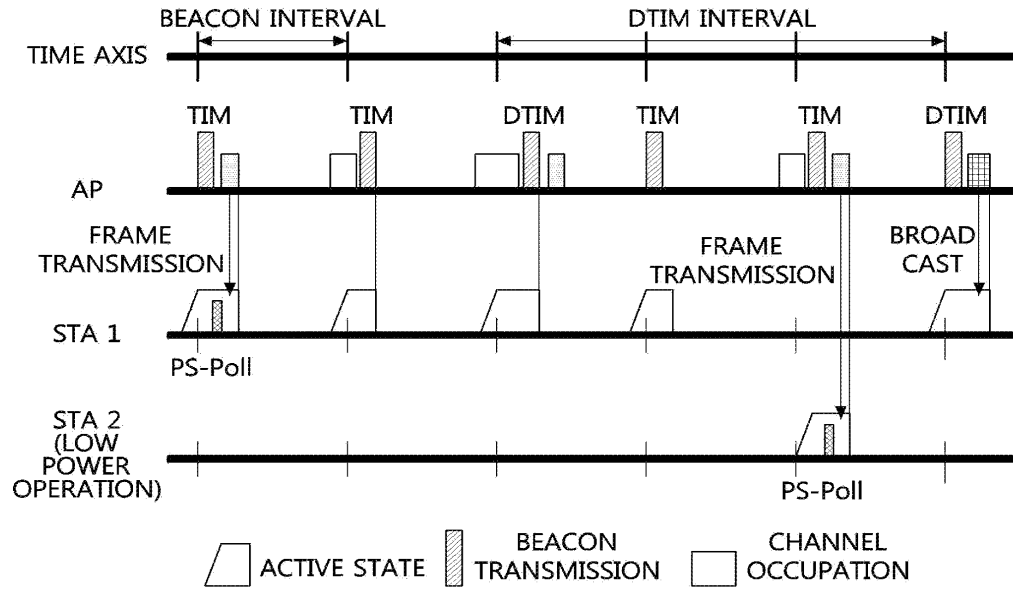


FIG. 4

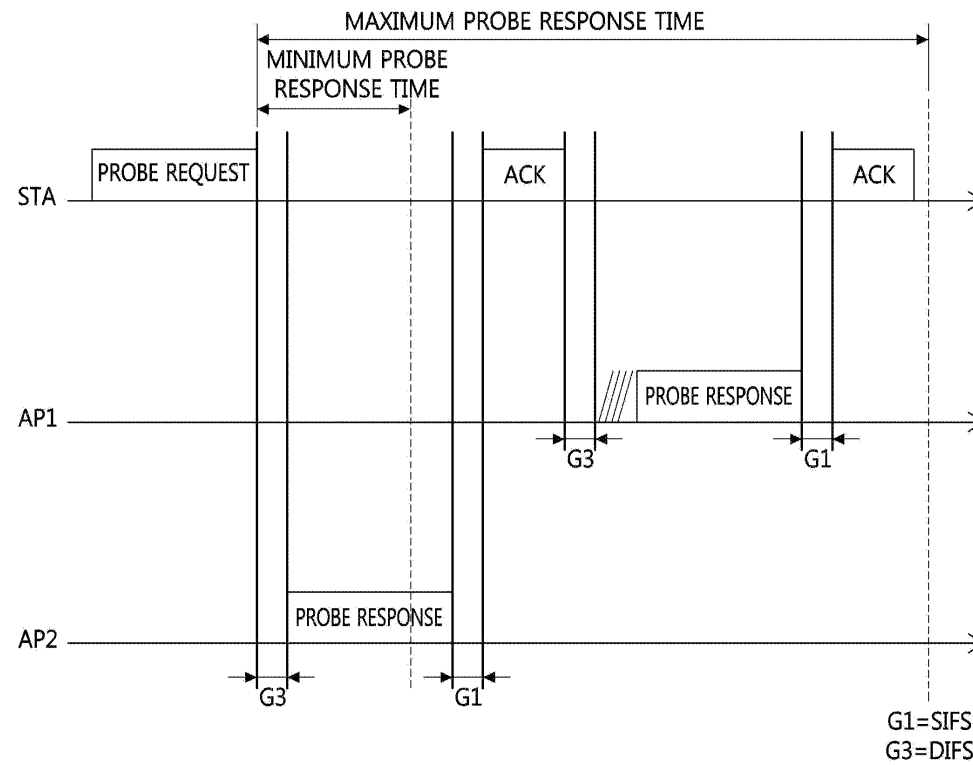


FIG. 5

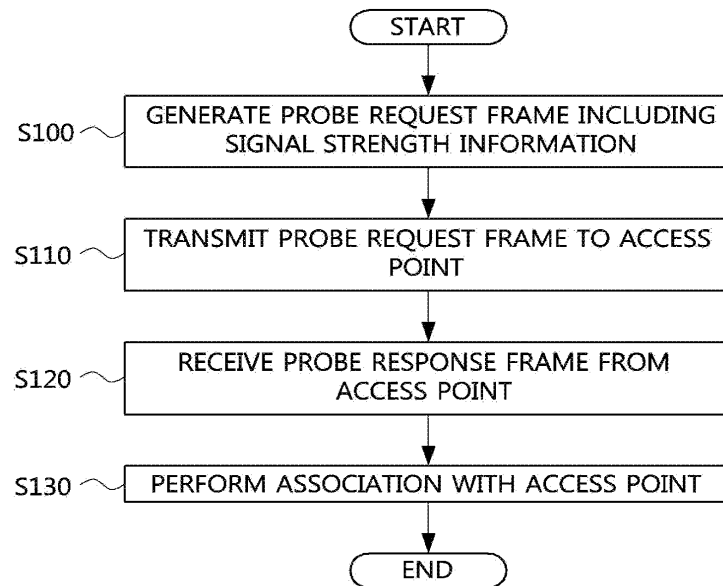


FIG. 6

Order	Information	Notes
1	SSID	
2	Supported rates	
3	Request information	May be included if dot11MultiDomainCapabilityEnabled is true.
4	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
5	Tx Power	
Last	Vendor Specific	One or more vendor-specific information elements may appear in this frame. This information element follows all other information elements.

FIG. 7

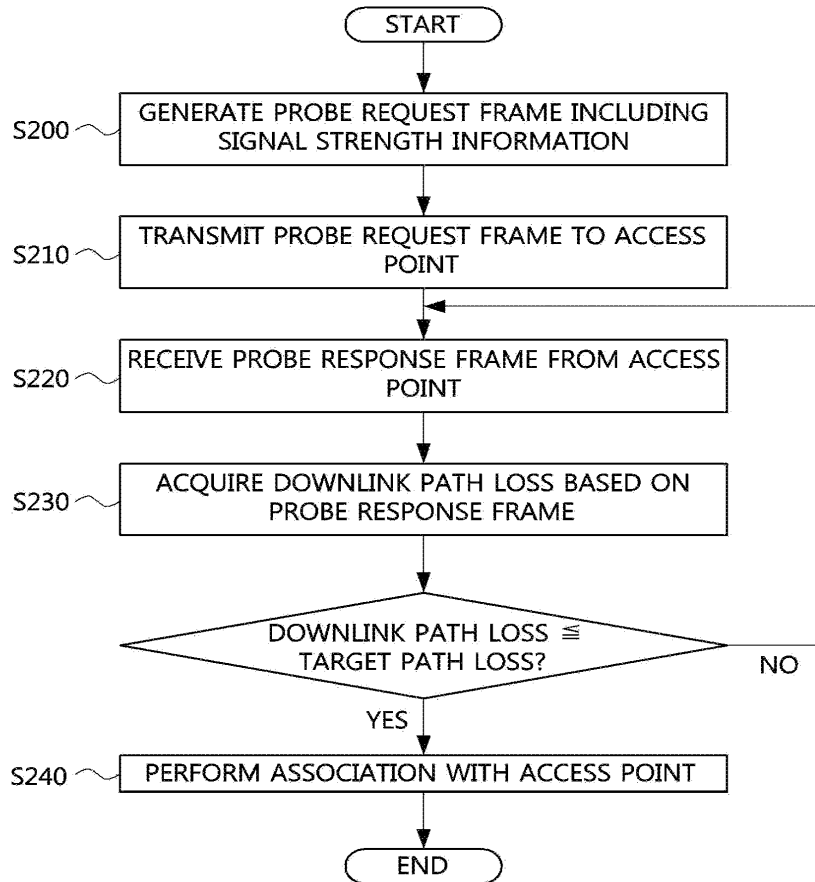


FIG. 8

Order	Information	Notes
1	Timestamp	
2	Beacon interval	
3	Capability	
4	SSID	
5	Supported rates	
6	FH Parameter Set	The FH Parameter Set information element is present within Probe Response frames generated by STAs using FH PHYs.
7	DS Parameter Set	The DS Parameter Set information element is present within Probe Response frames generated by STAs using Clause 15, Clause 18, and Clause 19 PHYs.
8	CF Parameter Set	The CF Parameter Set information element is present only within Probe Response frames generated by APs supporting a PCF.
9	IBSS Parameter Set	The IBSS Parameter Set information element is present only within Probe Response frames generated by STAs in an IBSS.
10	Country	Included if dot11MultiDomainCapabilityEnabled or dot11SpectrumManagementRequired is true.
11	FH Parameters	FH Parameters, as specified in 7.3.2.10, may be included if dot11MultiDomainCapabilityEnabled is true.
12	FH Pattern Table	FH Pattern Table information, as specified in 7.3.2.11, may be included if dot11MultiDomainCapabilityEnabled is true.
13	Power Constraint	Shall be included if dot11SpectrumManagementRequired is true.
14	Channel Switch Announcement	May be included if dot11SpectrumManagementRequired is true.

FIG. 9

Order	Information	Notes
15	Quiet	May be included if dot11SpectrumManagementRequired is true.
16	IBSS DFS	Shall be included if dot11SpectrumManagementRequired is true in an IBSS.
17	TPC Report	Shall be included if dot11SpectrumManagementRequired is true.
18	ERP Information	The ERP Information element is present within Probe Response frames generated by STAs using ERPs and is optionally present in other cases.
19	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
20	RSN	The RSN information element is only present within Probe Response frames generated by STAs that have dot11RSNAEnabled set to TRUE.
21	BSS Load	The BSS Load element is present when dot11QosOption- Implemented and dot11QBSSLoadImplemented are both true.
22	EDCA Parameter Set	The EDCA Parameter Set element is present when dot11QosOptionImplemented is true.
23	Target Pathloss	

FIG. 10

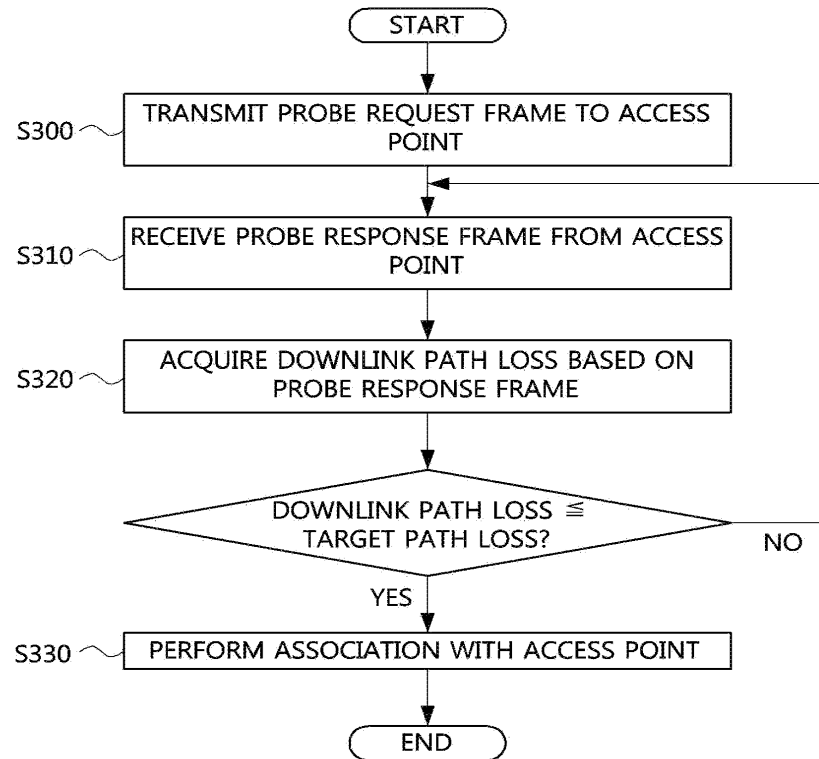


FIG. 11

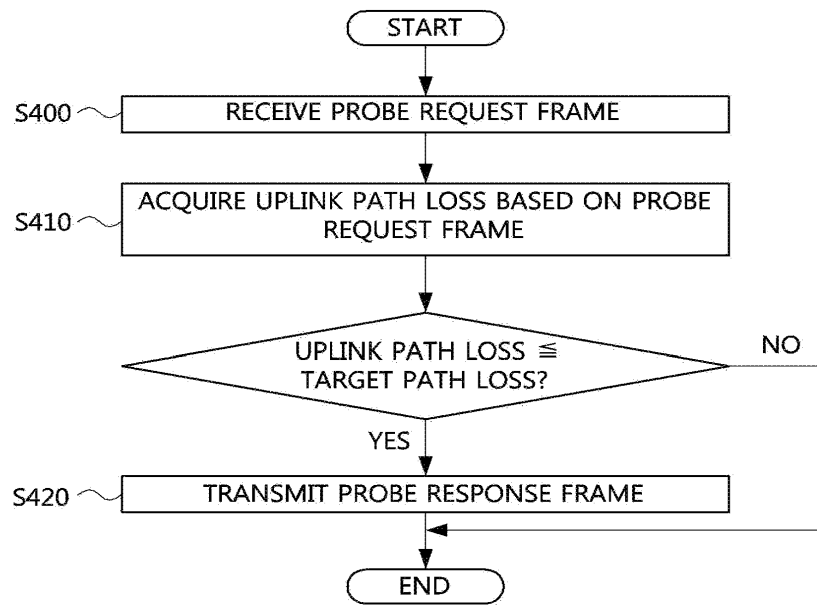
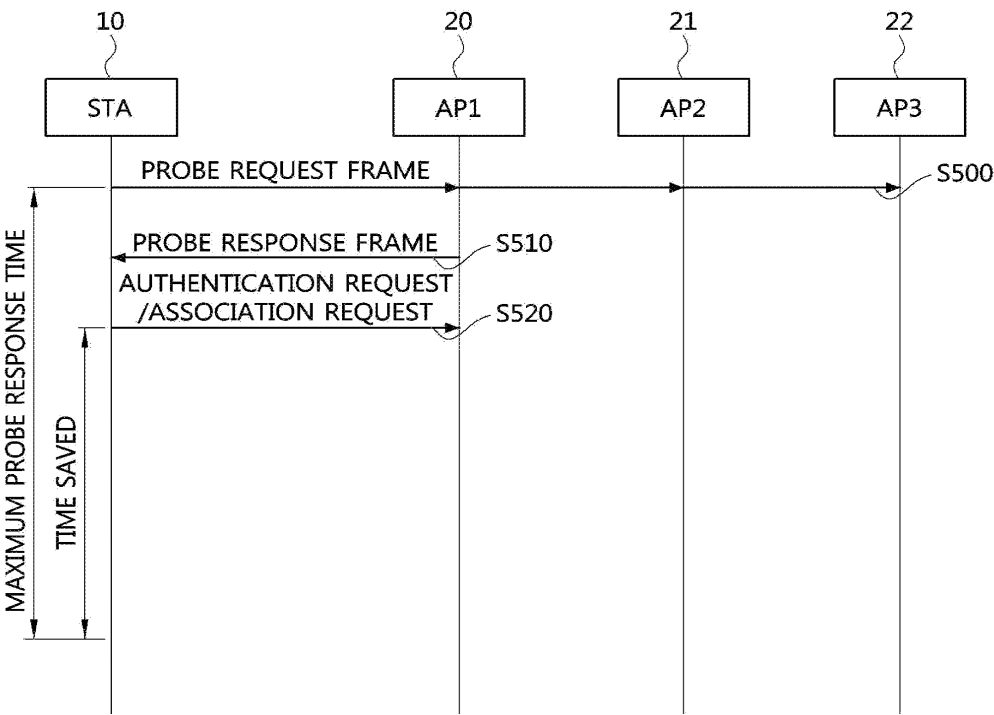


FIG. 12



ASSIGNMENT WITH DECLARATION FOR PATENT APPLICATION (37 CFR 1.63)

특허 출원 관련 양도 및 선언 (연방규칙집 제 37 조 1.63 항)

Korean Language Assignment with Declaration

이러 양도인으로 기청되는 하기 특정 발명자인 본인(들)은 아래에
명기된 출원에서 서술한 특정 개선을 발명하였으므로 그리고

에 소개한 (양수인)은(은) 출원 및 발명의
그리고 이에 따라 획득될 일체의 미국 특허에 대한 모든 권리, 소유권
및 이익을 획득하기를 원하므로,

이제 대가를 위한 그 수령을 인정합니다.

상기 양도인인 본인(들)은 상기 명칭의 양수인, 그 승계자 및 그
양수인에게 모든 분할과 그 연속을 포함하여 미국 용으로 공개된
출원과 발명 그리고 그에 대해 승인될 수 있는 미국의 모든 특허증서와
미합중국 코드 제 35 장 제 119 항에 의거한 우선권 청구권을 포함한,
개정된 파리 국제협약(1883)에 의거한 우선권을 포함한 모든 그
제발행과 모든 외국에 대한 전체 권리, 소유권 및 이익을 관에, 양도 및
이전하며 그리고 본인(들)은 출원서에 제시된 발명에 대해 승인된
일체의 특허증서를 양수인, 그 승계자 또는 그 양수인에게 발급하도록
미국 특허청장에게 요청하는 바이며 또한 본인(들)은 양수인이 본
발명에 대한 외국 특허증서를 신청할 수 있다는데 동의하며,
본인(들)은 양수인의 요청할 경우 미국 및 외국 출원과 관련하여
양수인이 필요하다고 생각하는 모든 서류를 더 이상의 보수 없이
서명할 것임니다.

(공인은 기록을 위해 요구되지는 않지만 미합중국 코드 제 35 장
제 261 항에 의거 서명날인에 대한 일종의 증거입니다)

본인은 아래 설명의 발명자로서 다음과 같이 선언합니다.

본 양도 및 선언서는 다음 사항을 위한 것입니다:

- ☐ 정부 출원 또는
☒ 미합중국 출원 또는 PCT
국제출원 번호: _____
출원일: _____

본 출원의 제목은 다음과 같습니다:

Whereas, I/We, the undersigned inventor(s) hereinafter called
assignor(s), have invented certain improvements described in the
application identified below; and

Whereas, KT CORPORATION of Bulilong-ro 90, Bundang-gu,
Seongnam-si, Gyeonggi-do, 463-711, Republic of Korea,
(assignee), desires to acquire the entire right, title, and interest in
the application and invention, and to any United States patents to
be obtained therefor;

Now therefore, for valuable consideration, receipt whereof is
hereby acknowledged.

I/We, the above named assignor(s), hereby sell, assign and
transfer to the above named assignee, its successors and assigns,
the entire right, title and interest in the application and the
invention disclosed therein for the United States of America,
including all divisions, and continuations thereof, and all Letters
Patent of the United States that may be granted thereon, and all
reissues thereof, and all countries foreign thereto, including rights
of priority under the International Convention of Paris (1883) as
amended, including the right to claim priority under 35 USC 119,
and I/we request the Director of the U.S. Patent and Trademark
Office to issue any Letters Patent granted upon the invention set
forth in the application to the assignee, his successors and assigns;
and I/we hereby agree that the assignee may apply for foreign
Letters Patent on the invention and I/we will execute without
further consideration all papers deemed necessary by the assignee
in connection with the United States and foreign applications
when called upon to do so by the assignee.

(Legalization not required for recording but is prima facie
evidence of execution under 35 USC 261)

As the below named inventor, I hereby declare that:

This assignment with declaration is directed to:

- ☐ The attached application, or
☒ United States Application or PCT International
Application Number PCT/KR2013/005733 filed on
June 27, 2013.

The application is entitled:

METHOD FOR SCANNING FOR ACCESS POINT IN
WIRELESS LAN SYSTEM

Korean Language Assignment with Declaration

위에 표시된 출원은 본인이 신청하였거나 또는 신청하도록 허가를 받았습니 다.

본인은, 본인이 본 출원에서 청구된 발명의 원 발명자 또는 원 공동 발명자라고 믿습니다.

본인은 본 양도 및 선언서 제출과 관련된 출원의 내용을 검토하였으며 아 래에 이해합니다.

본인은 연방 규정 코드 제 37 장 제 1.56 항에 규정된 바에 따라, 특허성의 판단에 중요한 본인이 아는 모든 정보를 특허청에 공개할 의무가 있음을 알고 있습니다.

본 양도 및 선언서 내에 의도적 허위 진술이 있을 경우 미합중국 코드 제 18 장의 1001 항에 의거 벌금이나 5년 이하의 징역 또는 두 가지 처벌을 모두 받을 수 있음을 인정합니다.

해당 관청의 특허출원 공개 허용 권한

☒ 이 칸에 표시한 경우, 하기의 서명자는 상기 언급된 출원에 대해 우선권을 주장하는 외국 특허청구 사항이 출원되어 있는 유럽특허청(EPO), 일본특허청(JPO), 한국특허청(KIPO), 세계지식재산기구(WIPO) 및 기타 특허청들에게 상기 언급된 특허 출원 정보를 공개할지 여부를 결정할 권한을 미국특허청(USPTO)에 하여합니다. 연방규정 코드 제 37 장 제 1.14(c)항과 (h)항을 참조하십시오. 만약 상기 출원자가 상기 언급된 출원에 대해 우선권을 주장하는 외국 특허청구 사항이 출원되어 있는 EPO, JPO, KIPO, 또는 기타 특허청들이 본 특허출원 내용을 열람하는 것을 원하지 않는다면 이 칸에 표시하지 않습니다.

연방규정 코드 제 37 장 제 1.14(b)(3)항에 따라, 다음의 경우에 한해 출원된 내용의 사본을 열람할 수 있습니다: 1) 상기 언급된 특허 출원, 2) 미합중국 코드 제 35 장 119(a)-(d)항에 따라 상기 언급된 특허출원이 우선권을 주장하는 대상인 기타 외국 특허출원으로, 그 외국 특허출원 사본이 연방규정 코드 제 37 장 제 1.55 항의 사본 증명 요건에 부합되며, 상기 언급된 특허출원에 이미 출원되어 있는 경우, 3) 상기 언급된 특허출원이 부수적인 이익을 주장하고자 하는 대상인 기타 미국 특허출원.

연방규정 코드 제 37 장 제 1.14(c) 항에 따라, "해당관청의 특허출원 공개 허용 권한" 서류 제출 일자에 관한 정보를 입수할 수 있습니다.

The above identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

Authorization To Permit Access To Application by Participating Office

☒ If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified application is filed to have access to the application.

In accordance with 37 CFR 1.14(b)(3), access will be provided to a copy of the application-as-filed with respect to: 1) the above-identified patent application-as-filed, 2) any foreign application to which the above-identified application claims priority under 35 USC 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application, and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Office.

STATEMENT OF ACCURATE TRANSLATION IN ACCORDANCE WITH 37 CFR §1.69(b):

The assignment with declaration is an accurate translation of the corresponding English language assignment with declaration.

Signature

Date


8/30/2012

NAME OF SOLE OR FIRST INVENTOR: 단독 혹은 최초 발명자의 성명			
Given Name (first and middle [if any]) 이름(성씨를 제외)		Family Name or Surname 성(姓)	
Byung Wan		YOON,	
Inventor's signature 발명자의 서명		Date 일자	December 23, 2014
Residence: 거주지:		Seoul, Republic of Korea	
Mailing Address: 우편 주소: KT Research Development Center 17 Woomyeon-dong, Seocho-gu, Seoul 137-140, Republic of Korea			
NAME OF SECOND INVENTOR: 두번째 발명자의 성명			
Given Name (first and middle [if any]) 이름(성씨를 제외)		Family Name or Surname 성(姓)	
Su Hwan		RIM,	
Inventor's signature 발명자의 서명		Date 일자	December 23, 2014
Residence: 거주지:		Seoul, Republic of Korea	
Mailing Address: 우편 주소:		Citizenship 국적	KR
KT Research Development Center 17 Woomyeon-dong, Seocho-gu, Seoul 137-140, Republic of Korea			

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	14/357,187
	Confirmation Number	6197
	Filing Date	May 8, 2014
	First Named Inventor	Masayuki HARA
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	Q210669

U.S. PATENTS						
Examiner Initials	Cite No	Patent Number	Kind Code	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	8,509,173	B2	2013-08-13	KIM et al.	

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initials	Cite No	Publication Number	Kind Code	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	2.	2008/0014934	A1	2008-01-17	BALASUBRAMANIAN et al.	
	3.	2010/0284303	A1	2010-11-11	CATOVIC et al.	
	4.	2011/0149766	A1	2011-06-23	CHOI et al.	
	5.	2011/0188486	A1	2011-08-04	KIM et al.	
	6.	2011/0243013	A1	2011-10-06	LEE et al.	
	7.	2012/0307685	A1	2012-12-6	KIM et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initials	Cite No	Foreign Document Number	Country Code	Kind Code	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	T

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. 2 Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). 3 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 4 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 5 Applicant is to place a check mark here if English language translation is attached.

[Page 1 of 1]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	Not Yet Assigned
	Confirmation Number	Not Yet Assigned
	Filing Date	December 24, 2014
	First Named Inventor	Byung Wan YOON
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	Q216623

CERTIFICATION STATEMENT			
Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):			
☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).			
OR			
☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).			
That each item of information contained in the Information Disclosure Statement filed concurrently herewith: (i) was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement; or (ii) is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement. See 37 CFR 1.704(d).			
☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.			
☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.			
☐ None			
WASHINGTON OFFICE 23373 CUSTOMER NUMBER			
SIGNATURE			
A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.			
Signature	/ S. Stuart Lee /	Date (YYYY-MM-DD)	2014-12-24
Name/Print	S. Stuart Lee	Registration Number	61,124

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1. See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. 2. Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). 3. For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 4. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 5. Applicant is to place a check mark here if English language translation is attached.

ADVANCE E-MAIL

PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

E-SANG PATENT & TRADEMARK LAW FIRM
3F., Woodo Bldg., 82-2 Yangjae-dong,
Seocho-gu,
Seoul 137-890
RÉPUBLIQUE DE CORÉE

Date of mailing (day/month/year) 17 July 2013 (17.07.2013)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference KT120009PCT	International application No. PCT/KR2013/005733

The applicant is hereby **notified** that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

KT CORPORATION (all designated States)

International filing date:

27 June 2013 (27.06.2013)

Priority date(s) claimed:

28 June 2012 (28.06.2012)

04 June 2013 (04.06.2013)

Date of receipt of the record copy by the International Bureau:

09 July 2013 (09.07.2013)

List of designated Offices:

AP: BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW

EA: AM, AZ, BY, KG, KZ, RU, TJ, TM

EP: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR

OA: BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG

National: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

ATTENTION: The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau. **In addition, the applicant's attention is drawn to:**

- time limits for entry into the national phase (see www.wipo.int/pct/en/texts/time_limits.html and *PCT Applicant's Guide*, National Phase, especially Chapters 3 and 4)
- requirements regarding priority documents (if applicable) (see *PCT Applicant's Guide*, International Phase, paragraph 5.070)

A copy of this notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Moon Kihwan e-mail pt01.pct@wipo.int Telephone No. +41 22 338 74 01
---	---

Facsimile No. +41 22 338 70 90

Form PCT/IB/301 (July 2010)

1/DKTWKJ4L6P2YH0

ADVANCE E-MAIL

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION,
OBTENTION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

E-SANG PATENT & TRADEMARK LAW FIRM
3F., Woodo Bldg., 82-2 Yangjae-dong,
Seocho-gu,
Seoul 137-890
RÉPUBLIQUE DE CORÉE

Date of mailing (day/month/year) 22 July 2013 (22.07.2013)	
Applicant's or agent's file reference KT120009PCT	IMPORTANT NOTIFICATION
International application No. PCT/KR2013/005733	International filing date (day/month/year) 27 June 2013 (27.06.2013)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 28 June 2012 (28.06.2012)
Applicant KT CORPORATION	

The applicant is hereby notified of the date of receipt (or of obtaining by the International Bureau) of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to the date of receipt, **the priority document concerned was submitted or transmitted to or obtained by the International Bureau in compliance with Rule 17.1(a), (b) or (b-bis)**. This Form replaces any previously issued notification concerning submission, transmittal or obtaining of priority documents.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
28 June 2012 (28.06.2012)	10-2012-0070043	KR	09 July 2013 (09.07.2013)
04 June 2013 (04.06.2013)	10-2013-0063860	KR	09 July 2013 (09.07.2013)

The letters "NR" denote a priority document which, on the date of mailing of this Form, had not yet been received or obtained by the International Bureau in compliance with Rule 17.1(a), (b) or (b-bis). Where the applicant has failed to either submit, request to prepare and transmit, or to request the International Bureau to obtain the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

An asterisk "*" next to a date of receipt, denotes a priority document submitted or transmitted to or obtained by the International Bureau but not in compliance with Rule 17.1(a), (b) or (b-bis) (the priority document was received after the time limit prescribed in Rule 17.1(a); the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b) or the request to the International Bureau to obtain the priority document was made after the applicable time limit under Rule 17.1(b-bis)). Even though the priority document was not furnished in compliance with Rule 17.1(a), (b) or (b-bis), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Kihwan Moon e-mail pt01.pct@wipo.int Telephone No. +41 22 338 74 01
---	---

Facsimile No. +41 22 338 70 90

Form PCT/IB/304 (July 2012)

1/QDHCZCMVJT6EFV0



ADVANCE E-MAIL

From the INTERNATIONAL BUREAU

PCT

FIRST NOTICE INFORMING THE APPLICANT OF
THE COMMUNICATION OF THE INTERNATIONAL
APPLICATION (TO DESIGNATED OFFICES WHICH
DO NOT APPLY THE 30 MONTH TIME LIMIT
UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

Date of mailing (day/month/year) 30 January 2014 (30.01.2014)		To: E-SANG PATENT & TRADEMARK LAW FIRM 3F., Woodo Bldg., 82-2 Yangjae-dong, Seocho-gu, Seoul 137-890 RÉPUBLIQUE DE CORÉE	
Applicant's or agent's file reference KT120009PCT			
International application No. PCT/KR2013/005733	International filing date (day/month/year) 27 June 2013 (27.06.2013)	Priority date (day/month/year) 28 June 2012 (28.06.2012)	
Applicant KT CORPORATION			

IMPORTANT NOTICE

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), **does apply**, please see Form PCT/IB/308(Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date).

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, **does not apply**, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
03 January 2014 (03.01.2014)

None

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, **does not apply**, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1 :

LU, TZ, UG

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. TIME LIMITS for entry into the national phase

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of **19 months** from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **20 MONTHS** from the priority date.

In practice, **time limits other than the 20-month time limit** will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For **regular updates on the applicable time limits** (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's **sole responsibility** to monitor all these time limits.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Kihwan Moon
Facsimile No. +41 22 338 82 70	e-mail: pt01.pct@wipo.int

Form PCT/IB/308(First Notice) (January 2004)



ADVANCE E-MAIL

From the INTERNATIONAL BUREAU

PCT

SECOND AND SUPPLEMENTARY NOTICE
INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION (TO DESIGNATED OFFICES
WHICH APPLY THE 30 MONTH TIME
LIMIT UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

E-SANG PATENT & TRADEMARK LAW FIRM
3F., Woodo Bldg., 82-2 Yangjae-dong,
Seocho-gu,
Seoul 137-890
RÉPUBLIQUE DE CORÉE

Date of mailing (day/month/year) 30 October 2014 (30.10.2014)		IMPORTANT NOTICE	
Applicant's or agent's file reference KT120009PCT			
International application No. PCT/KR2013/005733	International filing date (day/month/year) 27 June 2013 (27.06.2013)	Priority date (day/month/year) 28 June 2012 (28.06.2012)	
Applicant KT CORPORATION			

- ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), **does not apply**, please see Form PCT/IB/308(First Notice) issued previously.
- Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, **does apply**, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
03 January 2014 (03.01.2014)

AZ, BY, CN, EP, HU, KG, KP, MD, MK, MZ, NA, NG, PG, RU, SY, TM

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

- The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, **does apply**, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1 :

AE, AG, AL, AM, AO, AP, AT, AU, BA, BB, BG, BH, BN, BR, BW, BZ, CA, CH, CL, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, ID, IL, IN, IS, JP, KE, KN, KZ, LA, LC, LK, LR, LS, LT, LY, MA, ME, MG, MN, MW, MX, MY, NI, NO, NZ, OA, OM, PA, PE, PH, PL, PT, QA, RO, RS, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, TH, TJ, TN, TR, TT, UA, US, UZ, VC, VN, ZA, ZM, ZW

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. TIME LIMITS for entry into the national phase

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **30 MONTHS** from the priority date.

In practice, **time limits other than the 30-month time limit** will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For **regular updates on the applicable time limits** (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's **sole responsibility** to monitor all these time limits.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Kihwan Moon e-mail: pt01.pct@wipo.int
---	---

Form PCT/IB/308(Second and Supplementary Notice) (January 2004)



ADVANCE E-MAIL

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING
AVAILABILITY OF THE PUBLICATION
OF THE INTERNATIONAL APPLICATION

To:

E-SANG PATENT & TRADEMARK LAW FIRM
3F., Woodo Bldg., 82-2 Yangjae-dong,
Seocho-gu,
Seoul 137-890
RÉPUBLIQUE DE CORÉE

Date of mailing (day/month/year) 03 January 2014 (03.01.2014)		IMPORTANT NOTICE	
Applicant's or agent's file reference KT120009PCT			
International application No. PCT/KR2013/005733	International filing date (day/month/year) 27 June 2013 (27.06.2013)	Priority date (day/month/year) 28 June 2012 (28.06.2012)	
Applicant KT CORPORATION			

The applicant is hereby **notified** that the International Bureau:

- ☒ has **published** the above-indicated international application on 03 January 2014 (03.01.2014) under No. WO 2014/003472
- ☐ has **republished** the above-indicated international application on under No. WO
For an explanation as to the reason for this republication of the international application, reference is made to INID codes (15), (48) or (88) (as the case may be) on the front page of the published international application.

A copy of the international application is available for viewing and downloading on WIPO's website at the following address: www.wipo.int/pctdb (in the appropriate field of the structured search, enter the PCT or WO number).

The applicant may also obtain a paper copy of the published international application from the International Bureau by sending an e-mail to patentscope@wipo.int or by submitting a written request to the contact details provided below.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Kihwan Moon e-mail: pt01.pct@wipo.int
---	---

Form PCT/IB/311 (January 2009)

특 허 협 력 조 약
(PATENT COOPERATION TREATY)

발신 : 국제조사기관

수신 : 특허법인 이상 서울시 서초구 양재동 82-2 우도빌딩 3층 137-890 대한민국

PCT

조사용사본 수령 통지서

(PCT 규칙 25.1)

출원인 또는 대리인의 서류참조기호 KT120009PCT		발송일 (일/월/년) 2013년 07월 22일 (22.07.2013)
출원인 또는 대리인의 서류참조기호 KT120009PCT		중요통지
국제출원번호 PCT/KR2013/005733	국제출원일 (일/월/년) 2013년 06월 27일 (27.06.2013)	우선일 (일/월/년) 2012년 06월 28일 (28.06.2012)
출원인 주식회사 케이티		

1. 국제조사기관 및 수리관청이 동일한 관청이 아닌 경우:
본 국제조사기관이 아래 기재된 날에 국제출원의 조사용사본을 수령하였음을 출원인에게 통지합니다.

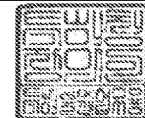
국제조사기관 및 수리관청이 동일한 관청인 경우:
아래 기재된 날에 국제출원의 조사용사본을 수령하였음을 출원인에게 통지합니다.

2013년 07월 15일 (15.07.2013) (접수일)

2. ☐ 조사용사본에 전자적 형태의 핵산염기 및/또는 아미노산 서열목록이 첨부되어 있습니다.
3. ☐ 조사용사본에 전자적 형태의 핵산염기 및/또는 아미노산 서열목록이 포함되어 있습니다.
4. 국제조사보고서 및 국제조사기관의 견해서 작성기한
국제조사보고서 및 국제조사기관의 견해서의 작성기한은 상기의 접수일로부터 3월 또는 우선일
부터 9월중 늦게 만료하는 날까지임을 통지합니다(조약규칙 42.1 및 43의 2.1(a)).

이 통지서의 사본은 국제사무국에 송부되었습니다. 다만, 1.의 첫 번째 문장에 해당하는 경우에는 수리관청에도 송부됩니다.

ISA/KR의 명칭 및 우편주소  대한민국 특허청 (302-701) 대전광역시 서구 청사로 189, 4동 (둔산동, 정부대전청사) 팩스번호 82-42-472-7140	특허청장 전화번호 82-42-481-5281
---	---------------------------------



서식 PCT/ISA/202 (2009년 7월)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2013/005733**A. CLASSIFICATION OF SUBJECT MATTER*****H04W 48/16(2009.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04W 48/16; H04W 88/02; H04W 52/36; H04W 16/14; H04W 48/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: wireless LAN|LAN|access point|AP|access point, active|active, search|scan|scan|scanning

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2011-0071884 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 29 June 2011	1-2
A	See abstract, paragraphs 42-50, 58-63 and figures 4, 6	3-15
A	KR 10-2011-0090734 A (LG ELECTRONICS INC.) 10 August 2011	1-15
	See abstract, paragraphs 75-79 and figure 7	
A	KR 10-2011-0111033 A (SAMSUNG ELECTRONICS CO., LTD. et al.) 10 October 2011	1-15
	See abstract, paragraphs 26-46 and figure 3	
A	KR 10-2011-0085836 A (LG ELECTRONICS INC.) 27 July 2011	1-15
	See abstract, claims 1-9 and figure 5	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

24 OCTOBER 2013 (24.10.2013)

Date of mailing of the international search report

25 OCTOBER 2013 (25.10.2013)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701,
 Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2013/005733

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 10-2011-0071884 A	29/06/2011	US 2011-0149766 A1	23/06/2011
KR 10-2011-0090734 A	10/08/2011	CN 102742333 A	17/10/2012
		EP 2532196 A2	12/12/2012
		JP 2013-519255A	23/05/2013
		KR 10-2011-0090746 A	10/08/2011
		US 2011-0188486 A1	04/08/2011
		US 8509173 B2	13/08/2013
		WO 2011-096746 A2	11/08/2011
		WO 2011-096746 A3	08/12/2011
KR 10-2011-0111033 A	10/10/2011	US 2011-0243013 A1	06/10/2011
KR 10-2011-0085836 A	27/07/2011	US 2012-0307685 A1	06/12/2012
		WO 2011-090257 A1	28/07/2011

Form PCT/ISA/210 (patent family annex) (July 2009)

PCT 출원서

출력(전자적 형태가 원본)

0	수리관청 전용	
0-1	국제출원번호	PCT/KR2013/005733
0-2	국제출원일자	2013년 06월 27일 (27.06.2013)
0-3	수리관청 명칭 및 "PCT 국제출원"	RO/KR
0-4	서식 PCT/RO/101 - PCT 출원서	
0-4-1	우측에 기재된 바와 같이 작성되었다.	PCT-SAFE 버전 3.51.059.235 MT/FOP 20130401/0.20.5.21
0-5	신청 아래 서명인은 본 국제 출원서가 특허협력조약에 의해 처리될 것을 청구합니다.	
0-6	출원인이 지정한 수리관청	대한민국 특허청 (RO/KR)
0-7	출원인 또는 대리인의 서류참조기호	KT120009PCT
I	발명의 명칭	무선랜 시스템에서 액세스 포인트의 검색 방법
II	출원인	
II-1	이 사람은	오직 출원인 (applicant only)
II-2	우측 지정국에 관한 출원인	모든 지정국 (all designated States)
II-4ko	성명	주식회사 케이티
II-4en	Name:	KT CORPORATION
II-5ko	주소	대한민국
		436-711
II-5en	Address:	경기도 성남시 분당구 불정로 90
		90 Buljeong-ro, Bundang-gu,
		Seongnam-si, Gyeonggi-do 436-711
		Republic of Korea
II-6	국적	대한민국 KR
II-7	거주국	대한민국 KR
II-8	전화번호	82-31-727-0114
II-11	출원인 코드	2-1998-005456-3
III-1	출원인 및/또는 발명자	
III-1-1	이 사람은	오직 발명자 (inventor only)
III-1-3	우측 지정국에 관한 발명자	
III-1-4ko	성명	윤병완
III-1-4en	Name (LAST, First):	YOON, Byung Wan
III-1-5ko	주소	대한민국
		137-140
III-1-5en	Address:	서울시 서초구 우면동 17 KT연구개발센터
		KT Research Development Center,
		17 Woomyeon-dong,
		Seocho-gu, Seoul 137-140
		Republic of Korea

PCT 출원서

출력(전자적 형태가 원본)

III-2 III-2-1 III-2-3 III-2-4ko III-2-4en III-2-5ko III-2-5en	출원인 및/또는 발명자 이 사람은 우측 지정국에 관한 발명자 성명 Name (LAST, First): 주소 Address:	오직 발명자 (inventor only) 임수환 RIM, Su Hwan 대한민국 137-140 서울시 서초구 우면동 17번지 KT연구개발센터 KT Research Development Center, 17 Woomyeon-dong, Seocho-gu, Seoul 137-140 Republic of Korea
IV-1 IV-1-1ko IV-1-1en IV-1-2ko IV-1-2en IV-1-3 IV-1-4 IV-1-5 IV-1-5(a) IV-1-6	대리인 또는 대표자 아래에 기재된 자는 관할 국제기관에 대하여 우측에 표시된 자격으로 출원인을 대리하는 것으로 선임되었다. 성명 Name: 주소 Address: 전화번호 팩스번호 이메일 주소 이메일 사용동의 수리관청, 국제조사기관, 국제사무국, 국제예비심사기관이 필요 시 이 이메일 주소를 사용하여 이 국제출원과 관련하여 발행된 통지서를 송부할 것에 동의한다. 대리인 코드	대리인 특허법인 이상 E-SANG PATENT & TRADEMARK LAW FIRM 대한민국 137-890 서울시 서초구 양재동 82-2 우도빌딩 3층 3F., Woodo Bldg., 82-2 Yangjae-dong, Seocho-gu, Seoul 137-890 Republic of Korea 82-2-2057-1246 82-2-2057-1260 esang@espat.co.kr 서면 통지서에 앞서 선람용 사본 송부 9-2008-100021-0
V V-1 V-2	지정국 본 출원서의 제출로, 규칙 4.9(a)에 따라, 부여될 수 있는 모든 종류의 권리 보호를 위하여, 그리고 해당하는 경우 지역특허 및 국내특허 모두를 위하여 당해 국제출원일에 PCT에 기속되는 모든 계약국이 지정된다. V-2란은 출원서 제출시 또는 규칙 26의2.1에 의해 그 이후 출원서 제6기재란에 위 특정 관련 계약국의 국내 선출원에 대한 우선권주장이 포함되어 있을 경우 당해 계약국의 국내법에 의해 해당 국내 선출원의 효력이 상실되는 것을 방지하기 위한 목적으로 당해 계약국의 지정을 제외하는 데에만 사용될 수 있다 (지정 제외시 이의 취소 불가능).	 KR
VI-1 VI-1-1 VI-1-2 VI-1-3	선국내출원에 대한 우선권 주장 출원일 출원번호 국가	2012년 06월 28일 (28.06.2012) 10-2012-0070043 KR

PCT 출원서

출력(전자적 형태가 원본)

VI-2	선국내출원에 대한 우선권 주장		
VI-2-1	출원일	2013년 06월 04일 (04.06.2013)	
VI-2-2	출원번호	10-2013-0063860	
VI-2-3	국가	KR	
VI-3	우선권서류 신청 수리관청에 대하여 위에 명시된 선출원의 인증등본을 준비하여 국제사무국에 송부하여 줄 것을 신청한다.	VI-1 VI-2	
VI-4	인용에 의한 보완 조약 제11조(I)(iii)(d) 또는 (e)에서 규정하는 국제출원의 요소, 또는 규칙 20.5(a)에서 규정하는 명세서, 청구 범위 또는 도면의 일부가 본 국제출원에는 포함되어 있지 않지만 조약 제11조(I)(iii) 규정의 요소 중 하나 이상이 수리관청에 최초로 접수된 날에 우선권주장의 기초가 된 선출원에 완전히 포함되어 있는 경우, 그 요소 또는 부분은 규칙 20.6 규정에 의한 확인을 조건으로, 규칙 20.6의 규정과 관련하여 본 국제출원에 있어서 인용에 의해 보완된다.		
VII-1	국제조사기관(ISA) 선택	대한민국 특허청 (ISA/KR)	
VIII	선언서	선언서 개수	
VIII-1	발명자의 신원에 관한 선언	-	
VIII-2	국제출원일에 특허출원 및 특허를 받을 수 있는 출원인의 자격에 관한 선언	-	
VIII-3	국제출원일에 선출원의 우선권을 주장할 수 있는 출원인의 자격에 관한 선언	-	
VIII-4	발명자 선언(미국에 대한 지정의 경우에 한함)	-	
VIII-5	신규성을 해치지 아니하는 개시 또는 신규성 상실의 예외에 관한 선언	-	
IX	체크 리스트	용지 수	전자적 파일 첨부
IX-1	출원서(선언서 포함)	4	✓
IX-2	명세서	14	✓
IX-3	청구범위	3	✓
IX-4	요약서	1	✓
IX-5	도면	7	✓
IX-7	용지매수 소개	29	
	첨부 항목	서면 첨부	전자적 파일 첨부
IX-8	수수료 계산 용지	-	✓
IX-9	개별위임장 원본	-	✓
IX-18	PCT-SAFE 전자출원 매체	-	-
IX-20	요약서에 수반되어야 할 도면 번호	5	
IX-21	국제출원의 출원 언어	한국어	
X-1	출원인, 대리인 또는 대표자의 서명 또는 날인	(PKCS7 전자서명)	
X-1-1	성명	특허법인 이상	
X-1-2	서명인의 성명	특허법인 이상	
X-1-3	권한 (출원서를 통해 서명자의 자격이 명백하지 않은 경우에는 그 자격도 표시)	특허법인 이상	

PCT 출원서

출력(전자적 형태가 원본)

수리관청 전용

10-1	국제출원으로 제출된 서류의 실제 접수일	2013년 06월 27일 (27.06.2013)
10-2	도면	
10-2-1	접수	
10-2-2	미접수	
10-3	국제출원으로 제출된 서류를 완성하는 서류 또는 도면의 후후 기간내 제출에 따른 정정된 실제 접수일	
10-4	PCT 제11조(2)에 따라 제출이 요구된 보완서로서 기간내 제출된 보완서의 접수일	
10-5	국제조사기관(ISA)	ISA/KR
10-6	조사료 납부시까지 지원된 조사용 사본의 총부	

국제 사무국 전용

11-1	국제 사무국의 기록원본 접수일	
------	------------------	--

특 허 협 력 조 약
(PATENT COOPERATION TREATY)

발신: 수리관청

수신:

특허법인 이상

서울시 서초구 양재동 82-2 우도빌딩 3층
137-890 대한민국**PCT**

국제출원보정요구서

(PCT 3(4)(i) 및 14(1); 규칙 26)

출원인 또는 대리인의 서류참조기호 KT120009PCT	발송일 (일/월/년) 2013년 07월 02일 (02.07.2013)
국제출원번호 PCT/KR2013/005733	답변기간 상기 발송일로부터 2월 이내
출원인 주식회사 케이티	국제출원일자 (일/월/년) 2013년 06월 27일 (27.06.2013)

1. ☒ 출원인은 기재출하신 이 국제출원에 있어서, 아래의 첨부물에 열거된 흠결에 대하여 위의 지정기 한내에 이를 보정하시기 바랍니다.

☒ 부록 A
☐ 부록 B1 (국제출원의 서식상의 요건에 관한 사항)
☐ 부록 C1 (국제출원의 도면에 관한 사항)

2. ☐ 출원인은 규칙 12.3 및 12.4에 의하여 기 제출하신 국제출원번역문에 있어서, 아래의 첨부물에 열거된 흠결에 대하여 위의 지정기간내에 이를 보정하시기 바랍니다.

☐ 부록 A
☐ 부록 B2 (국제출원번역문의 서식상의 요건에 관한 사항)
☐ 부록 C2 (국제출원번역문의 도면에 관한 사항)

기타사항 (필요한 경우 때):

흠결의 보정방법?

흠결이 출원서에 있는 경우를 제외하고, 보정은 보정을 포함하는 대체용지 및 대체용지에 수반되는 서한을 제출함으로써 행해져야 하며, 서한에는 대체되는 용지와 대체용지사이의 차이점에 대하여 주의를 환기하여야 합니다. 출원서상의 흠결에 대하여는, 기록원본의 출원서에 명확하게 옮겨적을 수 있는 것인 경우에만 서한에 기재할 수 있습니다 (규칙 26.4).

주의

흠결이 보정되지 않는 경우에는 이 국제출원이 취하된 것으로 간주합니다(규칙 26.5).

이 보정요구서와 첨부물의 사본은 국제사무국(☐ 과 국제조사기관)에 송부되었습니다.

수리관청명칭 및 우편주소 대한민국 특허청 (302-701) 대전광역시 서구 청사로 189, 정부대전청사 팩스번호: 82-42-472-7140	특허청장 전화번호: 82-42-481-5281
--	------------------------------

서식 PCT/RO/106 (2012년 9월 16일)

서식PCT/RO/106 부록A	국제출원번호 PCT/KR2013/005733
이 국제출원의 결함은 다음과 같습니다.	
<p>1. 국제출원의 서명*에 관하여 (규칙 4.15, 26.2bis(a) 및 90.4), 출원서에:</p> <p>a. ☐ 출원인의 서명(출원인이 2이상인 경우 최소한 1인)이 누락됨.*</p> <p>b. ☐ 대리인/대표자로 보이는 자가 서명을 하였으나, 국제출원에 출원인 중 최소 1인이 서명한 위임장이 첨부되어 있지 아니함.*</p> <p>c. ☐ 기타(상술):</p> <p>* 출원인은 각 지정관청의 국내법상 국내단계에서 국제출원의 처리와 관련하여 출원서에 서명하지 아니한 출원인의 서명을 통해 국제출원을 확인할 것을 요구할 수 있음에 유의하여야 한다.(규칙 51bis.1(a)(vi)).</p>	
<p>2. 규칙 19.1에 의거 수리관청에 국제출원을 제출할 수 있는 자격을 갖춘 출원인의 기재에 관하여, 출원서에 (규칙 4.4, 4.5 및 26.2bis(b)):</p> <p>a. ☐ 출원인의 성명을 올바르게 기재하지 않았음(상술):</p> <p>b. ☐ 출원인의 주소를 기재하지 않았음.</p> <p>c. ☐ 출원인의 주소를 올바르게 기재하지 않았음(상술):</p> <p>d. ☐ 출원인의 국적을 기재하지 않았음.</p> <p>e. ☐ 출원인의 거주지를 기재하지 않았음.</p> <p>☐ 다른 출원인에 관한 기재에 대한 추가사항(있는 경우):</p> <p>* 규칙 4.4 및 4.5의 규정에 의하여 조약 14(1)(a)(ii)의 요건상 출원인, 또는 출원인이 여러명인 경우 출원인 각각에 관한 기재가 있어야 한다고 규정하고 있음에도 불구하고, 출원인이 2인 이상인 경우 규칙 4.5(a)(ii) 및 (iii)에 의한 기재는 출원인 중 규칙 19.1에 따라 국제출원할 자격이 있는 출원인 중 1인에 대한 기재가 있는 경우 그 요건을 충족한 것으로 본다(규칙 26.2bis(b)).</p> <p>그러나, 출원인은 각 지정관청의 국내법상 국내단계에서 국제출원의 처리와 관련하여 지정국을 위한 출원인에 대하여 규칙 4.5(a)(ii) 및 (iii)에 따른 누락된 기재사항을 제출할 것을 요구할 수 있음에 유의하여야 한다(규칙 51bis.1(a)(vii)).</p>	
<p>3. 명세서와 청구의 범위를 제외한 국제출원의 언어에 관하여(규칙 12.1(c), 26.3ter(a) 및 (c)):</p> <p>a. ☐ 출원서가 당 수리관청이 인정하는 공개언어인 로 작성되지 않았음</p> <p>b. ☒ 도면중 설명부분이 이 국제출원이 공개될 언어인 [한국어] 로 작성되지 않았음.</p> <p>c. ☐ 요약서가 이 국제출원이 공개될 언어인 로 작성되지 않았음.</p>	
<p>4. 발명의 명칭이:</p> <p>a. ☐ 출원서 박스번호 I에 기재되지 않았음(규칙 4.1 (a)).</p> <p>b. ☐ 명세서 첫 페이지의 첫머리에 기재되지 않았음(규칙 5.1 (a)).</p> <p>c. ☐ 출원서 박스번호 I의 기재와 명세서 첫 머리에 표시된 것이 일치하지 아니함(규칙 5.1(a)).</p>	
<p>5. 요약서에 관하여(규칙 8 및 26.1):</p> <p>☐ 국제출원에 요약서가 포함되지 않았음.</p>	

서식 PCT/RO/106 (부록 A) (2012년 9월 16일)

<p>이 국제출원의 서식상의 요건이 아래와 같은 정도까지 충족되지 못했습니다.</p>		<p>국제출원번호</p>	
<p>서식 PCT/RO/106 부록 B1</p>		<p>PCT/KR2013/005733</p>	
<p>1. ☐ 균일한 국제공개를 위하여 필요한 정도까지(규칙 11 및 26.3(a)(i)) (결함을 상):</p>			
출원서	명세서	청구의 범위	요약서
☐	☐	☐	☐
<p>a. ☐ 직접부제를 허용하지 않음.</p>			
<p>b. ☐ 각 요소가 별개의 용지에 작성되지 않았음.</p>			
<p>c. ☐ 용지에 주를 또는 찢어진 곳이 있거나, 접어진 곳이 있음.</p>			
<p>d. ☐ 용지를 세로로 사용하지 않았음.</p>			
<p>e. ☐ 용지의 양면을 사용했음.</p>			
<p>f. ☐ 유연성 있는/튼튼한/원색의/부드러운/무광택의/내구성 있는 종이 아님.</p>			
<p>g. ☐ 용지가 규정대로 철하여지지 않았음 (규칙 11.4 (b)).</p>			
<p>h. ☐ 용지가 A4 사이즈 (29.7cm x 21cm)가 아님.</p>			
<p>i. ☐ 최소여백이 규정에 미치지 못함.</p>			
<p>(상단: 2cm; 좌단: 2.5cm; 우단: 2cm; 하단: 2cm).</p>			
<p>j. ☐ 서류번호가 용지의 상단으로부터 1.5cm 이내의 좌측 구석이 아님.</p>			
<p>k. ☐ 서류번호의 문자수가 12자를 초과함.</p>			
<p>l. ☐ 명세서, 청구의 범위 및 요약서의 용지에 아라비아숫자로 일련번호를 붙이지 않았음.</p>			
<p>m. ☐ 용지번호가 용지의 상단 또는 하단에 중앙에 위치하지 않음.</p>			
<p>n. ☐ 용지번호가 여백에 위치함(여백의 크기는 위 i. 참조).</p>			
<p>o. ☐ 문언이 타자 또는 인쇄되지 않았음.</p>			
<p>p. ☐ 타자에 의한 경우, 행의 간격이 1.5문자폭이 아님.</p>			
<p>q. ☐ 기재사항 중 대문자의 크기가 세로 0.28cm 미만임.</p>			
<p>r. ☐ 지워지지 않는 어두운 색으로 기재되지 않았음.</p>			
<p>s. ☐ 각 요소가 도면을 포함함.</p>			
<p>t. ☐ 용지에 변경/덧쓰기/행간잡임/파도한 자제가 있음.</p>			
<p>u. ☐ 용지에 복사한 흔적이 있음.</p>			
<p>2. ☐ 만족스러운 복제를 위하여 필요한 정도까지(규칙 11 및 26.3(b)(i)).</p>			
<p>기타사항(필요한 경우):</p>			

이 국제출원 번역문의 서식상의 요건이 아래와 같은 정도까지 충족되지 못했습니다.

1. ☐ 균일한 국제공개를 위하여 필요한 정도까지(규칙 11 및 26.3(a)(ii))(결함을 상술):

	출원서	명세서	청구의 범위	요약서
a. ☐ 직접복제를 허용하지 않음.	☐	☐	☐	☐
b. ☐ 각 요소가 별개의 용지에 작성되지 않았음.	☐	☐	☐	☐
c. ☐ 용지에 주름 또는 찢어진 곳이 있거나, 접어진곳이 있음.	☐	☐	☐	☐
d. ☐ 용지를 세로로 사용하지 않았음.	☐	☐	☐	☐
e. ☐ 용지의 양면을 사용했음.	☐	☐	☐	☐
f. ☐ 유연성있는/튼튼한/흰색의/부드러운/무광택의/내구성 있는 종이 아님.	☐	☐	☐	☐
g. ☐ 용지가 규정대로 철하여지지 않았음.(규칙11.4 (b)).	☐	☐	☐	☐
h. ☐ 용지가A4사이즈 (29.7cm x 21cm)가 아님.	☐	☐	☐	☐
i. ☐ 최소여백이 규정에 미치지 못함. (상단: 2cm; 좌단: 2.5cm; 우단: 2cm; 하단: 2cm).		☐	☐	☐
j. ☐ 서류번호가 용지의 상단으로부터 1.5cm이내의 좌측 구석이 아닌 곳에 기재되어 있음.		☐	☐	☐
k. ☐ 서류번호의 문자수가 12자를 초과함.	☐	☐	☐	☐
l. ☐ 명세서, 청구의 범위 및 요약서의 용지에 아라비아숫자로 일련번호를 붙이지 않았음.		☐	☐	☐
m. ☐ 용지번호가 용지의 상단 또는 하단의 중앙에 위치하지 않음.	☐	☐	☐	☐
n. ☐ 용지번호가 여백에 위치함(여백의 크기는 위 i. 참조)		☐	☐	☐
o. ☐ 문언이 타자 또는 인쇄되지 않았음.	☐	☐	☐	☐
p. ☐ 타자에 의한 경우, 행의 간격이 1.5문자폭이 아님.		☐	☐	☐
q. ☐ 기재사항 중 대문자의 크기가 세로 0.28cm미만임.	☐	☐	☐	☐
r. ☐ 지워지지 않는 어두운 색으로 기재되지 않았음.	☐	☐	☐	☐
s. ☐ 각 요소가 도면을 포함함.	☐	☐	☐	☐
t. ☐ 용지에 변경/덧쓰기/행간삽입/과도한 삭제 있음.	☐	☐	☐	☐
u. ☐ 용지에 복사한 흔적이 있음.	☐	☐	☐	☐

2. ☐ 만족스러운 복제를 위하여 필요한 정도까지(규칙 11 및 26.3(b)(ii)).

기타사항(필요한 경우):

이 국제출원의 도면이 아래와 같은 정도까지 충족되지 못했습니다.

1. ☐ 균일한 국제공개를 위하여 필요한 정도까지 (규칙 11 및 26.3(a)(i)) (결함을 상술):

도면이 그려진 용지:

- a. ☐ 직접복제를 허용하지 않음.
- b. ☐ 용지에 주름 또는 찢어진 곳이 있거나, 접어진 곳이 있음
- c. ☐ 용지의 양면을 사용했음
- d. ☐ 유연성 있는/튼튼한/흰색의/ 부드러운/무광택의/내구성 있는 종이 아님.
- e. ☐ 도면이 별개의 용지에 작성되지 않았음.
- f. ☐ 용지가 규정대로 첩하여지지 않았음(규칙 11.4(b)).
- g. ☐ 용지가 A4사이즈 (29.7cm x 21cm)가 아님.
- h. ☐ 최소여백이 규정에 미치지 못함
(상단: 2.5cm; 좌단: 2.5cm; 우단: 1.5cm; 하단: 1cm).
- i. ☐ 서류번호가 용지의 상단으로부터 1.5cm 이내의 좌측구석이 아닌곳에 기재되어 있음.
- j. ☐ 서류번호의 문자수가 12자를 초과함.
- k. ☐ 용지의 사용할 수 있는 면 또는 사용한 면의 테두리를 표시함.
- l. ☐ 용지에 아라비아숫자로 일련번호를 붙이지 않았음 (예: 1/3, 2/3, 3/3).
- m. ☐ 용지번호가 용지의 상단 또는 하단의 중앙에 위치하지 않음.
- n. ☐ 용지번호가 여백에 위치함(여백의 크기는 위 h. 참조
- o. ☐ 용지에 변경/덧쓰기/행간삽입/과도한 삭제가 있음.
- p. ☐ 용지에 복사한 흔적이 있음.

도면 (규칙 11.13):

- a. ☐ 직접복제를 허용하지 않음.
- b. ☐ 불필요한 문헌을 기재함.
- c. ☐ 번역할 경우, 어구가 도면의 선을 침범함.
- d. ☐ 내구성 있는 흑색으로 작성되지 않았음; 선은 두께가 균일하지 않고 선명하지 않음.
- e. ☐ 절단면이 올바르게 표시되지 않았음.
- f. ☐ 축소복제하는 경우 쉽게 식별되지 못함.
- g. ☐ 축척이 도식으로 표시되지 않았음.
- h. ☐ 간결하지 않고 명료하지 않은 숫자, 문자 및 인출선이 있음.
- i. ☐ 제도용구를 사용하지 않고 그은 선이 있음.
- j. ☐ 도가 불필요하게 다른 비율로 표시된 부분이 있음.
- k. ☐ 세로 0.32cm미만인 숫자 및 문자가 있음.
- l. ☐ 라틴문자 및 관례적인 그리스 문자와 부합하지 않는 문자가 있음.
- m. ☐ 2이상의 용지에 그려진 도형들이 일부분을 생략하지 않고는 한 개의 도형을 구성토록 합쳐되지 않음.
- n. ☐ 올바르게 배열되지 않고 명확하게 분리되지 않은 도가 있음.
- o. ☐ 연속된 아라비아숫자로 일련번호를 붙이지 않은 도가 있음.
- p. ☐ 용지의 번호와는 관계없이 번호를 붙이지 않은 도가 있음.
- q. ☐ 명세서에 사용하지 않은 인용부호를 사용했음.
- r. ☐ 명세서에 사용된 인용부호를 사용하지 않았음.
- s. ☐ 동일한 부분이 서로 다른 인용부호로써 표시됨.
- t. ☐ 도의 상하가 바르게 되어있지 않고, 개개의 도가 상호 충분히 분리되어 있지 않음.
- u. ☐ 도를 가로로 배열한 경우, 도의 상단이 용지의 좌측에 배열하지 않았음.

2. ☐ 만족스러운 복제를 위하여 필요한 정도까지(규칙 11 및 26.3(b)(i)).

기타사항(필요한 경우):

이 국제출원의 번역문의 도면이 아래와 같은 정도까지 충족되지 못했습니다.

1. ☐ 균일한 국제공개를 위하여 필요한 정도까지 (규칙 11 및 26.3(b)(ii)) (결함을 상술):

도면이 그려진 용지:

- a. ☐ 직접복제를 허용하지 않음.
- b. ☐ 용지에 주름 또는 찢어진 곳이 있거나, 접어진 곳이 있음.
- c. ☐ 용지의 양면을 사용했음.
- d. ☐ 유연성 있는/튼튼한/흰색의/ 부드러운/무광택의/내구성 있는 종이가아님.
- e. ☐ 도면이 별개의 용지에 작성되지 않았음.
- f. ☐ 용지가 규정대로 철하여지지 않았음.(규칙 11.4(b))
- g. ☐ 용지가 A4사이즈 (29.7cm x 21cm)가 아님.
- h. ☐ 최소여백이 규정에 미치지 못함.
(상단: 2.5cm; 좌단: 2.5cm; 우단: 1.5cm; 하단: 1cm)
- i. ☐ 서류번호가 용지의 상단으로부터 1.5cm 이내의 좌측구석이 아닌곳에 기재되어 있음.
- j. ☐ 서류번호의 문자수가 12자를 초과함.
- k. ☐ 용지의 사용할 수 있는 면 또는 사용한 면의 테두리를 표시함.
- l. ☐ 용지에 아라비아숫자로 일련번호를 붙이지 않았음. (예: 1/3, 2/3, 3/3)
- m. ☐ 용지번호가 용지의 상단 또는 하단의 중앙에 위치하지 않음.
- n. ☐ 용지번호가 여백에 위치함.(여백의 크기는 위 h. 참조)
- o. ☐ 용지에 변경/덧쓰기/행간삽입/파도한 삭제가 있음.
- p. ☐ 용지에 복사한 흔적이 있음.

도면 (규칙 11.13):

- a. ☐ 직접복제를 허용하지 않음.
- b. ☐ 불필요한 문헌을 기재함.
- c. ☐ 번역할 경우, 어구가 도면의 선을 침범함.
- d. ☐ 내구성 있는 흑색으로작성되지 않았음; 선은 두께가 균일하지 않고 선명하지 않음.
- e. ☐ 절단면이 올바르게 표시되지 않았음.
- f. ☐ 축소복제하는 경우 쉽게 식별되지 못함.
- g. ☐ 축척이 도식으로 표시되지 않았음.
- h. ☐ 간결하지 않고 명료하지 않은 숫자, 문자 및 인출선이 있음.
- i. ☐ 제도용구를 사용하지 않고 그은 선이 있음.
- j. ☐ 도가 불필요하게 다른 비율로 표시된 부분이 있음.
- k. ☐ 세로 0.32cm미만인 숫자 및 문자가 있음.
- l. ☐ 라틴문자 및 관례적인 그리스 문자와 부합하지 않는 문자가 있음.
- m. ☐ 2이상의 용지에 그려진 도형들이 일부분을 생략하지 않고는 한 개의 도형을 구성토록 합쳐되지 않음.
- n. ☐ 올바르게 배열되지 않고 명확하게 분리되지 않은 도가 있음.
- o. ☐ 연속된 아라비아숫자로 일련번호를 붙이지 않은 도가 있음.
- p. ☐ 용지의 번호와는 관계없이 번호를 붙이지 않은 도가 있음.
- q. ☐ 명세서에 사용하지 않은 인용부호를 사용했음.
- r. ☐ 명세서에 사용된 인용부호를 사용하지 않았음.
- s. ☐ 동일한 부분이 서로 다른 인용부호로써 표시됨.
- t. ☐ 도의 상하가 바르게 되어있지 않고, 개개의 도가 상호 충분히 분리되어 있지 않음.
- u. ☐ 도를 가로로 배열한 경우, 도의 상단이 용지의 좌측에 배열하지 않았음.

2. ☐ 만족스러운 복제를 위하여 필요한 정도까지(규칙 11 및 26.3(a)(ii)).

기타사항(필요한 경우):

특허협력조약

발신: 국제조사기관

수신:
특허법인 이상
서울시 서초구 양재동 82-2 우도빌딩 3층 137-890
대한민국

PCT

국제조사기관의 견해서
(PCT규칙 43의2.1)

출원인 또는 대리인의 서류참조기호 KT120009PCT		발송일 (일/월/년) 2013년 10월 25일 (25.10.2013)
국제출원번호 PCT/KR2013/005733		추가적인 조치 아래 2를 참조
국제출원일 (일/월/년) 2013년 06월 27일 (27.06.2013)	우선일 (일/월/년) 2012년 06월 28일 (28.06.2012)	
국제특허분류(IPC) H04W 48/16(2009.01)i		
출원인 주식회사 케이티		

1. 본 견해서는 다음 기재란에 관한 내용을 포함합니다.

- ☒ 제1기재란 견해서의 기초
☐ 제2기재란 우선권
☐ 제3기재란 신규성, 진보성 및 산업상이용가능성에 관한 견해 부작성
☐ 제4기재란 발명의 단일성 결여
☒ 제5기재란 신규성, 진보성 또는 산업상이용가능성에 관한 견해(PCT규칙 43의2.1(a)(i)), 이를 뒷받침하는 인용문헌 및 설명
☐ 제6기재란 특이 인용문헌
☐ 제7기재란 국제출원의 홈결
☒ 제8기재란 국제출원에 관한 의견

2. 추가적인 조치

국제예비심사가 청구되면, 본 견해서는 국제예비심사기관("IPEA")의 견해서로 간주될 것입니다. 다만, 출원인이 본 기관 이외의 기관을 IPEA로 선택하고, 그 선택된 IPEA가 PCT규칙 66.1의2(b)에 따라 본 국제조사기관의 견해서가 위와 같이 간주되지 않을 것임을 국제사무국에 통보한 경우에는 그러하지 않습니다.

본 견해서가 상기와 같이 IPEA의 견해서로 간주되는 경우, 출원인은 서식 PCT/ISA/220의 발송일로부터 3월 또는 우선일 부터 22월 중 늦게 만료되는 날 이전에 의견서 및 보정서(해당하는 경우)를 IPEA에 제출할 수 있습니다.

다른 선택사항에 대하여는 서식 PCT/ISA/220에 대한 안내문을 참조하십시오.

ISA/KR의 명칭 및 우편주소 대한민국 특허청 (302-701) 대전광역시 서구 청사로 189, 4동 (둔산동, 정부대전청사) 팩스번호 +82-42-472-7140	본 견해서의 완료일 2013년 10월 24일 (24.10.2013)	심사관 장상배 전화번호 +82-42-481-8201
--	--	------------------------------------

서식 PCT/ISA/237 (표지) (2011년 7월)

제1기제란 본 견해서의 기초

1. 언어와 관련하여, 본 견해서는 아래에 기초하여 작성되었습니다.

☒ 출원시의 언어로 된 국제출원

☐ 국제조사를 위하여 _____ 로 번역되어 제출된 국제출원의 번역문
(PCT규칙 12.3(a) 및 23.1(b))

2. ☐ 본 견해서는 PCT규칙 91에 따라 당해 기관이 허가하였거나 당해 기관에 통보된 **명백한 잘못의 정정**을 고려하여 작성되었습니다(PCT규칙 43의2.1(a)).

3. 국제출원에 개시된 **핵산염기 서열 및/또는 아미노산 서열**과 관련하여, 본 견해서는 아래에 기초하여 작성되었습니다.

a. 출원시 또는 추후 제출된 서열목록

☐ 서면

☐ 전자적 형태

b. 제출시기

☐ 출원시 국제출원에 포함

☐ 국제출원과 함께 전자적 형태로 제출

☐ 조사를 위해 본 기관에 추후 제출

4. ☐ 추가로 서열목록에 대하여 하나 이상의 버전이나 사본이 제출된 경우, 후속 버전 또는 추가된 사본에 기재되어 있는 정보가 출원시의 정보와 동일하거나 또는 출원시의 개시범위를 벗어나지 않는다는 진술서가 제출되었습니다.

5. 추가 의견:

제5기제란 신규성, 진보성 또는 산업상이용가능성에 관한 견해(PCT규칙 43의2.1(a)(i)), 이를 뒷받침하는 인용문헌 및 설명

1. 견해

신규성 (N)	청구항	1-15	있음
	청구항	없음	없음
진보성 (IS)	청구항	3-15	있음
	청구항	1-2	없음
산업상 이용가능성 (IA)	청구항	1-15	있음
	청구항	없음	없음

2. 인용문헌 및 설명:

참고한 인용문헌은 다음과 같습니다.

D1: KR 10-2011-0071884 A (한국전자통신연구원) 2011.06.29
 D2: KR 10-2011-0090734 A (엘지전자 주식회사) 2011.08.10
 D3: KR 10-2011-0111033 A (삼성전자주식회사 외 2명) 2011.10.10
 D4: KR 10-2011-0085836 A (엘지전자 주식회사) 2011.07.27.

(1) 신규성 및 진보성

1) 청구항 제1항 (독립항)

청구항 제1항에 기재된 발명은 단말이 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임에 액세스 포인트로 전송하는 방법이 제시되어 있습니다.

인용문헌 D1에는 접속 지원 장치가 접속 가능한 AP들을 검색하기 위해 프로브 요청 메시지를 이용하는 과정이 제시되어 있습니다. 그러나 상기 인용문헌 D1에는 청구항 제1항의 특징인 프로브 요청 프레임에 단말의 신호 강도 정보를 포함하는 기술적 특징이 기재되어 있지 않다는 점에서 차이가 있지만, 상기 차이는 인용문헌 D1에서 접속한 STA가 사용하는 전력레벨이 동일하지 않은 경우에 AP가 STA들에게 각각이 사용하는 전력 레벨을 요청하여 그 응답을 수신하는 과정이 제시된 점에서, 통상의 지식을 가진 자가 단순한 설계변경을 통해 구성할 수 있는 정도입니다. 따라서, 청구항 제1항에 기재된 발명은 진보성이 없습니다(PCT 제33조(3)).

2) 청구항 제2항 (종속항)

청구항 제2항에 기재된 발명은 상기 인용문헌 D1에서 STA들이 각각이 사용하는 전력레벨을 AP에 전송하는 과정이 개시된 점에서, 통상의 지식을 가진 자가 단순한 설계변경으로 구성할 수 있는 정도입니다. 따라서, 청구항 제2항에 기재된 발명은 진보성이 없습니다(PCT 제33조(3)).

3) 청구항 제3항 내지 제8항 (종속항)

청구항 제3-8항에 기재된 발명은 상기 인용문헌들 D1-D4에 기재된 발명과 차이가 있으며, 상기 차이점은 다른 인용문헌에도 기재되어 있지 않으며, 통상의 지식을 가진 자에게도 자명하지 않습니다. 따라서 청구항 제3-8항은 신규성과 진보성이 있습니다(PCT 제33조(2) 및 (3)).

4) 청구항 제9항 (독립항)

청구항 제9항에 기재된 발명은 단말이 전송한 프로브 요청 프레임에 대응하여 액세스 포인트로부터 수신한 프로브 응답 프레임에 대해 그 신호 강도를 기반으로 하향링크 품질 정보를 획득하고, 하향링크 품질이 미리 정의된 기준을 만족하는 경우, 임의의 액세스 포인트와의 접속을 수행한다는 점에서, 상기 인용문헌들 D1-D4에 기재된 발명과 차이가 있으며, 상기 차이점은 다른 인용문헌에도 기재되어 있지 않으며, 통상의 지식을 가진 자에게도 자명하지 않습니다. 따라서 청구항 제9항은 신규성과 진보성이 있습니다(PCT 제33조(2) 및 (3)).

추가 기재란에 계속

서식 PCT/ISA/237 (제5기제란) (2011년 7월)

제8기제란 국제출원에 관한 의견

청구범위, 명세서 및 도면의 명료성에 관하여 또는 청구범위가 명세서에 의하여 충분히 뒷받침되고 있는지에 관하여 다음과 같은 의견을 제시합니다.

1. 청구항 제7항 두번째 줄에 기재된 "상기 제1 액세스 포인트"는 그 이전에 기재된 바가 없어 그 지시하는 바가 불명확합니다. 이에 청구항 제7항은 명확하게 기재되어 있지 않다는 점에서 PCT 조약 제6조의 요건을 충족시키지 않습니다.

서식 PCT/ISA/237 (제8기제란) (2011년 7월)

추가 기재란

이전 기재란의 공간이 충분하지 아니한 경우.

제5 기재란의 연속

5) 청구항 제10항 내지 제11항 (종속항)

청구항 제10-11항은 제9항을 인용하고 있으므로, 신규성과 진보성이 있습니다(PCT 제33조(2) 및 (3)).

6) 청구항 제12항 (독립항)

청구항 제12항에 기재된 발명은 액세스 포인트가 단말로부터 프로브 요청 프레임 수신하면, 프로브 요청 프레임에 포함된 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득하고 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 단말에 프로브 응답 프레임을 전송한다는 점에서, 상기 인용문헌들 D1-D4에 기재된 발명과 차이가 있으며, 상기 차이점은 다른 인용문헌에도 기재되어 있지 않으며, 통상의 지식을 가진 자에게도 자명하지 않습니다. 따라서 청구항 제12항은 신규성과 진보성이 있습니다(PCT 제33조(2) 및 (3)).

7) 청구항 제13항 내지 제15항 (종속항)

청구항 제13-15항은 제12항을 인용하고 있으므로, 신규성과 진보성이 있습니다(PCT 제33조(2) 및 (3)).

(2) 산업상 이용가능성

청구항 제1항 내지 제15항에 기재된 발명은 산업상 이용가능합니다(PCT 제33조(4)).

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
First Named Inventor/Applicant Name:		Byung Wan YOON		
Filer:		Seok-Won Stuart Lee/Chris Carter		
Attorney Docket Number:		Q216623		
Filed as Large Entity				
Filing Fees for U.S. National Stage under 35 USC 371				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
National Stage Fee	1631	1	280	280
Natl Stage Search Fee - Report provided	1642	1	480	480
National Stage Exam - all other cases	1633	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1480

Electronic Acknowledgement Receipt	
EFS ID:	21062907
Application Number:	14411278
International Application Number:	PCT/KR2013/005733
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan YOON
Customer Number:	23373
Filer:	Seok-Won Stuart Lee/Chris Carter
Filer Authorized By:	Seok-Won Stuart Lee
Attorney Docket Number:	Q216623
Receipt Date:	24-DEC-2014
Filing Date:	
Time Stamp:	14:00:38
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1480
RAM confirmation Number	1522
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	Q216623Transmittal.pdf	57994	no	4
			78d7d8be7267dba02fd251d0fab6f6050225fff9		
Warnings:					
Information:					
2	Application Data Sheet	Q216623ADS.pdf	1561018	no	7
			5f0557bac1ad81b44b392c6c3f6b9a5f39eb9964		
Warnings:					
Information:					
3		Q216623Specificationasfiled.pdf	125491	yes	24
			013a6f7f0f030f787e8018fc81be85a9c9c9cd9		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	20	
	Claims		21	23	
	Abstract		24	24	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Q216623Drawingsasfiled.pdf	4685652	no	11
			115760d6e915baec868d9f36df9ba49ef5c4bfc5		
Warnings:					
Information:					
5	Oath or Declaration filed	Q216623AssignmentwithDeclaration.pdf	360241	no	3
			e7fb312b20ddf390784ef8c9dbe7824652e5241da		
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					

6	Information Disclosure Statement (IDS) Form (SB08)	Q216623PTOSB08.pdf	41223 906658ff76a20ac2596ab5cfe20d5ab62989d99	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
7	Documents submitted with 371 Applications	Q216623PCTIB301.pdf	151133 18af6ef22152246326c26de78d7d8a0284e289c2	no	1
Warnings:					
Information:					
8	Documents submitted with 371 Applications	Q216623PCTIB304.pdf	159201 fd4568210c875c7a661ca155f18562f704d9d78	no	1
Warnings:					
Information:					
9	Documents submitted with 371 Applications	Q216623PCTIB3081st.pdf	161905 76e0972a88e67327279f48a7d2e4b6b6ef1a7	no	1
Warnings:					
Information:					
10	Documents submitted with 371 Applications	Q216623PCTIB3082nd.pdf	147818 bcd53326477fc48d61a88773458c799c07f1c07	no	1
Warnings:					
Information:					
11	Documents submitted with 371 Applications	Q216623PCTIB311.pdf	121976 ee203e20b78ef39cf5b68b856c9655ee086e660c	no	1
Warnings:					
Information:					
12	Documents submitted with 371 Applications	Q216623PCTISA202.pdf	123801 a445446d6d3c3ab4f6b31ef56802f55d79c78e41	no	1
Warnings:					
Information:					
13	Documents submitted with 371 Applications	Q216623PCTISA210.pdf	198657 c3a66d4937d632836fe24653e9edf72ab4f1317	no	2
Warnings:					
Information:					
14	Documents submitted with 371 Applications	Q216623PCTRO101.pdf	220079 cdf516c36ea0bfdd24bac63ed4b333bd783a938f5	no	4

Warnings:					
Information:					
15	Documents submitted with 371 Applications	Q216623PCTRO106.pdf	432951 1e24394ac9f3b1d68bc607040fbc96d4ace1542	no	6
Warnings:					
Information:					
16	Documents submitted with 371 Applications	Q216623PCTISA237.pdf	178540 d08be0f88de23d420f469333804c8d5226c5a65e	no	5
Warnings:					
Information:					
17	Fee Worksheet (SB06)	fee-info.pdf	35457 8749e9c780373edd8cbb990b0ffbf6e557cd0362	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			8763137		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS			
NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.			
Application Number	14/411,278		
Filing Date	December 24, 2014		
First Named Inventor	Byung Wan YOON		
Title	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM		
Art Unit	Not Yet Assigned		
Examiner Name	Not Yet Assigned		
Attorney Docket Number	Q216623		
SIGNATURE of Applicant or Patent Practitioner			
Signature	/ S. Stuart Lee /	Date (Optional)	December 24, 2014
Name	S. Stuart Lee	Registration Number	61,124
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☒ *Total of <u>1</u> forms are submitted.			

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

- ☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

23373

OR

- ☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

Name	Registration Number	Name	Registration Number

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

- ☒ The address associated with the above-mentioned Customer Number

OR

- ☐ The address associated with Customer Number:

OR

☐ Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant:

- ☐ Inventor or Joint Inventor
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature		Date	November 1, 2012
Name	Ji Myung CHOI	Telephone	+82-31-727-2661
Title and Company	General Manager of KT CORPORATION		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below *.

- ☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

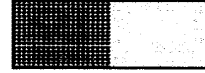
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	21063358
Application Number:	14411278
International Application Number:	
Confirmation Number:	1058
Title of Invention:	METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM
First Named Inventor/Applicant Name:	Byung Wan YOON
Customer Number:	23373
Filer:	Seok-Won Stuart Lee/Chris Carter
Filer Authorized By:	Seok-Won Stuart Lee
Attorney Docket Number:	Q216623
Receipt Date:	24-DEC-2014
Filing Date:	
Time Stamp:	14:19:17
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Q216623POAandTransmittal.pdf	180370 f1b3b4d3b5caddb792e6441e20b467982785bb95c	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	180370
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	



별첨 사본은 아래 출원의 원본과 동일함을 증명함.

This is to certify that the following application annexed hereto
is a true copy from the records of the Korean Intellectual
Property Office

출 원 번 호 : 10-2012-0070043
Application Number

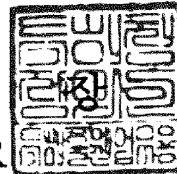
출 원 년 월 일 : 2012년 06월 28일
Filing Date 6월 28, 2012

출 원 인 : 주식회사 케이티
Applicant(s) KT Corporation

2013 년 07 월 01 일

특 허 청

COMMISSIONER



【서지사항】

【서류명】 특허출원서
【참조번호】 KT120009NP1
【출원구분】 특허출원
【출원인】
【명칭】 주식회사 케이티
【출원인코드】 2-1998-005456-3
【대리인】
【명칭】 특허법인 이상
【대리인코드】 9-2008-100021-0
【지정된변리사】 이재관, 김영아, 정용인, 전호진
【포괄위임등록번호】 2011-072484-1
【발명의 국문명칭】 와이파이 시스템에서 액티브 스캐닝을 위한 프로브 요청 구조 및 방법
【발명의 영문명칭】 PROBE REQUEST STRUCTURE AND PROBE REQUEST METHOD FOR ACTIVE SCANNING IN WIFI SYSTEM
【발명자】
【성명】 윤병완
【성명의 영문표기】 Y00N, Byung Wan
【주민등록번호】 790108-1XXXXXX
【우편번호】 137-140
【주소】 서울특별시 서초구 우면동 17번지 KT연구개발센터
【국적】 KR
【발명자】
【성명】 임수환
【성명의 영문표기】 RIM, Su Hwan

2012-06-28

【주민등록번호】 711126-1XXXXXX
【우편번호】 137-140
【주소】 서울특별시 서초구 우면동 17번지 KT연구개발센터
【국적】 KR
【취지】 위와 같이 특허청장에게 제출합니다.

대리인 특허법인 이상 (서명 또는 인)

【수수료】

【출원료】	0 면	38,000 원
【가산출원료】	13 면	0 원
【우선권주장료】	0 건	0 원
【심사청구료】	0 항	0 원
【합계】	38,000 원	

【명세서】

【발명의 명칭】

와이파이 시스템에서 액티브 스캐닝을 위한 프로브 요청 구조 및 방법{PROBE REQUEST STRUCTURE AND PROBE REQUEST METHOD FOR ACTIVE SCANNING IN WIFI SYSTEM}

【기술분야】

<1> 본 발명은 무선랜 접속 방식에 있어서 단말의 출력 정보를 이용하여 무선 채널의 경로손실 계산 및 이를 이용하여 무선랜 접속에 관한 메시지 전송을 최소화하여 접속을 효율적으로 할 수 있는 방법에 관한 것이다.

【배경기술】

<2> 무선랜 AP와 단말간 접속을 위해서는 AP의 비콘 신호에 의존하여 단말이 접속을 결정하는 passive scanning 방법과 단말의 접속 요청에 의한 AP 응답으로 단말이 접속을 결정하는 active scanning 방법이 존재한다. 본 발명은 active scanning 방법을 효율적으로 수행하기 위한 Probe Request 메시지 및 AP와 단말간 무의미한 응답 메시지를 최소화 하여 AP의 효율성을 높이는 방법에 관해 기술하였다.

<3> 기존의 active scanning 방법은 Probe Request에 SSID를 null로 사용하여 불특정 다수의 AP에 응답 요청을 하거나, 특정 SSID를 포함하여 SSID에 해당하는 특정 AP에 응답 요청을 하는 두 가지 방법이 존재한다. AP는 Probe Request의 SSID

field가 null 형태이거나 자신의 SSID가 포함되어 있으면 Probe Response로 응답한다. 단말은 도1과 같이 Probe Request 전송 후 일정 시간이 경과할 때까지 AP들로부터 Probe Response를 수신하기 위해 수신모드로 동작을 하게 된다.

<4> 기존의 방법은 일정 시간(Max_Probe_Response_Time)내에 접속 가능한 AP가 응답을 하여도 단말은 수신모드로 동작을 한 후 응답한 AP들 중 무선환경이 가장 좋은 AP에 접속 요청을 하게 된다. 단말의 숫자가 많아 질 경우 많은 수의 단말들이 짧은 시간내에 접속을 하기 위해서는 일정 시간 동안 수신모드로 동작하기 보다는 일정 시간 중간에 접속할 수 있는 방법이 필요하다.

<5> AP는 단말들이 요청한 Probe Request에 매번 Probe Response를 air로 전송하게 된다. 단말과 AP사이의 무선채널 고려 없이 무조건적인 응답으로 AP의 자원이 낭비되는 문제점이 있다(도2).

【발명의 내용】

【해결하려는 과제】

<6> 본 발명의 목적은 단말의 출력 정보를 활용하여 AP와 단말간 접속을 효율적으로 수행하고, AP 자원을 효율적으로 사용할 수 있는 방법을 제공하는데 있다.

【과제의 해결 수단】

<7> 상기 목적을 달성하기 위한 본 발명의 일 실시예는, 와이파이(WiFi) 시스템에서 액티브 스캐닝(Active Scanning)을 위한 방법을 포함한다.

【발명의 효과】

<8> 본 발명에 따르면, Probe Response에 대한 신호 품질 신뢰성을 제공함으로써 AP와 단말간 무선 접속 시간을 최소화 할 수 있다. 또한 Probe Response를 제한적으로 전송함으로써 AP의 자원을 효율적으로 사용할 수 있다. AP에서 수신되는 RSSI가 같은 경우 pathloss가 작은 AP위주로 접속을 유도함으로써 AP 인접 거리에 위치단 단말을 우선 접속하는 등 전체 단말에 대해 적절한 load sharing등의 효과를 가질 수 있다.

【도면의 간단한 설명】

<9> 도 1은 단말이 프로브 응답(Probe Response)을 수신하는 것을 도시한 개념도이다.

도 2는 각각의 프레임이 채널을 점유하는 시간을 도시한 그래프이다.

도 3은 프로브 요청 프레임(Probe Request frame) 구조를 도시한 개념도이다.

도 4는 프로브 응답 프레임(Probe Response frame)의 구조를 도시한 개념도이다.

도 5는 액티브 스캐닝(active scanning) 과정을 도시한 개념도이다.

도 6은 액티브 스캐닝(active scanning) 과정을 도시한 흐름도이다.

도 7은 AP Side에서의 동작 스킴을 도시한 흐름도이다.

【발명을 실시하기 위한 구체적인 내용】

- <10> 본 발명은 다양한 변형을 가할 수 있고 여러 가지 실시예를 가질 수 있는 바, 특정 실시예들을 도면에 예시하고 상세하게 설명하고자 한다.
- <11> 그러나, 이는 본 발명을 특정한 실시 형태에 대해 한정하려는 것이 아니며, 본 발명의 사상 및 기술 범위에 포함되는 모든 변형, 균등물 내지 대체물을 포함하는 것으로 이해되어야 한다.
- <12> 제1, 제2 등의 용어는 다양한 구성요소들을 설명하는데 사용될 수 있지만, 상기 구성요소들은 상기 용어들에 의해 한정되어서는 안 된다. 상기 용어들은 하나의 구성요소를 다른 구성요소로부터 구별하는 목적으로만 사용된다. 예를 들어, 본 발명의 권리 범위를 벗어나지 않으면서 제1 구성요소는 제2 구성요소로 명명될 수 있고, 유사하게 제2 구성요소도 제1 구성요소로 명명될 수 있다. 및/또는 이라는 용어는 복수의 관련된 기재된 항목들의 조합 또는 복수의 관련된 기재된 항목들 중의 어느 항목을 포함한다.
- <13> 어떤 구성요소가 다른 구성요소에 "연결되어" 있다거나 "접속되어" 있다고 언급된 때에는, 그 다른 구성요소에 직접적으로 연결되어 있거나 또는 접속되어 있을 수도 있지만, 중간에 다른 구성요소가 존재할 수도 있다고 이해되어야 할 것이다. 반면에, 어떤 구성요소가 다른 구성요소에 "직접 연결되어" 있다거나 "직접 접속되어" 있다고 언급된 때에는, 중간에 다른 구성요소가 존재하지 않는 것으로 이해되어야 할 것이다.

<14> 본 출원에서 사용한 용어는 단지 특정한 실시예를 설명하기 위해 사용된 것으로, 본 발명을 한정하려는 의도가 아니다. 단수의 표현은 문맥상 명백하게 다르게 뜻하지 않는 한, 복수의 표현을 포함한다. 본 출원에서, "포함하다" 또는 "가지다" 등의 용어는 명세서상에 기재된 특징, 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것이 존재함을 지정하려는 것이지, 하나 또는 그 이상의 다른 특징들이나 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것들의 존재 또는 부가 가능성을 미리 배제하지 않는 것으로 이해되어야 한다.

<15> 다르게 정의되지 않는 한, 기술적이거나 과학적인 용어를 포함해서 여기서 사용되는 모든 용어들은 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자에 의해 일반적으로 이해되는 것과 동일한 의미를 가지고 있다. 일반적으로 사용되는 사전에 정의되어 있는 것과 같은 용어들은 관련 기술의 문맥 상 가지는 의미와 일치하는 의미를 가진 것으로 해석되어야 하며, 본 출원에서 명백하게 정의하지 않는 한, 이상적이거나 과도하게 형식적인 의미로 해석되지 않는다.

<16> 이하, 첨부한 도면들을 참조하여, 본 발명의 바람직한 실시예를 보다 상세하게 설명하고자 한다. 본 발명을 설명함에 있어 전체적인 이해를 용이하게 하기 위하여 도면상의 동일한 구성요소에 대해서는 동일한 참조부호를 사용하고 동일한 구성요소에 대해서 중복된 설명은 생략한다.

<17> 상기의 문제점들을 개선하기 위해 본 발명에서는 단말 ERP 정보를 활용하여

무선 채널의 Pathloss를 이용하고자 한다. 단순 RSSI 고려 시 UL/DL Link Budget 불일치를 정확하게 예측할 수 없으며, 본 발명에서는 AP 관점에서 통신에 관한 통제권을 수행하고자 한다. 무선 채널의 Pathloss를 계산하기 위해서 Probe Request/Response frame은 도3, 도4와 같이 ERP정보를 포함하는 구조가 되어야 한다. 단말은 배터리 사용 등의 이유로 Tx Power에 제한이 있으며, 단말의 종류에 따라 Tx Power가 상이하다. 단말의 Tx Power 정보를 Probe Request에 포함하여 전송할 경우 AP에서는 Uplink Pathloss가 계산될 수 있다. Uplink Pathloss는 무선 접속 후 AP와 단말간 서비스 품질을 예측할 수 있는 Parameter로 이 값에 따라 서비스 품질이 일정 수준 이하가 될 것으로 예상될 경우 AP는 Probe Response를 전송하지 않는다. Probe Response에 신호 품질에 대한 신뢰성을 제공하는 방법으로 단말에서는 Probe Response가 수신되면 일정 시간(Max_Probe_Response_Time)을 기다리지 않고 Probe Response를 제공한 AP에 접속을 시도할 수 있게 된다(도5). UL/DL Link가 상이할 경우 DL Pathloss 정보를 활용할 경우 좀 더 정확한 무선 채널 환경 예측에 따라 AP에 접속을 시도할 수 있다. Probe Response 수신 시 포함된 ERP 정보와 Target pathloss를 활용하여 단말에서 계산 되어진 pathloss가 Target pathloss보다 작을 경우만 접속을 수행하면 AP 관점에서 무선 품질에 따른 단말 접속을 유도할 수 있게 된다(도6).

<18> AP의 경우 Probe Response를 모든 단말에 제공하지 않음으로써(신호 품질이 일정 수준 이상인 단말에게만 제공) Probe Response 점유 시간을 절약할 수 있게 된다. Probe Response 전송 여부는 도7과 같은 방법으로 사용될 수 있다. 또한 현

재의 load(유효 단말 접속 수, CPU load 상태 etc.)등과 연동하여 서비스 조건에 맞을 경우만 사용될 수 있다.

<19> 이상 실시예를 참조하여 설명하였지만, 해당 기술 분야의 숙련된 당업자는 하기의 특허 청구의 범위에 기재된 본 발명의 사상 및 영역으로부터 벗어나지 않는 범위 내에서 본 발명을 다양하게 수정 및 변경시킬 수 있음을 이해할 수 있을 것이다

【특허청구범위】

【청구항 1】

와이파이(WiFi) 시스템에서 액티브 스캐닝(Active Scanning)을 위한 방법.

【요약서】**【요약】**

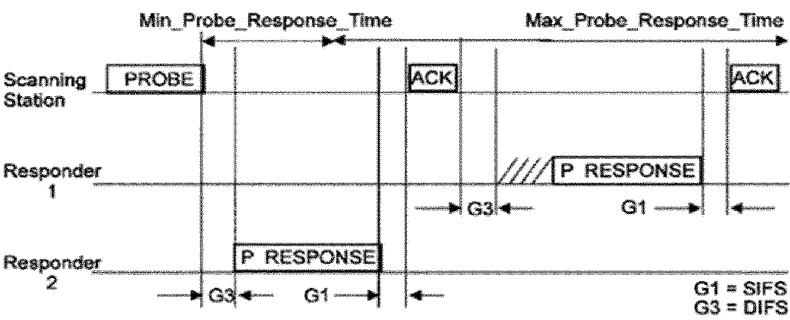
WiFi 시스템에서 Active Scanning을 위한 Probe request 구조 및 방법이 개시된다. 상기 목적을 달성하기 위한 본 발명의 일 실시예는, 와이파이(WiFi) 시스템에서 액티브 스캐닝(Active Scanning)을 위한 방법을 포함한다. 본 발명에 따르면, Probe Response에 대한 신호 품질 신뢰성을 제공함으로써 AP와 단말 간 무선 접속 시간을 최소화할 수 있다.

【대표도】

도 6

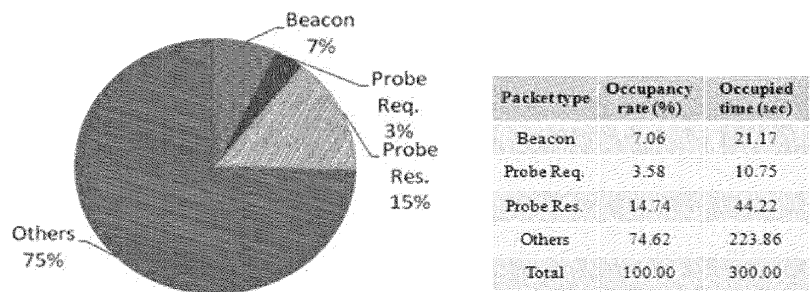
【도면】

【도 1】



【도 2】

Occupied Time Calculation Result



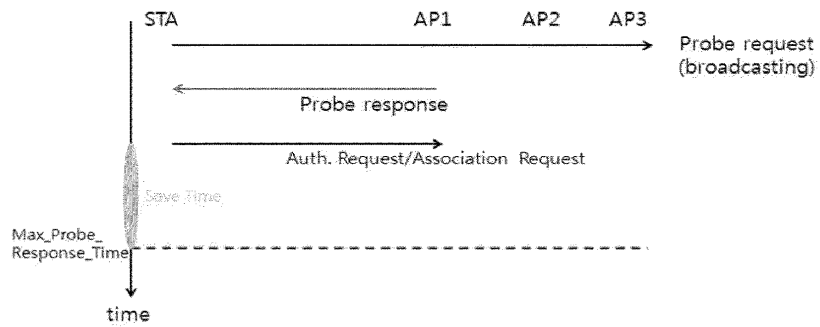
【도 3】

order	Information	Notes
1	SSID	
2	Supported rates	
3	Request information	May be included if do11MultiDomainCapabilityEnaled is true.
4	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
5	Tx Power	
Last	Vendor Specific	One or more vendor-specific information elements may appear in this frame. This information element follows all other information elements.

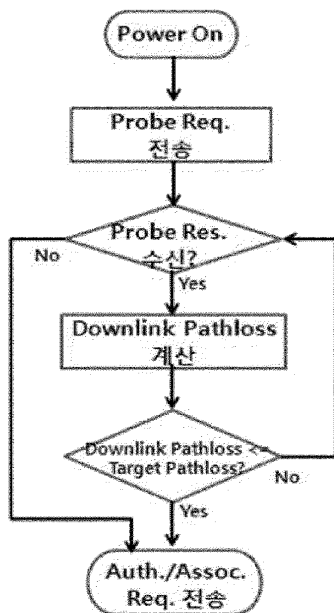
【도 4】

Order	Information	Notes
1	Timestamp	
2	Beacon interval	
3	Capability	
4	SSID	
5	Supported rates	
6	FH Parameter Set	The FH Parameter Set information element is present within Probe Response frames generated by STAs using FH PHYs.
7	DS Parameter Set	The DS Parameter Set information element is present within Probe Response frames generated by STAs using Clause 15, Clause 18, and Clause 19 PHYs.
8	CF Parameter Set	The CF Parameter Set information element is present only within Probe Response frames generated by APs supporting a PCF.
9	IBSS Parameter Set	The IBSS Parameter Set information element is present only within Probe Response frames generated by STAs in an IBSS.
10	Country	Included if dot11MultiDomainCapabilityEnabled or dot11SpectrumManagementRequired is true.
11	FH Parameters	FH Parameters, as specified in 7.3.2.10, may be included if dot11MultiDomainCapabilityEnabled is true.
12	FH Pattern Table	FH Pattern Table information, as specified in 7.3.2.11, may be included if dot11MultiDomainCapabilityEnabled is true.
13	Power Constraint	Shall be included if dot11SpectrumManagementRequired is true.
14	Channel Switch Announcement	May be included if dot11SpectrumManagementRequired is true.
15	Quiet	May be included if dot11SpectrumManagementRequired is true.
16	IBSS DFS	Shall be included if dot11SpectrumManagementRequired is true in an IBSS.
17	TPC Report	Shall be included if dot11SpectrumManagementRequired is true.
18	ERP Information	The ERP Information element is present within Probe Response frames generated by STAs using ERPs and is optionally present in other cases.
19	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
20	RSN	The RSN information element is only present within Probe Response frames generated by STAs that have dot11RSNA-Enabled set to TRUE.
21	BSS Load	The BSS Load element is present when dot11QosOptionImplemented and dot11QBSSLoadImplemented are both true.
22	EDCA Parameter Set	The EDCA Parameter Set element is present when dot11QosOptionImplemented is true.
23	Target Pathloss	

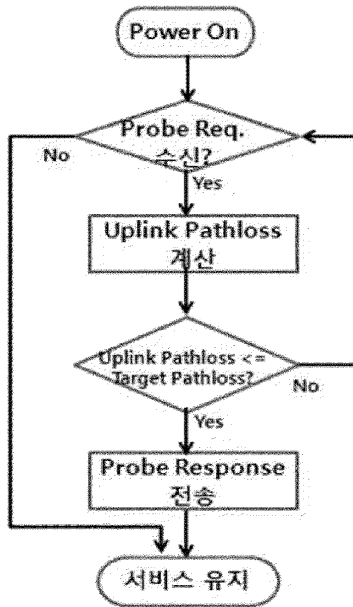
【도 5】



【도 6】



【도 7】



**DOCUMENT MADE AVAILABLE UNDER THE
PATENT COOPERATION TREATY (PCT)**

International application number:	PCT/KR2013/005733
International filing date:	27 June 2013 (27.06.2013)
Document type:	Certified copy of priority document
Document details:	Country/Office: KR
	Number: 10-2012-0070043
	Filing date: 28 June 2012 (28.06.2012)
Date of receipt at the International Bureau:	09 July 2013 (09.07.2013)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-bis)

34, chemin des Colombettes
1211 Geneva 20, Switzerland
www.wipo.int

PCT 출원서

출력(전자적 형태가 원본)

0	수리관청 전용	
0-1	국제출원번호	PCT/KR2013/005733
0-2	국제출원일자	2013년 06월 27일 (27.06.2013)
0-3	수리관청 명칭 및 "PCT 국제출원"	RO/KR
0-4	서식 PCT/RO/101 - PCT 출원서	
0-4-1	우측에 기재된 바와 같이 작성되었다.	PCT-SAFE 버전 3.51.059.235 MT/FOP 20130401/0.20.5.21
0-5	신청 아래 서명인은 본 국제 출원서가 특허협력조약에 의해 처리될 것을 청구합니다.	
0-6	출원인이 지정한 수리관청	대한민국 특허청 (RO/KR)
0-7	출원인 또는 대리인의 서류참조기호	KT120009PCT
I	발명의 명칭	무선랜 시스템에서 액세스 포인트의 검색 방법
II	출원인	
II-1	이 사람은	오직 출원인 (applicant only)
II-2	우측 지정국에 관한 출원인	모든 지정국 (all designated States)
II-4ko	성명	주식회사 케이티
II-4en	Name:	KT CORPORATION
II-5ko	주소	대한민국
		436-711
II-5en	Address:	경기도 성남시 분당구 불정로 90
		90 Buljeong-ro, Bundang-gu,
		Seongnam-si, Gyeonggi-do 436-711
		Republic of Korea
II-6	국적	대한민국 KR
II-7	거주국	대한민국 KR
II-8	전화번호	82-31-727-0114
II-11	출원인 코드	2-1998-005456-3
III-1	출원인 및/또는 발명자	
III-1-1	이 사람은	오직 발명자 (inventor only)
III-1-3	우측 지정국에 관한 발명자	
III-1-4ko	성명	윤병완
III-1-4en	Name (LAST, First):	YOON, Byung Wan
III-1-5ko	주소	대한민국
		137-140
III-1-5en	Address:	서울시 서초구 우면동 17 KT연구개발센터
		KT Research Development Center,
		17 Woomyeon-dong,
		Seocho-gu, Seoul 137-140
		Republic of Korea

PCT 출원서

출력(전자적 형태가 원본)

III-2 III-2-1 III-2-3 III-2-4ko III-2-4en III-2-5ko III-2-5en	출원인 및/또는 발명자 이 사람은 우측 지정국에 관한 발명자 성명 Name (LAST, First): 주소 Address:	오직 발명자 (inventor only) 임수환 RIM, Su Hwan 대한민국 137-140 서울시 서초구 우면동 17번지 KT연구개발센터 KT Research Development Center, 17 Woomyeon-dong, Seocho-gu, Seoul 137-140 Republic of Korea
IV-1 IV-1-1ko IV-1-1en IV-1-2ko IV-1-2en IV-1-3 IV-1-4 IV-1-5 IV-1-5(a) IV-1-6	대리인 또는 대표자 아래에 기재된 자는 관할 국제기관에 대하여 우측에 표시된 자격으로 출원인을 대리하는 것으로 선임되었다. 성명 Name: 주소 Address: 전화번호 팩스번호 이메일 주소 이메일 사용동의 수리관청, 국제조사기관, 국제사무국, 국제예비심사기관이 필요 시 이 이메일 주소를 사용하여 이 국제출원과 관련하여 발행된 통지서를 송부할 것에 동의한다. 대리인 코드	대리인 특허법인 이상 E-SANG PATENT & TRADEMARK LAW FIRM 대한민국 137-890 서울시 서초구 양재동 82-2 우도빌딩 3층 3F., Woodo Bldg., 82-2 Yangjae-dong, Seocho-gu, Seoul 137-890 Republic of Korea 82-2-2057-1246 82-2-2057-1260 esang@espat.co.kr 서면 통지서에 앞서 선람용 사본 송부 9-2008-100021-0
V V-1 V-2	지정국 본 출원서의 제출로, 규칙 4.9(a)에 따라, 부여될 수 있는 모든 종류의 권리 보호를 위하여, 그리고 해당하는 경우 지역특허 및 국내특허 모두를 위하여 당해 국제출원일에 PCT에 기속되는 모든 계약국이 지정된다. V-2란은 출원서 제출시 또는 규칙 26의2.1에 의해 그 이후 출원서 제6기제관에 위 특정 관련 계약국의 국내 선출원에 대한 우선권주장이 포함되어 있을 경우 당해 계약국의 국내법에 의해 해당 국내 선출원의 효력이 상실되는 것을 방지하기 위한 목적으로 당해 계약국의 지정을 제외하는 데에만 사용될 수 있다 (지정 제외시 이의 취소 불가능).	 KR
VI-1 VI-1-1 VI-1-2 VI-1-3	선국내출원에 대한 우선권 주장 출원일 출원번호 국가	2012년 06월 28일 (28.06.2012) 10-2012-0070043 KR

PCT 출원서

출력(전자적 형태가 원본)

VI-2	선국내출원에 대한 우선권 주장		
VI-2-1	출원일	2013년 06월 04일 (04.06.2013)	
VI-2-2	출원번호	10-2013-0063860	
VI-2-3	국가	KR	
VI-3	우선권서류 신청 수리관청에 대하여 위에 명시된 선출원의 인증등본을 준비하여 국제사무국에 송부하여 줄 것을 신청한다.	VI-1 VI-2	
VI-4	인용에 의한 보완 조약 제11조(1)(iii)(d) 또는 (e)에서 규정하는 국제출원의 요소, 또는 규칙 20.5(a)에서 규정하는 명세서, 청구 범위 또는 도면의 일부가 본 국제출원에는 포함되어 있지 않지만 조약 제11조(1)(iii) 규정의 요소 중 하나 이상이 수리관청에 최초로 접수된 날에 우선권주장의 기초가 된 선출원에 완전히 포함되어 있는 경우, 그 요소 또는 부분은 규칙 20.6 규정에 의한 확인을 조건으로, 규칙 20.6의 규정과 관련하여 본 국제출원에 있어서 인용에 의해 보완된다.		
VII-1	국제조사기관(ISA) 선택	대한민국 특허청 (ISA/KR)	
VIII	선언서	선언서 개수	
VIII-1	발명자의 신원에 관한 선언	-	
VIII-2	국제출원일에 특허출원 및 특허를 받을 수 있는 출원인의 자격에 관한 선언	-	
VIII-3	국제출원일에 선출원의 우선권을 주장할 수 있는 출원인의 자격에 관한 선언	-	
VIII-4	발명자 선언(미국에 대한 지정의 경우에 한함)	-	
VIII-5	신규성을 해치지 아니하는 개시 또는 신규성 상실의 예외에 관한 선언	-	
IX	체크 리스트	용지 수	전자적 파일 첨부
IX-1	출원서(선언서 포함)	4	✓
IX-2	명세서	14	✓
IX-3	청구범위	3	✓
IX-4	요약서	1	✓
IX-5	도면	7	✓
IX-7	용지매수 소개	29	
	첨부 항목	서면 첨부	전자적 파일 첨부
IX-8	수수료 계산 용지	-	✓
IX-9	개별위임장 원본	-	✓
IX-18	PCT-SAFE 전자출원 매체	-	-
IX-20	요약서에 수반되어야 할 도면 번호	5	
IX-21	국제출원의 출원 언어	한국어	
X-1	출원인, 대리인 또는 대표자의 서명 또는 날인	(PKCS7 전자서명)	
X-1-1	성명	특허법인 이상	
X-1-2	서명인의 성명	특허법인 이상	
X-1-3	권한 (출원서를 통해 서명자의 자격이 명백하지 않은 경우에는 그 자격도 표시)	특허법인 이상	

PCT 출원서

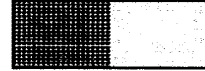
출력(전자적 형태가 원본)

수리관청 전용

10-1	국제출원으로 제출된 서류의 실제 접수일	2013년 06월 27일 (27.06.2013)
10-2	도면	
10-2-1	접수	
10-2-2	미접수	
10-3	국제출원으로 제출된 서류를 완성하는 서류 또는 도면의 후후 기간내 제출에 따른 정정된 실제 접수일	
10-4	PCT 제11조(2)에 따라 제출이 요구된 보완서로서 기간내 제출된 보완서의 접수일	
10-5	국제조사기관(ISA)	ISA/KR
10-6	조사료 납부시까지 지원된 조사용 사본의 총부	

국제 사무국 전용

11-1	국제 사무국의 기록원본 접수일	
------	------------------	--



별첨 사본은 아래 출원의 원본과 동일함을 증명함.

This is to certify that the following application annexed hereto
is a true copy from the records of the Korean Intellectual
Property Office

출 원 번 호 : 10-2013-0063860
Application Number

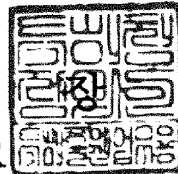
출 원 년 월 일 : 2013년 06월 04일
Filing Date 6월 04, 2013

출 원 인 : 주식회사 케이티
Applicant(s) KT Corporation

2013 년 07 월 01 일

특 허 청

COMMISSIONER



【서지사항】

【서류명】 특허출원서
【참조번호】 KT120009NR
【출원구분】 특허출원
【출원인】
【명칭】 주식회사 케이티
【출원인코드】 2-1998-005456-3
【대리인】
【명칭】 특허법인 이상
【대리인코드】 9-2008-100021-0
【지정된변리사】 이재관, 김영아, 정용인, 전호진, 유광철
【포괄위임등록번호】 2011-072484-1
【발명의 국문명칭】 무선랜 시스템에서 액세스 포인트의 검색 방법
【발명의 영문명칭】 METHOD FOR SCANNING ACCESS POINT IN WIRELESS LOCAL AREA NETWORK SYSTEM
【발명자】
【성명】 윤병완
【성명의 영문표기】 YOON, Byung Wan
【주민등록번호】 790108-1XXXXXX
【우편번호】 137-140
【주소】 서울특별시 서초구 우면동 17번지 KT연구개발센터
【국적】 KR
【발명자】
【성명】 임수환
【성명의 영문표기】 LIM, Su Hwan
【주민등록번호】 711126-1XXXXXX

【우편번호】 137-140
【주소】 서울특별시 서초구 우면동 17번지 KT연구개발센터
【국적】 KR
【우선권 주장】
【출원국명】 KR
【출원번호】 10-2012-0070043
【출원일자】 2012.06.28
【증명서류】 첨부
【취지】 위와 같이 특허청장에게 제출합니다.

대리인 특허법인 이상 (서명 또는 인)

【수수료】

【출원료】	0 면	38,000 원
【가산출원료】	40 면	0 원
【우선권주장료】	1 건	18,000 원
【심사청구료】	0 항	0 원
【합계】		56,000 원

【명세서】

【발명의 명칭】

무선랜 시스템에서 액세스 포인트의 검색 방법{METHOD FOR SCANNING ACCESS POINT IN WIRELESS LOCAL AREA NETWORK SYSTEM}

【기술분야】

<1> 본 발명은 액세스 포인트의 검색 방법에 관한 것으로, 더욱 상세하게는 무선랜 시스템에서 능동 검색 방식을 사용한 액세스 포인트의 검색 방법에 관한 것이다.

【배경기술】

<2> 정보통신 기술의 발전과 더불어 다양한 무선 통신 기술이 개발되고 있다. 이 중에서 무선랜(wireless local area network, WLAN)은 무선 주파수 기술을 바탕으로 개인용 휴대 정보 단말기(personal digital assistant, PDA), 랩탑 컴퓨터(laptop computer), 휴대형 멀티미디어 플레이어(portable multimedia player, PMP) 등과 같은 휴대형 단말기를 사용하여 가정이나 기업 또는 특정 서비스 제공지역에서 무선으로 인터넷에 접속할 수 있도록 하는 기술이다.

<3> 무선랜 기술에 대한 표준은 IEEE(Institute of Electrical and Electronics Engineers) 802.11 표준으로서 개발되고 있다. IEEE 802.11a는 5 GHz에서 비면허대역(unlicensed band)을 이용하여, 54 Mbps의 전송 속도를 제공한다. IEEE 802.11b는 2.4 GHz에서 직접 시퀀스 방식(direct sequence spread spectrum, DSS

S)을 적용하여, 11 Mbps의 전송 속도를 제공한다. IEEE 802.11g는 2.4 GHz에서 직교 주파수 분할 다중화(orthogonal frequency division multiplexing, OFDM)를 적용하여, 54 Mbps의 전송 속도를 제공한다. IEEE 802.11n은 다중입출력 OFDM(multiple input multiple output-OFDM, MIMO-OFDM)을 적용하여, 2 개의 공간적인 스트림(spatial stream)에 대해서 300 Mbps의 전송 속도를 제공한다. IEEE 802.11n에서는 채널 대역폭(channel bandwidth)을 40 MHz까지 지원하며, 이 경우에 600 Mbps의 전송 속도를 제공한다.

<4> 이와 같은 무선랜의 보급이 활성화되고 이를 이용한 어플리케이션이 다양화됨에 따라, IEEE 802.11n이 지원하는 데이터 처리 속도보다 더 높은 처리율을 지원하기 위한 새로운 무선랜 기술에 대한 필요성이 증가하고 있다. 초고처리율(very high throughput, VHT) 무선랜 기술은 1 Gbps 이상의 데이터 처리 속도를 지원하기 위하여 제안되고 있는 IEEE 802.11 무선랜 기술 중의 하나이다. 그 중, IEEE 802.11ac는 5 GHz 이하 대역에서 초고처리율 제공을 위한 표준으로서 개발되고 있고, IEEE 802.11ad는 60 GHz 대역에서 초고처리율 제공을 위한 표준으로서 개발되고 있다.

<5> 이러한 무선랜 기술을 기초로 한 시스템에 있어서, 액세스 포인트(access point)의 검색 방법에는 능동 검색(active scan) 방법과 수동 검색(passive scan) 방법이 있다. 액세스 포인트의 능동 검색 방법은 단말(station)이 프로브 요청 프레임(probe request frame)을 전송하고, 이를 수신한 액세스 포인트가 프로브 응답 프레임(probe response frame)으로 응답하는 방식으로 진행된다.

<6> 프로브 요청 프레임의 SSID(service set identifier)를 null로 설정하여 불특정 다수의 액세스 포인트에 응답을 요청한 경우, 단말은 최대 프로브 응답 시간(Max_Probe_Response_Time) 동안 액세스 포인트로부터 프로브 응답 프레임을 수신하고, 프로브 응답 프레임을 전송한 액세스 포인트들 중에서 무선 환경이 가장 좋은 액세스 포인트에 접속 요청을 한다. 즉, 무선 환경이 좋은 액세스 포인트로부터 프로브 응답 프레임을 수신한 경우에도 단말은 최대 프로브 응답 시간까지 기다린 후 액세스 포인트에 접속 요청을 해야 하므로, 불필요한 시간이 낭비되는 문제점이 있다.

<7> 액세스 포인트의 측면에서, 액세스 포인트는 수신된 프로브 요청 프레임에 매번 프로브 응답 프레임으로 응답을 해야 하므로, 무선 환경의 고려 없는 무조건적인 응답으로 인해 무선 자원이 낭비되는 문제점이 있다.

【발명의 내용】

【해결하려는 과제】

<8> 상기와 같은 문제점을 해결하기 위한 본 발명의 목적은, 단말의 출력 정보를 포함하는 프로브 요청 프레임을 사용하여 능동 검색을 수행하기 위한 액세스 포인트의 능동 검색 방법을 제공하는 데 있다.

<9> 상기와 같은 문제점을 해결하기 위한 본 발명의 다른 목적은, 액세스 포인트의 출력 정보를 포함하는 프로브 응답 프레임을 사용하여 능동 검색을 수행하기 위한 액세스 포인트의 능동 검색 방법을 제공하는 데 있다.

【과제의 해결 수단】

- <10> 상기 목적을 달성하기 위한 본 발명의 일 실시예에 따른 능동 검색 방법은, 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성하는 단계 및 상기 프로브 요청 프레임을 액세스 포인트에 전송하는 단계를 포함한다.
- <11> 여기서, 상기 신호 강도 정보는 상기 단말의 전송 파워 정보를 포함할 수 있다.
- <12> 여기서, 상기 능동 검색 방법은, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계 및 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함하되, 상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의된 기준을 만족하는 액세스 포인트일 수 있다.
- <13> 여기서, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계는, 최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- <14> 여기서, 상기 능동 검색 방법은, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계, 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 경로손실을 획득하는 단계 및 상기 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함할 수 있다.

- <15> 여기서, 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실 정보를 포함할 수 있다.
- <16> 여기서, 상기 제1 액세스 포인트와의 접속을 수행하는 단계는, 최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- <17> 여기서, 상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의된 기준을 만족하는 액세스 포인트일 수 있다.
- <18> 상기 목적을 달성하기 위한 본 발명의 다른 실시예에 따른 능동 검색 방법은, 프로브 요청 프레임을 액세스 포인트에 전송하는 단계, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계, 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 품질 정보를 획득하는 단계 및 하향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 포함한다.
- <19> 여기서, 상기 하향링크 품질 정보는 하향링크 경로손실 정보를 포함할 수 있다.
- <20> 여기서, 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실 정보를 포함할 수 있다.
- <21> 상기 다른 목적을 달성하기 위한 본 발명의 일 실시예에 따른 능동 검색 응답 방법은, 단말로부터 프로브 요청 프레임을 수신하는 단계, 상기 프로브 요청 프레임에 포함된 상기 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득

하는 단계 및 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 단말에 프로브 응답 프레임을 전송하는 단계를 포함한다.

<22> 여기서, 상기 신호 강도 정보는 상기 단말의 전송 파워 정보를 포함할 수 있다.

<23> 여기서, 상기 상향링크 품질 정보는 상향링크 경로손실 정보를 포함할 수 있다.

<24> 여기서, 상기 프로브 응답 프레임을 전송하는 단계는, 목표 경로손실 정보를 포함하는 상기 프로브 응답 프레임을 전송할 수 있다.

【발명의 효과】

<25> 본 발명에 의하면, 액세스 포인트는 프로브 요청 프레임에 대한 상향링크 경로손실이 미리 정의된 기준을 만족하는 단말에만 프로브 응답 프레임으로 응답할 수 있으므로, 불필요한 무선 자원이 낭비되는 것을 방지할 수 있다.

<26> 한편, 단말은 프로브 응답 프레임에 대한 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우, 최대 프로브 응답 시간까지 기다리지 않고 즉시 해당 액세스 포인트에 연결을 수행할 수 있으므로, 불필요한 시간이 낭비되는 것을 방지할 수 있다.

【도면의 간단한 설명】

<27> 도 1은 IEEE 802.11 무선랜 시스템의 구성에 대한 일 실시예를 도시한 개념도이다.

도 2는 인프라스트럭처 BSS에서 단말의 연결 과정을 도시한 개념도이다.

도 3은 액세스 포인트의 데이터 전송 과정에 대한 일 실시예를 도시한 개념도이다.

도 4는 능동 검색 방법의 일 실시예를 도시한 개념도이다.

도 5는 본 발명의 일 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.

도 6은 프로브 요청 프레임의 구성을 도시한 개념도이다.

도 7은 본 발명의 다른 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.

도 8은 프로브 응답 프레임(1 ~ 14)의 구성을 도시한 개념도이다.

도 9는 프로브 응답 프레임(15 ~ 23)의 구성을 도시한 개념도이다.

도 10은 본 발명의 또 다른 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.

도 11은 본 발명의 일 실시예에 따른 능동 검색 응답 방법을 도시한 흐름도이다.

도 12는 본 발명의 일 실시예에 따른 액세스 포인트의 능동 검색 방법을 도시한 순서도이다.

【발명을 실시하기 위한 구체적인 내용】

<28> 본 발명은 다양한 변경을 가할 수 있고 여러 가지 실시예를 가질 수 있는 바, 특정 실시예들을 도면에 예시하고 상세하게 설명하고자 한다.

<29> 그러나, 이는 본 발명을 특정한 실시 형태에 대해 한정하려는 것이 아니며,

본 발명의 사상 및 기술 범위에 포함되는 모든 변경, 균등물 내지 대체물을 포함하는 것으로 이해되어야 한다.

<30> 제1, 제2 등의 용어는 다양한 구성요소들을 설명하는데 사용될 수 있지만, 상기 구성요소들은 상기 용어들에 의해 한정되어서는 안 된다. 상기 용어들은 하나의 구성요소를 다른 구성요소로부터 구별하는 목적으로만 사용된다. 예를 들어, 본 발명의 권리 범위를 벗어나지 않으면서 제1 구성요소는 제2 구성요소로 명명될 수 있고, 유사하게 제2 구성요소도 제1 구성요소로 명명될 수 있다. 및/또는 이라는 용어는 복수의 관련된 기재된 항목들의 조합 또는 복수의 관련된 기재된 항목들 중의 어느 항목을 포함한다.

<31> 어떤 구성요소가 다른 구성요소에 "연결되어" 있다거나 "접속되어" 있다고 언급된 때에는, 그 다른 구성요소에 직접적으로 연결되어 있거나 또는 접속되어 있을 수도 있지만, 중간에 다른 구성요소가 존재할 수도 있다고 이해되어야 할 것이다. 반면에, 어떤 구성요소가 다른 구성요소에 "직접 연결되어" 있다거나 "직접 접속되어" 있다고 언급된 때에는, 중간에 다른 구성요소가 존재하지 않는 것으로 이해되어야 할 것이다.

<32> 본 출원에서 사용한 용어는 단지 특정한 실시예를 설명하기 위해 사용된 것으로, 본 발명을 한정하려는 의도가 아니다. 단수의 표현은 문맥상 명백하게 다르게 뜻하지 않는 한, 복수의 표현을 포함한다. 본 출원에서, "포함하다" 또는 "가지다" 등의 용어는 명세서상에 기재된 특징, 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것이 존재함을 지정하려는 것이지, 하나 또는 그 이상의 다른 특정

들이나 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것들의 존재 또는 부가 가능성을 미리 배제하지 않는 것으로 이해되어야 한다.

<33> 다르게 정의되지 않는 한, 기술적이거나 과학적인 용어를 포함해서 여기서 사용되는 모든 용어들은 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자에 의해 일반적으로 이해되는 것과 동일한 의미를 가지고 있다. 일반적으로 사용되는 사전에 정의되어 있는 것과 같은 용어들은 관련 기술의 문맥 상 가지는 의미와 일치하는 의미를 가진 것으로 해석되어야 하며, 본 출원에서 명백하게 정의하지 않는 한, 이상적이거나 과도하게 형식적인 의미로 해석되지 않는다.

<34> 이하, 첨부한 도면들을 참조하여, 본 발명의 바람직한 실시예를 보다 상세하게 설명하고자 한다. 본 발명을 설명함에 있어 전체적인 이해를 용이하게 하기 위하여 도면상의 동일한 구성요소에 대해서는 동일한 참조부호를 사용하고 동일한 구성요소에 대해서 중복된 설명은 생략한다.

<35> 명세서 전체에서, 스테이션(station, STA)은 IEEE(Institute of Electrical and Electronics Engineers) 802.11 표준의 규정을 따르는 매체 접속 제어(media access control, MAC)와 무선 매체(media)에 대한 물리 계층(physical layer) 인터페이스(interface)를 포함하는 임의의 기능 매체를 의미한다. 스테이션(STA)은 액세스 포인트(access point, AP)인 스테이션(STA)과 비-액세스 포인트(non-AP)인 스테이션(STA)으로 구분할 수 있다. 액세스 포인트(AP)인 스테이션(STA)은 단순히 액세스 포인트(AP)로 불릴 수 있고, 비-액세스 포인트(non-AP)인 스테이션(STA)은

단순히 단말(terminal)로 불릴 수 있다.

<36> 스테이션(STA)은 프로세서(Processor)와 트랜시버(transceiver)를 포함하고, 사용자 인터페이스와 디스플레이(display) 장치 등을 더 포함할 수 있다. 프로세서는 무선 네트워크를 통해 전송할 프레임을 생성하거나 무선 네트워크를 통해 수신된 프레임을 처리하도록 고안된 유닛(unit)을 의미하며, 스테이션(STA)을 제어하기 위한 여러 가지 기능을 수행한다. 트랜시버는 프로세서와 기능적으로 연결되어 있으며, 스테이션(STA)을 위하여 무선 네트워크를 통해 프레임을 송수신하도록 고안된 유닛을 의미한다.

<37> 엑세스 포인트(AP)는 집중 제어기, 기지국(base station, BS), 노드-B(node-B), e노드-B, BTS(base transceiver system), 또는 사이트 제어기 등을 지칭할 수 있고, 그 것들의 일부 또는 전부 기능을 포함할 수 있다.

<38> 단말은 무선 송수신 유닛(wireless transmit/receive unit, WTRU), 사용자 장비(user equipment, UE), 사용자 단말(user terminal, UT), 액세스 단말(access terminal, AT), 이동국(mobile station, MS), 휴대용 단말(mobile terminal), 가입자 유닛(subscriber unit), 가입자 스테이션(subscriber station, SS), 무선 기기(wireless device), 또는 이동 가입자 유닛(mobile subscriber unit) 등을 지칭할 수 있고, 그 것들의 일부 또는 전부 기능을 포함할 수 있다.

<39> 여기서, 단말로 통신이 가능한 데스크탑 컴퓨터(desktop computer), 랩탑 컴퓨터(laptop computer), 태블릿(tablet) PC, 무선전화기(wireless phone), 모바일 폰(mobile phone), 스마트폰(smart phone), e-book 리더기, PMP(Portable

Multimedia Player), 휴대용 게임기, 네비게이션(navigation) 장치, 디지털 카메라(digital camera), DMB (Digital Multimedia Broadcasting) 재생기, 디지털 음성 녹음기(digital audio recorder), 디지털 음성 재생기(digital audio player), 디지털 영상 녹화기(digital picture recorder), 디지털 영상 재생기(digital picture player), 디지털 동영상 녹화기(digital video recorder), 디지털 동영상 재생기(digital video player) 등을 사용할 수 있다.

<40> 도 1은 IEEE 802.11 무선랜 시스템의 구성에 대한 일 실시예를 도시한 개념도이다.

<41> 도 1을 참조하면, IEEE 802.11 무선랜 시스템은 적어도 하나의 기본 서비스 세트(basic service set, BSS)를 포함한다. BSS는 성공적으로 동기화를 이루어서 서로 통신할 수 있는 스테이션(STA 1, STA 2(AP 1), STA 3, STA 4, STA 5(AP 2))의 집합을 의미하며, 특정 영역을 의미하는 개념은 아니다.

<42> BSS는 인프라스트럭처 BSS(infrastructure BSS)와 독립 BSS(independent BSS, IBSS)로 구분할 수 있으며, BSS 1과 BSS 2는 인프라스트럭처 BSS를 의미한다. BSS 1은 단말(STA 1), 분배 서비스(distribution service)를 제공하는 액세스 포인트(STA 2(AP 1)) 및 다수의 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 연결하는 분배 시스템(Distribution System, DS)을 포함할 수 있다. BSS 1에서 액세스 포인트(STA 2(AP 1))는 단말(STA 1)을 관리한다.

<43> BSS 2는 단말(STA 3, STA 4), 분배 서비스를 제공하는 액세스 포인트(STA 5(AP 2)) 및 다수의 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 연결하는 분배 시스템을 포함할 수 있다. BSS 2에서 액세스 포인트(STA 5(AP 2))는 단말(STA 3, STA 4)을 관리한다.

<44> 한편, 독립 BSS는 애드-혹(ad-hoc) 모드로 동작하는 BSS이다. IBSS는 액세스 포인트를 포함하지 않으므로, 중앙에서 관리 기능을 수행하는 개체(centralized management entity)가 존재하지 않는다. 즉, IBSS에서 단말들은 분산된 방식(distributed manner)으로 관리된다. IBSS에서 모든 단말은 이동 단말로 이루어질 수 있으며, 분배 시스템(DS)으로 접속이 허용되지 않으므로 자기 완비적 네트워크(self-contained network)를 이룬다.

<45> 액세스 포인트(STA 2(AP 1), STA 5(AP 2))는 자신에게 결합된 단말(STA 1, STA 3, STA 4)을 위하여 무선 매체를 통한 분산 시스템(DS)에 대한 접속을 제공한다. BSS 1 또는 BSS 2에서 단말들(STA 1, STA 3, STA 4) 사이의 통신은 일반적으로 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 통해 이루어지나, 다이렉트 링크(direct link)가 설정된 경우에는 단말들(STA 1, STA 3, STA 4) 간의 직접 통신이 가능하다.

<46> 복수의 인프라스트럭처 BSS는 분배 시스템(DS)을 통해 상호 연결될 수 있다. 분배 시스템(DS)을 통하여 연결된 복수의 BSS를 확장 서비스 세트(extended service set, ESS)라 한다. ESS에 포함되는 스테이션들은 서로 통신할 수 있으며, 동일한 ESS 내에서 단말은 끊임 없이 통신하면서 하나의 BSS에서 다른 BSS로 이동

할 수 있다.

<47> 분배 시스템(DS)은 하나의 액세스 포인트가 다른 액세스 포인트와 통신하기 위한 메커니즘(mechanism)으로서, 이에 따르면 액세스 포인트는 자신이 관리하는 BSS에 결합되어 있는 단말들을 위해 프레임을 전송하거나, 다른 BSS로 이동한 임의의 단말을 위해 프레임 전송할 수 있다. 또한, 액세스 포인트는 유선 네트워크 등과 같은 외부 네트워크와 프레임을 송수신할 수가 있다. 이러한 분배 시스템(DS)은 반드시 네트워크일 필요는 없으며, IEEE 802.11 표준에 규정된 소정의 분배 서비스를 제공할 수 있다면 그 형태에 대해서는 아무런 제한이 없다. 예컨대, 분배 시스템은 메쉬 네트워크(mesh network)와 같은 무선 네트워크이거나, 액세스 포인트들을 서로 연결시켜 주는 물리적인 구조물일 수 있다.

<48> 후술할 본 발명의 일 실시예에 따른 액세스 포인트의 능동 검색 방법은 상기에서 설명한 IEEE 802.11 무선랜 시스템에 적용될 수 있으며, 더불어 IEEE 802.11 무선랜 시스템뿐만 아니라 WPAN(Wireless Personal Area Network), WBAN(Wireless Body Area Network) 등과 같은 다양한 네트워크에 적용될 수 있다.

<49> 도 2는 인프라스트럭처 BSS에서 단말의 연결 과정을 도시한 개념도이다.

<50> 인프라스트럭처 BSS에서 단말(STA)이 데이터를 송수신하기 위해, 먼저 단말(STA)은 액세스 포인트(AP)와 연결되어야 한다.

<51> 도 2를 참조하면, 인프라스트럭처 BSS에서 단말(STA)의 연결 과정은 크게 1)

액세스 포인트(AP)를 탐지하는 단계(probe step), 2) 탐지된 액세스 포인트(AP)와의 인증 단계(authentication step), 3) 인증된 액세스 포인트(AP)와의 연결 단계(association step)로 구분된다.

<52> 단말(STA)은 먼저 탐지 프로세스(process)를 통해 이웃하는 액세스 포인트들(APs)을 탐지할 수 있다. 탐지 프로세스는 수동 스캐닝(passive scanning) 방법과 능동 스캐닝(active scanning) 방법으로 구분된다. 수동 스캐닝 방법은 이웃하는 액세스 포인트들(APs)이 전송하는 비컨을 엿들음(overhearing)으로써 수행될 수 있다. 한편, 능동 스캐닝 방법은 프로브 요청 프레임(probe request frame)을 브로드캐스팅(broadcasting)함으로써 수행될 수 있다. 프로브 요청 프레임을 수신한 액세스 포인트(AP)는 프로브 요청 프레임에 대응된 프로브 응답 프레임(probe response frame)을 해당 단말(STA)에 전송할 수 있다. 단말(STA)은 프로브 응답 프레임을 수신함으로써 이웃하는 액세스 포인트들(APs)의 존재를 알 수 있다.

<53> 그 후, 단말(STA)은 탐지된 액세스 포인트(AP)와의 인증을 수행하며, 탐지된 복수의 액세스 포인트들(APs)과의 인증을 수행할 수 있다. IEEE 802.11 표준에 따른 인증 알고리즘(algorithm)은 두 개의 인증 프레임을 교환하는 오픈 시스템(open system) 알고리즘, 네 개의 인증 프레임을 교환하는 공유 키(shared key) 알고리즘으로 구분된다. 이러한 인증 알고리즘을 기초로 인증 요청 프레임(authentication request frame)과 인증 응답 프레임(authentication response frame)을 교환하는 과정을 통해, 단말(STA)은 액세스 포인트(AP)와의 인증을 수행할 수 있다.

<54> 마지막으로, 단말(STA)은 인증된 복수의 액세스 포인트들(APs) 중 하나의 액

세스 포인트(AP)를 선택하고, 선택된 액세스 포인트(AP)와 연결 과정을 수행한다. 즉, 단말(STA)은 선택된 액세스 포인트(AP)에 연결 요청 프레임(association request frame)을 전송하고, 연결 요청 프레임을 수신한 액세스 포인트(AP)는 연결 요청 프레임에 대응된 연결 응답 프레임(association response frame)을 해당 단말(STA)에 전송한다. 이와 같이, 연결 요청 프레임과 연결 응답 프레임을 교환하는 과정을 통해, 단말(STA)은 액세스 포인트(AP)와 연결 과정을 수행할 수 있다.

<55> 도 3은 액세스 포인트의 데이터 전송 과정에 대한 일 실시예를 도시한 개념도이다.

<56> 도 3을 참조하면, 액세스 포인트(AP)는 주기적으로 비컨을 브로드캐스팅(broadcasting) 하며, 3개의 비컨 간격(interval)으로 DTIM이 포함된 비컨을 브로드캐스팅할 수 있다. 전력 절감 모드(power save mode, PSM)의 단말(STA 1, STA 2)은 주기적으로 깨어나(awake) 비컨을 수신하고, 비컨에 포함된 TIM 또는 DTIM을 확인하여 자신에게 전송될 데이터가 액세스 포인트에 버퍼링되어 있는지 확인한다. 이때, 버퍼링된 데이터가 존재하는 경우 단말(STA 1, STA 2)은 깨어있는 상태를 유지하여 액세스 포인트(AP)로부터 데이터를 수신하고, 버퍼링된 데이터가 존재하지 않는 경우 단말(STA 1, STA 2)은 전력 절감 상태(즉, doze 상태)로 돌아간다.

<57> 즉, 자신의 AID에 대응하는 TIM 내의 비트가 1로 설정되어 있는 경우, 단말(STA 1, STA 2)은 자신이 깨어 있고 데이터를 받을 준비가 되어 있음을 알리는 PS(Power Save)-Poll 프레임(또는, 트리거(trigger) 프레임)을 액세스 포인트(AP)

에 전송하고, 액세스 포인트(AP)는 PS-Poll 프레임을 수신함으로써 단말(STA 1, STA 2)이 데이터 수신을 위한 준비가 되었음을 확인하고, 단말(STA 1, STA 2)에 데이터 또는 ACK(acknowledgement)을 전송할 수 있다. ACK을 단말(STA 1, STA 2)에 전송한 경우, 액세스 포인트(AP)는 적절한 시점에 데이터를 단말(STA 1, STA 2)에 전송한다. 한편, 자신의 AID에 대응하는 TIM 내의 비트가 0 으로 설정되어 있는 경우, 단말(STA 1, STA 2)은 전력 절감 상태로 돌아간다.

<58> 도 4는 능동 검색 방법의 일 실시예를 도시한 개념도이다.

<59> 도 4를 참조하면, 단말(STA)은 프로브 요청 프레임을 브로드캐스팅할 수 있고, 프로브 요청 프레임을 수신한 액세스 포인트들(AP 1, AP 2)은 프로브 응답 프레임으로 응답할 수 있다. 단말(STA)은 최소 프로브 응답 시간(min_probe_response_time) 동안 프로브 응답 프레임을 수신하지 못한 경우 프로브 요청 프레임을 다시 전송할 수 있다. 단말(STA)은 최대 프로브 응답 시간(max_probe_response_time) 동안 프로브 응답 프레임을 수신하며, 프로브 응답 프레임을 전송한 액세스 포인트들(AP 1, AP 2) 중에서 무선 환경이 가장 좋은 액세스 포인트에 접속 요청을 한다. 즉, 무선 환경이 좋은 액세스 포인트로부터 프로브 응답 프레임을 수신한 경우에도 단말은 최대 프로브 응답 시간까지 기다린 후 액세스 포인트에 접속 요청을 해야 하므로, 불필요한 시간이 낭비되는 문제가 있다.

- <60> 도 5는 본 발명의 일 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.
- <61> 도 5를 참조하면, 단말에서 수행되는 능동 검색 방법은 단말의 신호 강도 (signal strength) 정보를 포함한 프로브 요청 프레임을 생성하는 단계(S100) 및 프로브 요청 프레임을 액세스 포인트에 전송하는 단계(S110)를 포함한다. 또한, 능동 검색 방법은 임의의 액세스 포인트로부터 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계(S120) 및 임의의 액세스 포인트와의 접속(access)을 수행하는 단계(S130)를 더 포함할 수 있다.
- <62> 단계 S100에서, 단말은 자신의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성할 수 있으며, 신호 강도 정보는 전송 파워(Tx power) 정보를 포함할 수 있다. 즉, 신호 강도는 전송 파워를 의미할 수 있다.
- <63> 도 6은 프로브 요청 프레임의 구성을 도시한 개념도이다.
- <64> 도 6을 참조하면, 프로브 요청 프레임은 전송 파워(5, Tx Power) 정보를 포함한다. 즉, 단말은 도 6에 도시된 바와 같이 전송 파워 정보를 포함한 프로브 요청 프레임을 생성할 수 있다.
- <65> 다시 도 5를 참조하면, 단계 S110에서, 단말은 프로브 요청 프레임을 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 프로브 요청 프레임을 전송할 수 있고, 또는 불특정 액세스 포인트에 프로브 요청 프레임을 전송(즉, 브로드캐스팅)할 수 있다.
- <66> 단계 S120에서, 단말은 임의의 액세스 포인트로부터 프로브 요청 프레임에

<68> 도 7은 본 방법의 다른 실시예에 따른 응용 검색 방법을 도시한 흐름도이다.

<69> 도 7을 참조하면, 단말에서 수행되는 응용 검색 방법은 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임(예를 들어, 단계(S200)), 프로브 요청 프레임을 액세스 포인트에 전송하는 단계(S210), 임의의 액세스 포인트로부터 요청

<67> 단계 S130에서, 단말은 임의의 액세스 포인트와의 접속(즉, 인증(authentication) 과정 및 연결(association) 과정)을 수행할 수 있다. 단말은 미리 설정된 최대 프로브 응답 시간이 지나기 전에 임의의 액세스 포인트와의 접속을 수행할 수 있다. 즉, 단말은 프로브 응답 프레임을 수신한 후 즉시 임의의 액세스 포인트와의 접속을 수행할 수 있다. 상황링크 경로손실이 미리 정의된 기준을 만족하는 경우는 임의의 액세스 포인트와 단말 간의 상황링크 품질이 양호한 것을 의미하므로, 단말은 남은 최대 프로브 응답 시간 동안 다른 프로브 응답 프레임을 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.

트는 목표 경로손실보다 작거나 같은 상황링크 경로손실을 가지는 액세스 포인트를 기준(상황링크) 목표 경로손실(target pathloss)을 의미하며, 임의의 액세스 포인트를 정의된 기준을 만족하는 액세스 포인트를 의미할 수 있다. 여기서, 미리 정의된 임의의 액세스 포인트는 단말에 대한 상황링크 품질(예를 들어, 경로손실)이 미리 정 프레임 수신한 액세스 포인트들 중 하나의 액세스 포인트를 의미한다. 또한, 대응된 프로브 응답 프레임을 수신할 수 있다. 임의의 액세스 포인트는 프로브 요청

2013-06-04

프레임에 대응된 프로브 응답 프레임을 수신하는 단계(S220), 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 경로손실을 획득하는 단계(S230) 및 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우 임의의 액세스 포인트와의 접속을 수행하는 단계(S240)를 포함한다.

<70> 단계 S200에서, 단말은 자신의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성할 수 있으며, 신호 강도 정보는 전송 파워 정보를 포함할 수 있다. 즉, 신호 강도는 전송 파워를 의미할 수 있다.

<71> 단계 S210에서, 단말은 프로브 요청 프레임을 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 프로브 요청 프레임을 전송할 수 있고, 또는 불특정 액세스 포인트에 프로브 요청 프레임을 전송(즉, 브로드캐스팅)할 수 있다.

<72> 단계 S220에서, 단말은 임의의 액세스 포인트로부터 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신할 수 있다. 임의의 액세스 포인트는 프로브 요청 프레임을 수신한 액세스 포인트들 중 하나의 액세스 포인트를 의미한다. 또한, 임의의 액세스 포인트는 단말에 대한 상향링크 품질(예를 들어, 경로손실)이 미리 정의된 기준을 만족하는 액세스 포인트를 의미할 수 있다. 여기서, 미리 정의된 기준은 (상향링크) 목표 경로손실을 의미하며, 임의의 액세스 포인트는 목표 경로손실보다 작거나 같은 상향링크 경로손실을 가지는 액세스 포인트를 의미할 수 있다.

<73> 단계 S230에서, 단말은 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 경로손실을 획득할 수 있다. 임의의 액세스 포인트의 전송 파워를 알고 있는 경

프로브 응답 포레이팅 수신한 경우 즉시 임의의 액세스 포레이팅의 접속을 수행할
세스 포레이팅의 접속을 수행할 수 있다. 즉, 단말은 미리 정의된 기준을 만족하는
할 수 있다. 단말은 미리 설정된 최대 프로브 응답 시간이 지나기 전에 임의의 액
나 같은 경우 임의의 액세스 포레이팅의 접속(즉, 인증 과정 및 연결 과정)을 수행
다시 도 7을 참조하면, 단말은 하향링크 경로손실이 목표 경로손실보다 작거

<77>

생성된 프로브 응답 포레이팅을 단말에 제공할 수 있다.
바와 같이 목표 경로손실 정보를 포함한 프로브 응답 포레이팅을 생성할 수 있으며,
Pathloss) 정보를 포함한다. 즉, 임의의 액세스 포레이팅은 도 8 및 도 9에 도시된
도 8 및 도 9를 참조하면, 프로브 응답 포레이팅은 목표 경로손실(23, Target
도 8 및 도 9는 프로브 응답 포레이팅의 구성을 도시한 개념도이다.

<76>

<75>

단말에 전송될 수 있다.
링크) 목표 경로손실을 의미하며, 목표 경로손실은 프로브 응답 포레이팅에 포함되어
같은 임의의 액세스 포레이팅의 접속을 수행할 수 있다. 미리 정의된 기준은 (하향
단계 S240에서, 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우 단
의 액세스 포레이팅의 전송 파워를 획득할 수 있다.

<74>

를 생성하여 단말에 전송할 수 있고, 단말은 이러한 프로브 응답 포레이팅을 통해 안
즉, 임의의 액세스 포레이팅은 자신의 전송 파워 정보를 포함한 프로브 응답 포레이
의 액세스 포레이팅의 전송 파워를 프로브 응답 포레이팅을 통해 획득할 수도 있다.
강도 간의 차이를 통해 하향링크 경로손실을 획득할 수 있다. 여기서, 단말은 임의
우, 단말은 임의의 액세스 포레이팅의 전송 파워와 프로브 응답 포레이팅의 수신 신호

2013-06-04

수 있다.

<78> 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우는 임의의 액세스 포인트와 단말 간의 하향링크 품질이 양호한 것을 의미하므로, 단말은 남은 최대 프로브 응답 시간 동안 다른 프로브 응답 프레임을 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.

<79> 한편, 하향링크 경로손실이 목표 경로손실보다 큰 경우, 단말은 다른 액세스 포인트로부터 프로브 응답 프레임을 수신할 수 있다.

<80> 도 10은 본 발명의 또 다른 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.

<81> 도 10을 참조하면, 단말에서 수행되는 능동 검색 방법은 프로브 요청 프레임을 액세스 포인트에 전송하는 단계(S300), 임의의 액세스 포인트로부터 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계(S310), 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 품질 정보를 획득하는 단계(S320) 및 하향링크 품질이 미리 정의된 기준을 만족하는 경우 임의의 액세스 포인트와의 접속을 수행하는 단계(S330)를 포함한다.

<82> 단계 S300에서, 단말은 프로브 요청 프레임을 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 프로브 요청 프레임을 전송할 수 있고, 또는 불특정 액세스 포인트에 프로브 요청 프레임을 전송(즉, 브로드캐스팅)할 수

세스 포인트와의 접속(즉, 인증 과정 및 연결 과정)을 수행할 수 있다. 단말은 미

<86> 단말은 하향링크 경로손실이 목표 경로손실보다 작거나 같은 경우 임의의 액

단말에 전송될 수 있다.

링크) 목표 경로손실을 의미하며, 목표 경로손실은 프로브 응답 프레임에 포함되어

같은 임의의 액세스 포인트와의 접속을 수행할 수 있다. 미리 정의된 기준은 (하향

<85> 단계 S330에서, 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우 단

할 수 있다.

같은 이러한 프로브 응답 프레임에 의해 임의의 액세스 포인트의 전송 파워를 획득

송 파워 정보를 포함한 프로브 응답 프레임에 생성하여 단말에 전송할 수 있고, 단

브 응답 프레임에 의해 획득할 수도 있다. 즉, 임의의 액세스 포인트는 자신의 전

손실을 획득할 수 있다. 여기서, 단말은 임의의 액세스 포인트의 전송 파워를 프로

송 파워와 프로브 응답 프레임의 수신 신호 강도 간의 차이를 통해 하향링크 경로

액세스 포인트의 전송 파워를 알고 있는 경우, 단말은 임의의 액세스 포인트의 전

보를 포함한다. 즉, 하향링크 품질은 하향링크 경로손실을 의미할 수 있다. 임의의

하향링크 품질 정보를 획득할 수 있다. 하향링크 품질 정보는 하향링크 경로손실 정

<84> 단계 S320에서, 단말은 프로브 응답 프레임의 수신 신호 강도를 기반으로 하

향 프레임에 수신한 액세스 포인트를 중 하나의 액세스 포인트를 의미한다.

대응된 프로브 응답 프레임에 수신할 수 있다. 임의의 액세스 포인트는 프로브 요

<83> 단계 S310에서, 단말은 임의의 액세스 포인트로부터 프로브 요청 프레임에

있다.

2013-06-04

리 설정된 최대 프로브 응답 시간이 지나기 전에 임의의 액세스 포인트와의 접속을 수행할 수 있다. 즉, 단말은 미리 정의된 기준을 만족하는 프로브 응답 프레임을 수신한 경우 즉시 임의의 액세스 포인트와의 접속을 수행할 수 있다.

<87> 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우는 임의의 액세스 포인트와 단말 간의 하향링크 품질이 양호한 것을 의미하므로, 단말은 남은 최대 프로브 응답 시간 동안 다른 프로브 응답 프레임을 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.

<88> 한편, 하향링크 경로손실이 목표 경로손실보다 큰 경우, 단말은 다른 액세스 포인트로부터 프로브 응답 프레임을 수신할 수 있다.

<89> 도 11은 본 발명의 일 실시예에 따른 능동 검색 응답 방법을 도시한 흐름도이다.

<90> 도 11을 참조하면, 액세스 포인트에서 수행되는 능동 검색 응답 방법은 단말로부터 프로브 요청 프레임을 수신하는 단계(S400), 프로브 요청 프레임에 포함된 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득하는 단계(S410) 및 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 단말에 프로브 응답 프레임을 전송하는 단계(S420)를 포함한다.

<91> 단계 S400에서, 액세스 포인트는 단말로부터 프로브 요청 프레임을 수신할 수 있다. 즉, 프로브 요청 프레임에 포함된 SSID가 자신의 SSID인 경우 또는 SSID

가 null로 설정되어 있는 경우, 액세스 포인트는 해당 프로브 요청 프레임을 수신할 수 있다.

<92> 단계 S410에서, 액세스 포인트는 프로브 요청 프레임에 포함된 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득할 수 있다. 여기서, 단말의 신호 강도 정보는 단말의 전송 파워 정보를 의미하고, 상향링크 품질 정보는 상향링크 경로손실을 의미한다. 즉, 액세스 포인트는 프로브 요청 프레임에 포함된 단말의 전송 파워와 프로브 요청 프레임의 수신 신호 강도 간의 차이를 통해 상향링크 경로손실을 획득할 수 있다.

<93> 단계 S420에서, 액세스 포인트는 상향링크 품질이 미리 정의된 기준을 만족하는 경우 단말에 프로브 응답 프레임을 전송할 수 있다. 여기서, 미리 정의된 기준은 (상향링크) 목표 경로손실을 의미한다. 즉, 액세스 포인트는 상향링크 품질 (즉, 경로손실)이 목표 경로손실보다 작거나 같은 경우 단말에 프로브 응답 프레임을 전송할 수 있다. 한편, 상향링크 품질(즉, 경로손실)이 목표 경로손실보다 큰 경우, 액세스 포인트는 단말에 프로브 응답 프레임을 전송하지 않는다.

<94> 단말에 프로브 응답 프레임을 전송하는 경우, 액세스 포인트는 (하향링크) 목표 경로손실 정보를 포함한 프로브 응답 프레임을 단말에 전송할 수 있다. 프로브 응답 프레임에 포함된 목표 경로손실 정보는 단말에서 하향링크 품질을 획득하는데 사용될 수 있다.

시한 문제이다.

다(S500). 액세서 포인트를(20, 21, 22)은 수신한 프로토콜 요청 프로세싱을 기반으로

이전속 파악하 프로그램은 표제어, 품사, 문법, 표현의 의미를 주시각화한 자료를 기반으로 학습자의 학습 수준을 파악하여 학습자에게 적합한 학습 자료를 제공한다.

계로순원(모다 자거나 같은 경우, 해당 액세스 포인트는 포트브 응답 프레임에 다

<97> 예를 들어, 제1 액체스 포인트(20)에 대한 상하임크 경로손실이 미리 정의된

(10)에 전속할 수 있다.

있고, 포르트 응답 프레임 수신한 후 즉시 제1 액세스 포인트(20)와의 접속(중,

포괄적 응답 시간이 지나기 전에 제1 액세서 포인트(20)와의 접촉을 수행할 수 있

(20) 다름 간의 차별적 불평등이 양호한 것을 의미하므로, 다름은 다름 자체

(20)와이 결속은 수혜를 수 있다.

<99> 이상 실시예를 참조하여 설명하였지만, 해당 기술 분야의 숙련된 당업자는 하기의 특허 청구의 범위에 기재된 본 발명의 사상 및 영역으로부터 벗어나지 않는 범위 내에서 본 발명을 다양하게 수정 및 변경시킬 수 있음을 이해할 수 있을 것이다.

【부호의 설명】

<100> 10: 단말
 20: 제1 액세스 포인트
 21: 제2 액세스 포인트
 22: 제3 액세스 포인트

【특허청구범위】

【청구항 1】

단말(station)에서 수행되는 능동 검색 방법으로서,

상기 단말의 신호 강도(signal strength) 정보를 포함하는 프로브 요청 프레임(probe request frame)을 생성하는 단계; 및

상기 프로브 요청 프레임을 액세스 포인트(access point)에 전송하는 단계를 포함하는 것을 특징으로 하는 능동 검색 방법.

【청구항 2】

청구항 1에 있어서,

상기 신호 강도 정보는 상기 단말의 전송 파워(Tx power) 정보를 포함하는 것을 특징으로 하는 능동 검색 방법.

【청구항 3】

청구항 1에 있어서,

상기 능동 검색 방법은,

임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임(probe response frame)을 수신하는 단계; 및

상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함하되,

상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의된 기준을 만족하는 액세스 포인트인 것을 특징으로 하는 능동 검색 방법.

【청구항 4】

청구항 3에 있어서,
 상기 임의의 액세스 포인트와의 접속을 수행하는 단계는,
 최대 프로브 응답 시간(max probe response time)이 지나기 전에 상기 임의의 액세스 포인트와의 접속을 수행하는 것을 특징으로 하는 능동 검색 방법.

【청구항 5】

청구항 1에 있어서,
 상기 능동 검색 방법은,
 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계;
 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 경로손실을 획득하는 단계; 및
 상기 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함하는 것을 특징으로 하는 능동 검색 방법.

【청구항 6】

청구항 5에 있어서,
 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실(target pathloss) 정보를 포함하는 것을 특징으로 하는 능동 검색 방법.

2013-06-04

【청구항 7】

청구항 5에 있어서,

상기 제1 액세스 포인트와의 접속을 수행하는 단계는,

최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스 포인트와의 접속

를 수행하는 것을 특징으로 하는 응용 검색 방법.

【청구항 8】

청구항 5에 있어서,

상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의

된 기준을 만족하는 액세스 포인트인 것을 특징으로 하는 응용 검색 방법.

【청구항 9】

단말(station)에서 수행되는 응용 검색 방법으로서,

프로브 요청 프레임(probe request frame)을 액세스 포인트(access point)에

전송하는 단계;

임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답

프레임(probe response frame)을 수신하는 단계;

상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 품질 정보를 회

득하는 단계; 및

하향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포

인트와의 접속을 수행하는 단계를 포함하는 것을 특징으로 하는 응용 검색 방법.

【청구항 10】

청구항 9에 있어서,

상기 하향링크 품질 정보는 하향링크 경로손실 정보를 포함하는 것을 특징으로 하는 능동 검색 방법.

【청구항 11】

청구항 9에 있어서,

상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실(target pathloss) 정보를 포함하는 것을 특징으로 하는 능동 검색 방법.

【청구항 12】

액세스 포인트(access point)에서 수행되는 능동 검색 응답 방법으로서,

단말(station)로부터 프로브 요청 프레임(probe request frame)을 수신하는 단계;

상기 프로브 요청 프레임에 포함된 상기 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득하는 단계; 및

상향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 단말에 프로브 응답 프레임(probe response frame)을 전송하는 단계를 포함하는 것을 특징으로 하는 능동 검색 응답 방법.

【청구항 13】

청구항 12에 있어서,

상기 신호 강도 정보는 상기 단말의 전송 파워(Tx power) 정보를 포함하는 것을 특징으로 하는 능동 검색 응답 방법.

【청구항 14】

청구항 12에 있어서,

상기 상향링크 품질 정보는 상향링크 경로손실 정보를 포함하는 것을 특징으로 하는 능동 검색 응답 방법.

【청구항 15】

청구항 12에 있어서,

상기 프로브 응답 프레임을 전송하는 단계는,

목표 경로손실(target pathloss) 정보를 포함하는 상기 프로브 응답 프레임을 전송하는 것을 특징으로 하는 능동 검색 응답 방법.

【요약서】**【요약】**

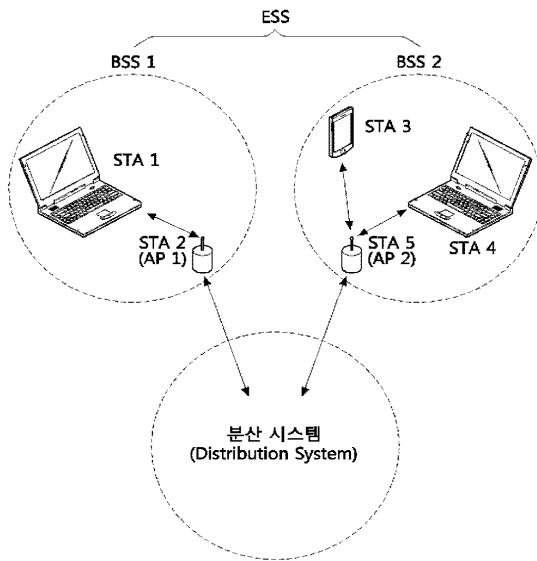
액세스 포인트의 검색 방법이 개시된다. 능동 검색 방법은, 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성하는 단계 및 프로브 요청 프레임을 액세스 포인트에 전송하는 단계를 포함한다. 따라서, 불필요한 시간 및 무선 자원이 낭비되는 것을 방지할 수 있다.

【대표도】

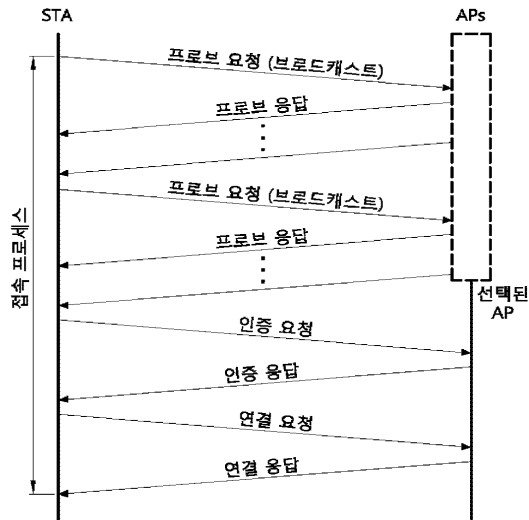
도 5

【도면】

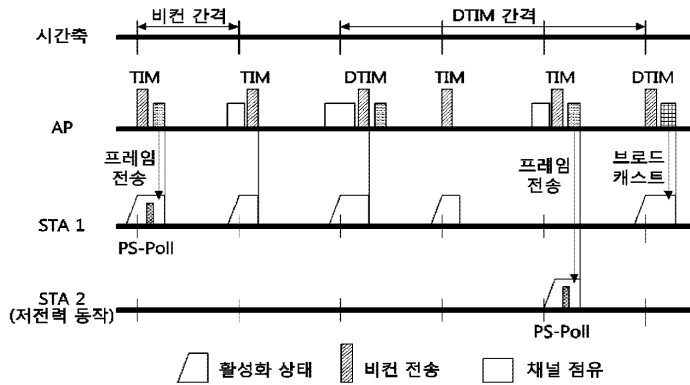
【도 1】



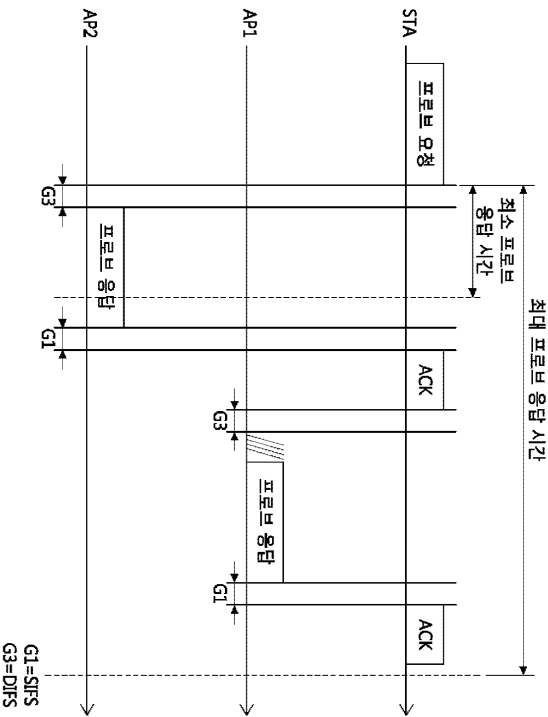
【도 2】



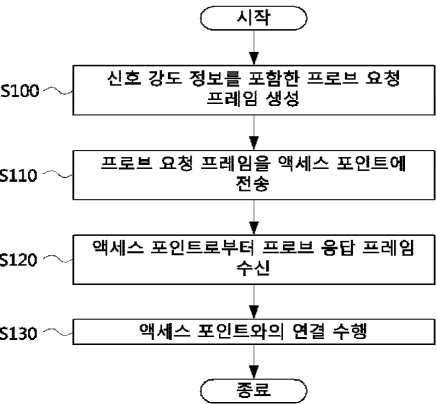
【도 3】



【도 4】



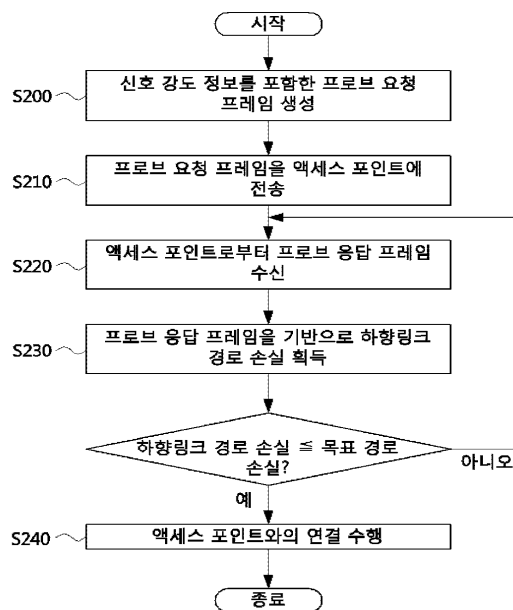
【도 5】



【도 6】

Order	Information	Notes
1	SSID	
2	Supported rates	
3	Request information	May be included if dot11MultiDomainCapabilityEnabled is true.
4	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
5	Tx Power	
Last	Vendor Specific	One or more vendor-specific information elements may appear in this frame. This information element follows all other information elements.

【도 7】



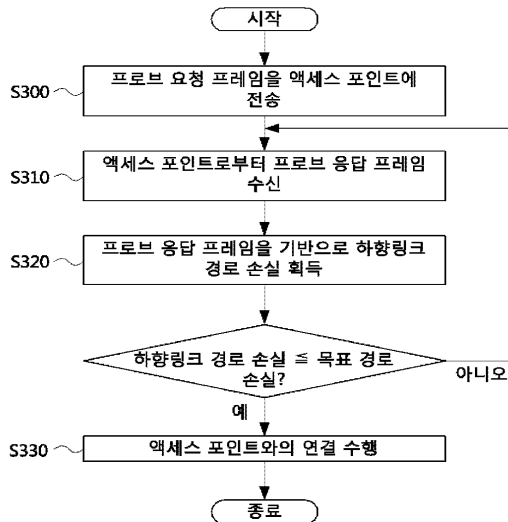
【도 8】

Order	Information	Notes
1	Timestamp	
2	Beacon interval	
3	Capability	
4	SSID	
5	Supported rates	
6	FH Parameter Set	The FH Parameter Set information element is present within Probe Response frames generated by STAs using FH PHYs.
7	DS Parameter Set	The DS Parameter Set information element is present within Probe Response frames generated by STAs using Clause 15, Clause 18, and Clause 19 PHYs.
8	CF Parameter Set	The CF Parameter Set information element is present only within Probe Response frames generated by APs supporting a PCF.
9	IBSS Parameter Set	The IBSS Parameter Set information element is present only within Probe Response frames generated by STAs in an IBSS.
10	Country	Included if dot11MultiDomainCapabilityEnabled or dot11SpectrumManagementRequired is true.
11	FH Parameters	FH Parameters, as specified in 7.3.2.10, may be included if dot11MultiDomainCapabilityEnabled is true.
12	FH Pattern Table	FH Pattern Table information, as specified in 7.3.2.11, may be included if dot11MultiDomainCapabilityEnabled is true.
13	Power Constraint	Shall be included if dot11SpectrumManagementRequired is true.
14	Channel Switch Announcement	May be included if dot11SpectrumManagementRequired is true.

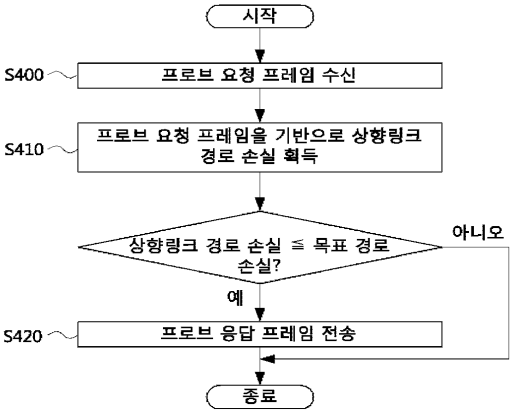
【도 9】

Order	Information	Notes
15	Quiet	May be included if dot11SpectrumManagementRequired is true.
16	IBSS DFS	Shall be included if dot11SpectrumManagementRequired is true in an IBSS.
17	TPC Report	Shall be included if dot11SpectrumManagementRequired is true.
18	ERP Information	The ERP Information element is present within Probe Response frames generated by STAs using ERPs and is optionally present in other cases.
19	Extended Supported Rates	The Extended Supported Rates element is present whenever there are more than eight supported rates, and it is optional otherwise.
20	RSN	The RSN information element is only present within Probe Response frames generated by STAs that have dot11RSNAEnabled set to TRUE.
21	BSS Load	The BSS Load element is present when dot11QosOptionImplemented and dot11QBSSLoadImplemented are both true.
22	EDCA Parameter Set	The EDCA Parameter Set element is present when dot11QosOptionImplemented is true.
23	Target Pathloss	

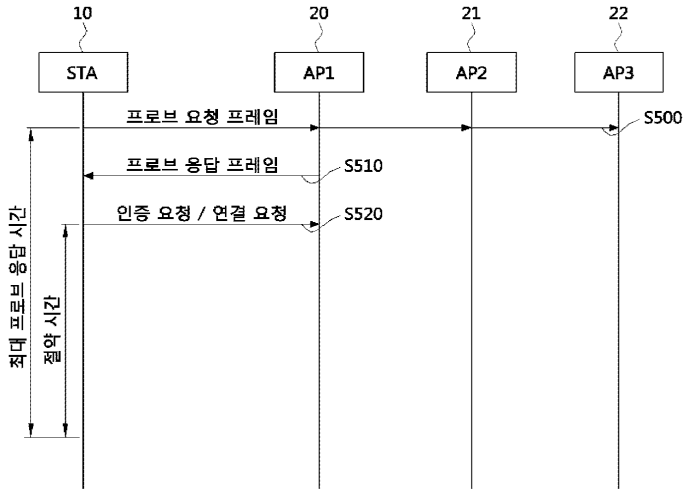
【도 10】



【도 11】



【도 12】



**DOCUMENT MADE AVAILABLE UNDER THE
PATENT COOPERATION TREATY (PCT)**

International application number:	PCT/KR2013/005733
International filing date:	27 June 2013 (27.06.2013)
Document type:	Certified copy of priority document
Document details:	Country/Office: KR
	Number: 10-2013-0063860
	Filing date: 04 June 2013 (04.06.2013)
Date of receipt at the International Bureau:	09 July 2013 (09.07.2013)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-bis)

34, chemin des Colombettes
1211 Geneva 20, Switzerland
www.wipo.int

(12) 특허협력조약에 의하여 공개된 국제출원

(19) 세계지식재산권기구
국제사무국

(43) 국제공개일
2014년 1월 3일 (03.01.2014)



(10) 국제공개번호
WO 2014/003472 A1

(51) 국제특허분류:
H04W 48/16 (2009.01)

(21) 국제출원번호: PCT/KR2013/005733

(22) 국제출원일: 2013년 6월 27일 (27.06.2013)

(25) 출원언어: 한국어

(26) 공개언어: 한국어

(30) 우선권정보:
10-2012-0070043 2012년 6월 28일 (28.06.2012) KR
10-2013-0063860 2013년 6월 4일 (04.06.2013) KR

(71) 출원인: 주식회사 케이티 (KT CORPORATION)
[KR/KR]; 436-711 경기도 성남시 분당구 불정로 90,
Gyeonggi-do (KR).

(72) 발명자: 윤병완 (YOON, Byung Wan); 137-140 서울시
서초구 우면동 17 KT 연구개발센터, Seoul (KR). 임수
환 (RIM, Su Hwan); 137-140 서울시 서초구 우면동 17
번지 KT 연구개발센터, Seoul (KR).

(74) 대리인: 특허법인 이상 (E-SANG PATENT & TRADE-
MARK LAW FIRM); 137-890 서울시 서초구 양재동
82-2 우도빌딩 3층, Seoul (KR).

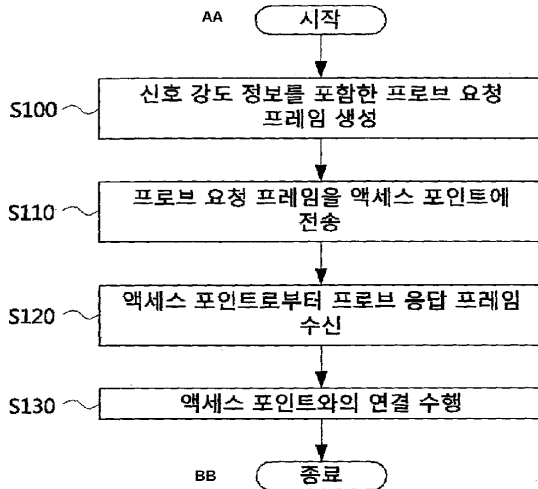
(81) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의
국내 권리의 보호를 위하여): AE, AG, AL, AM, AO,
AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KZ, LA,
LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK,
MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA,
PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE,
SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT,
TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의
역내 권리의 보호를 위하여): ARIPO (BW, GH, GM,
KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG,
ZM, ZW), 유라시아 (AM, AZ, BY, KG, KZ, RU, TJ,
TM), 유럽 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC,

[다음 쪽 계속]

(54) Title: METHOD FOR SCANNING FOR ACCESS POINT IN WIRELESS LAN SYSTEM

(54) 발명의 명칭 : 무선랜 시스템에서 액세스 포인트의 검색 방법



AA ... Start
S100 ... Generate a probe request frame including signal strength information
S110 ... Transmit the probe request frame to an access point
S120 ... Receive the probe request frame from the access point
S130 ... Connect to the access point
BB ... End

(57) Abstract: Disclosed is a method for scanning for an access point. An active scan method comprises the steps of: generating a probe request frame including information on the signal strength of a terminal; and transmitting the probe request frame to an access point. Thus, a waste of time and radio resources can be prevented.

(57) 요약서: 액세스 포인트의 검색 방법이 개시된다. 능동 검색 방법은, 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성하는 단계 및 프로브 요청 프레임을 액세스 포인트에 전송하는 단계를 포함한다. 따라서, 불필요한 시간 및 무선 자원이 낭비되는 것을 방지할 수 있다.

WO 2014/003472 A1



MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

— 청구범위 보정 기한 만료 전의 공개이며, 보정서를
접수하는 경우 그에 관하여 별도 공개함 (규칙
48.2(h))

공개:

— 국제조사보고서와 함께 (조약 제 21 조(3))

명세서

발명의 명칭: 무선랜 시스템에서 액세스 포인트의 검색 방법

기술분야

- [1] 본 발명은 액세스 포인트의 검색 방법에 관한 것으로, 더욱 상세하게는 무선랜 시스템에서 능동 검색 방식을 사용한 액세스 포인트의 검색 방법에 관한 것이다.

배경기술

- [2] 정보통신 기술의 발전과 더불어 다양한 무선 통신 기술이 개발되고 있다. 이 중에서 무선랜(wireless local area network, WLAN)은 무선 주파수 기술을 바탕으로 개인용 휴대 정보 단말기(personal digital assistant, PDA), 랩탑 컴퓨터(laptop computer), 휴대형 멀티미디어 플레이어(portable multimedia player, PMP) 등과 같은 휴대형 단말기를 사용하여 가정이나 기업 또는 특정 서비스 제공지역에서 무선으로 인터넷에 접속할 수 있도록 하는 기술이다.
- [3] 무선랜 기술에 대한 표준은 IEEE(Institute of Electrical and Electronics Engineers) 802.11 표준으로서 개발되고 있다. IEEE 802.11a는 5 GHz에서 비면허 대역(unlicensed band)을 이용하여, 54 Mbps의 전송 속도를 제공한다. IEEE 802.11b는 2.4 GHz에서 직접 시퀀스 방식(direct sequence spread spectrum, DSSS)을 적용하여, 11 Mbps의 전송 속도를 제공한다. IEEE 802.11g는 2.4 GHz에서 직교 주파수 분할 다중화(orthogonal frequency division multiplexing, OFDM)를 적용하여, 54 Mbps의 전송 속도를 제공한다. IEEE 802.11n은 다중입출력 OFDM(multiple input multiple output-OFDM, MIMO-OFDM)을 적용하여, 2 개의 공간적인 스트림(spatial stream)에 대해서 300 Mbps의 전송 속도를 제공한다. IEEE 802.11n에서는 채널 대역폭(channel bandwidth)을 40 MHz까지 지원하며, 이 경우에 600 Mbps의 전송 속도를 제공한다.
- [4] 이와 같은 무선랜의 보급이 활성화되고 이를 이용한 어플리케이션이 다양화됨에 따라, IEEE 802.11n이 지원하는 데이터 처리 속도보다 더 높은 처리율을 지원하기 위한 새로운 무선랜 기술에 대한 필요성이 증가하고 있다. 초고처리율(very high throughput, VHT) 무선랜 기술은 1 Gbps 이상의 데이터 처리 속도를 지원하기 위하여 제안되고 있는 IEEE 802.11 무선랜 기술 중의 하나이다. 그 중, IEEE 802.11ac는 5 GHz 이하 대역에서 초고처리율 제공을 위한 표준으로서 개발되고 있고, IEEE 802.11ad는 60 GHz 대역에서 초고처리율 제공을 위한 표준으로서 개발되고 있다.
- [5] 이러한 무선랜 기술을 기초로 한 시스템에 있어서, 액세스 포인트(access point)의 검색 방법에는 능동 검색(active scan) 방법과 수동 검색(passive scan) 방법이 있다. 액세스 포인트의 능동 검색 방법은 단말(station)이 프로브 요청 프레임(probe request frame)을 전송하고, 이를 수신한 액세스 포인트가 프로브 응답 프레임(probe response frame)으로 응답하는 방식으로 진행된다.

- [6] 프로브 요청 프레임의 SSID(service set identifier)를 null로 설정하여 불특정 다수의 액세스 포인트에 응답을 요청한 경우, 단말은 최대 프로브 응답 시간(Max_Probe_Response_Time) 동안 액세스 포인트로부터 프로브 응답 프레임을 수신하고, 프로브 응답 프레임을 전송한 액세스 포인트들 중에서 무선 환경이 가장 좋은 액세스 포인트에 접속 요청을 한다. 즉, 무선 환경이 좋은 액세스 포인트로부터 프로브 응답 프레임을 수신한 경우에도 단말은 최대 프로브 응답 시간까지 기다린 후 액세스 포인트에 접속 요청을 해야 하므로, 불필요한 시간이 낭비되는 문제점이 있다.
- [7] 액세스 포인트의 측면에서, 액세스 포인트는 수신된 프로브 요청 프레임에 매번 프로브 응답 프레임으로 응답을 해야 하므로, 무선 환경의 고려 없는 무조건적인 응답으로 인해 무선 자원이 낭비되는 문제점이 있다.

발명의 상세한 설명

기술적 과제

- [8] 상기와 같은 문제점을 해결하기 위한 본 발명의 목적은, 단말의 출력 정보를 포함하는 프로브 요청 프레임을 사용하여 능동 검색을 수행하기 위한 액세스 포인트의 능동 검색 방법을 제공하는 데 있다.
- [9] 상기와 같은 문제점을 해결하기 위한 본 발명의 다른 목적은, 액세스 포인트의 출력 정보를 포함하는 프로브 응답 프레임을 사용하여 능동 검색을 수행하기 위한 액세스 포인트의 능동 검색 방법을 제공하는 데 있다.

과제 해결 수단

- [10] 상기 목적을 달성하기 위한 본 발명의 일 실시예에 따른 능동 검색 방법은, 단말의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성하는 단계 및 상기 프로브 요청 프레임을 액세스 포인트에 전송하는 단계를 포함한다.
- [11] 여기서, 상기 신호 강도 정보는 상기 단말의 전송 파워 정보를 포함할 수 있다.
- [12] 여기서, 상기 능동 검색 방법은, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계 및 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함하되, 상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의된 기준을 만족하는 액세스 포인트일 수 있다.
- [13] 여기서, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계는, 최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- [14] 여기서, 상기 능동 검색 방법은, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계, 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 경로손실을 획득하는 단계 및 상기 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더 포함할 수 있다.

- [15] 여기서, 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실 정보를 포함할 수 있다.
- [16] 여기서, 상기 제1 액세스 포인트와의 접속을 수행하는 단계는, 최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- [17] 여기서, 상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이 미리 정의된 기준을 만족하는 액세스 포인트일 수 있다.
- [18] 상기 목적을 달성하기 위한 본 발명의 다른 실시예에 따른 능동 검색 방법은, 프로브 요청 프레임을 액세스 포인트에 전송하는 단계, 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계, 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 품질 정보를 획득하는 단계 및 하향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 포함한다.
- [19] 여기서, 상기 하향링크 품질 정보는 하향링크 경로손실 정보를 포함할 수 있다.
- [20] 여기서, 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표 경로손실 정보를 포함할 수 있다.
- [21] 상기 다른 목적을 달성하기 위한 본 발명의 일 실시예에 따른 능동 검색 응답 방법은, 단말로부터 프로브 요청 프레임을 수신하는 단계, 상기 프로브 요청 프레임에 포함된 상기 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득하는 단계 및 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 단말에 프로브 응답 프레임을 전송하는 단계를 포함한다.
- [22] 여기서, 상기 신호 강도 정보는 상기 단말의 전송 파워 정보를 포함할 수 있다.
- [23] 여기서, 상기 상향링크 품질 정보는 상향링크 경로손실 정보를 포함할 수 있다.
- [24] 여기서, 상기 프로브 응답 프레임을 전송하는 단계는, 목표 경로손실 정보를 포함하는 상기 프로브 응답 프레임을 전송할 수 있다.

발명의 효과

- [25] 본 발명에 의하면, 액세스 포인트는 프로브 요청 프레임에 대한 상향링크 경로손실이 미리 정의된 기준을 만족하는 단말에만 프로브 응답 프레임으로 응답할 수 있으므로, 불필요한 무선 자원이 낭비되는 것을 방지할 수 있다.
- [26] 한편, 단말은 프로브 응답 프레임에 대한 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우, 최대 프로브 응답 시간까지 기다리지 않고 즉시 해당 액세스 포인트에 연결을 수행할 수 있으므로, 불필요한 시간이 낭비되는 것을 방지할 수 있다.

도면의 간단한 설명

- [27] 도 1은 IEEE 802.11 무선랜 시스템의 구성에 대한 일 실시예를 도시한 개념도이다.
- [28] 도 2는 인프라스트럭처 BSS에서 단말의 연결 과정을 도시한 개념도이다.

- [29] 도 3은 액세스 포인트의 데이터 전송 과정에 대한 일 실시예를 도시한 개념도이다.
- [30] 도 4는 능동 검색 방법의 일 실시예를 도시한 개념도이다.
- [31] 도 5는 본 발명의 일 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.
- [32] 도 6은 프로브 요청 프레임의 구성을 도시한 개념도이다.
- [33] 도 7은 본 발명의 다른 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.
- [34] 도 8은 프로브 응답 프레임(1 ~ 14)의 구성을 도시한 개념도이다.
- [35] 도 9는 프로브 응답 프레임(15 ~ 23)의 구성을 도시한 개념도이다.
- [36] 도 10은 본 발명의 또 다른 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.
- [37] 도 11은 본 발명의 일 실시예에 따른 능동 검색 응답 방법을 도시한 흐름도이다.
- [38] 도 12는 본 발명의 일 실시예에 따른 액세스 포인트의 능동 검색 방법을 도시한 순서도이다.

발명의 실시를 위한 형태

- [39] 본 발명은 다양한 변경을 가할 수 있고 여러 가지 실시예를 가질 수 있는 바, 특정 실시예들을 도면에 예시하고 상세하게 설명하고자 한다.
- [40] 그러나, 이는 본 발명을 특정한 실시 형태에 대해 한정하려는 것이 아니며, 본 발명의 사상 및 기술 범위에 포함되는 모든 변경, 균등물 내지 대체물을 포함하는 것으로 이해되어야 한다.
- [41] 제1, 제2 등의 용어는 다양한 구성요소들을 설명하는데 사용될 수 있지만, 상기 구성요소들은 상기 용어들에 의해 한정되어서는 안 된다. 상기 용어들은 하나의 구성요소를 다른 구성요소로부터 구별하는 목적으로만 사용된다. 예를 들어, 본 발명의 권리 범위를 벗어나지 않으면서 제1 구성요소는 제2 구성요소로 명명될 수 있고, 유사하게 제2 구성요소도 제1 구성요소로 명명될 수 있다. 및/또는 이라는 용어는 복수의 관련된 기재된 항목들의 조합 또는 복수의 관련된 기재된 항목들 중의 어느 항목을 포함한다.
- [42] 어떤 구성요소가 다른 구성요소에 "연결되어" 있다거나 "접속되어" 있다고 언급된 때에는, 그 다른 구성요소에 직접적으로 연결되어 있거나 또는 접속되어 있을 수도 있지만, 중간에 다른 구성요소가 존재할 수도 있다고 이해되어야 할 것이다. 반면에, 어떤 구성요소가 다른 구성요소에 "직접 연결되어" 있다거나 "직접 접속되어" 있다고 언급된 때에는, 중간에 다른 구성요소가 존재하지 않는 것으로 이해되어야 할 것이다.
- [43] 본 출원에서 사용한 용어는 단지 특정한 실시예를 설명하기 위해 사용된 것으로, 본 발명을 한정하려는 의도가 아니다. 단수의 표현은 문맥상 명백하게 다르게 뜻하지 않는 한, 복수의 표현을 포함한다. 본 출원에서, "포함하다" 또는 "가지다" 등의 용어는 명세서상에 기재된 특징, 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것이 존재함을 지정하려는 것이지, 하나 또는 그 이상의 다른 특징들이나 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것들의

존재 또는 부가 가능성을 미리 배제하지 않는 것으로 이해되어야 한다.

- [44] 다르게 정의되지 않는 한, 기술적이거나 과학적인 용어를 포함해서 여기서 사용되는 모든 용어들은 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자에 의해 일반적으로 이해되는 것과 동일한 의미를 가지고 있다. 일반적으로 사용되는 사전에 정의되어 있는 것과 같은 용어들은 관련 기술의 문맥 상 가지는 의미와 일치하는 의미를 가진 것으로 해석되어야 하며, 본 출원에서 명백하게 정의하지 않는 한, 이상적이거나 과도하게 형식적인 의미로 해석되지 않는다.
- [45] 이하, 첨부한 도면들을 참조하여, 본 발명의 바람직한 실시예를 보다 상세하게 설명하고자 한다. 본 발명을 설명함에 있어 전체적인 이해를 용이하게 하기 위하여 도면상의 동일한 구성요소에 대해서는 동일한 참조부호를 사용하고 동일한 구성요소에 대해서 중복된 설명은 생략한다.
- [46]
- [47] 명세서 전체에서, 스테이션(station, STA)은 IEEE(Institute of Electrical and Electronics Engineers) 802.11 표준의 규정을 따르는 매체 접속 제어(media access control, MAC)와 무선 매체(media)에 대한 물리 계층(physical layer) 인터페이스(interface)를 포함하는 임의의 기능 매체를 의미한다. 스테이션(STA)은 액세스 포인트(access point, AP)인 스테이션(STA)과 비-액세스 포인트(non-AP)인 스테이션(STA)으로 구분할 수 있다. 액세스 포인트(AP)인 스테이션(STA)은 단순히 액세스 포인트(AP)로 불릴 수 있고, 비-액세스 포인트(non-AP)인 스테이션(STA)은 단순히 단말(terminal)로 불릴 수 있다.
- [48] 스테이션(STA)은 프로세서(Processor)와 트랜시버(transceiver)를 포함하고, 사용자 인터페이스와 디스플레이(display) 장치 등을 더 포함할 수 있다. 프로세서는 무선 네트워크를 통해 전송할 프레임을 생성하거나 무선 네트워크를 통해 수신된 프레임을 처리하도록 고안된 유닛(unit)을 의미하며, 스테이션(STA)을 제어하기 위한 여러 가지 기능을 수행한다. 트랜시버는 프로세서와 기능적으로 연결되어 있으며, 스테이션(STA)을 위하여 무선 네트워크를 통해 프레임을 송수신하도록 고안된 유닛을 의미한다.
- [49] 액세스 포인트(AP)는 집중 제어기, 기지국(base station, BS), 노드-B(node-B), e노드-B, BTS(base transceiver system), 또는 사이트 제어기 등을 지칭할 수 있고, 그것들의 일부 또는 전부 기능을 포함할 수 있다.
- [50] 단말은 무선 송수신 유닛(wireless transmit/receive unit, WTRU), 사용자 장비(user equipment, UE), 사용자 단말(user terminal, UT), 액세스 단말(access terminal, AT), 이동국(mobile station, MS), 휴대용 단말(mobile terminal), 가입자 유닛(subscriber unit), 가입자 스테이션(subscriber station, SS), 무선 기기(wireless device), 또는 이동 가입자 유닛(mobile subscriber unit) 등을 지칭할 수 있고, 그것들의 일부 또는 전부 기능을 포함할 수 있다.
- [51] 여기서, 단말로 통신이 가능한 데스크탑 컴퓨터(desktop computer), 랩탑 컴퓨터(laptop computer), 태블릿(tablet) PC, 무선전화기(wireless phone),

모바일폰(mobile phone), 스마트폰(smart phone), e-book 리더기, PMP(Portable Multimedia Player), 휴대용 게임기, 네비게이션(navigation) 장치, 디지털 카메라(digital camera), DMB (Digital Multimedia Broadcasting) 재생기, 디지털 음성 녹음기(digital audio recorder), 디지털 음성 재생기(digital audio player), 디지털 영상 녹화기(digital picture recorder), 디지털 영상 재생기(digital picture player), 디지털 동영상 녹화기(digital video recorder), 디지털 동영상 재생기(digital video player) 등을 사용할 수 있다.

- [52]
- [53] 도 1은 IEEE 802.11 무선랜 시스템의 구성에 대한 일 실시예를 도시한 개념도이다.
- [54] 도 1을 참조하면, IEEE 802.11 무선랜 시스템은 적어도 하나의 기본 서비스 세트(basic service set, BSS)를 포함한다. BSS는 성공적으로 동기화를 이루어서 서로 통신할 수 있는 스테이션(STA 1, STA 2(AP 1), STA 3, STA 4, STA 5(AP 2))의 집합을 의미하며, 특정 영역을 의미하는 개념은 아니다.
- [55] BSS는 인프라스트럭처 BSS(infrastructure BSS)와 독립 BSS(independent BSS, IBSS)로 구분할 수 있으며, BSS 1과 BSS 2는 인프라스트럭처 BSS를 의미한다. BSS 1은 단말(STA 1), 분배 서비스(distribution service)를 제공하는 액세스 포인트(STA 2(AP 1)) 및 다수의 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 연결하는 분배 시스템(Distribution System, DS)을 포함할 수 있다. BSS 1에서 액세스 포인트(STA 2(AP 1))는 단말(STA 1)을 관리한다.
- [56] BSS 2는 단말(STA 3, STA 4), 분배 서비스를 제공하는 액세스 포인트(STA 5(AP 2)) 및 다수의 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 연결하는 분배 시스템을 포함할 수 있다. BSS 2에서 액세스 포인트(STA 5(AP 2))는 단말(STA 3, STA 4)을 관리한다.
- [57] 한편, 독립 BSS는 애드-혹(ad-hoc) 모드로 동작하는 BSS이다. IBSS는 액세스 포인트를 포함하지 않으므로, 중앙에서 관리 기능을 수행하는 개체(centralized management entity)가 존재하지 않는다. 즉, IBSS에서 단말들은 분산된 방식(distributed manner)으로 관리된다. IBSS에서 모든 단말은 이동 단말으로 이루어질 수 있으며, 분배 시스템(DS)으로 접속이 허용되지 않으므로 자기 완비적 네트워크(self-contained network)를 이룬다.
- [58] 액세스 포인트(STA 2(AP 1), STA 5(AP 2))는 자신에게 결합된 단말(STA 1, STA 3, STA 4)을 위하여 무선 매체를 통한 분산 시스템(DS)에 대한 접속을 제공한다. BSS 1 또는 BSS 2에서 단말들(STA 1, STA 3, STA 4) 사이의 통신은 일반적으로 액세스 포인트(STA 2(AP 1), STA 5(AP 2))를 통해 이루어지나, 다이렉트 링크(direct link)가 설정된 경우에는 단말들(STA 1, STA 3, STA 4) 간의 직접 통신이 가능하다.
- [59] 복수의 인프라스트럭처 BSS는 분배 시스템(DS)을 통해 상호 연결될 수 있다. 분배 시스템(DS)을 통하여 연결된 복수의 BSS를 확장 서비스 세트(extended

service set, ESS)라 한다. ESS에 포함되는 스테이션들은 서로 통신할 수 있으며, 동일한 ESS 내에서 단말은 끊임 없이 통신하면서 하나의 BSS에서 다른 BSS로 이동할 수 있다.

- [60] 분배 시스템(DS)은 하나의 액세스 포인트가 다른 액세스 포인트와 통신하기 위한 메커니즘(mechanism)으로서, 이에 따르면 액세스 포인트는 자신이 관리하는 BSS에 결합되어 있는 단말들을 위해 프레임을 전송하거나, 다른 BSS로 이동한 임의의 단말을 위해 프레임을 전송할 수 있다. 또한, 액세스 포인트는 유선 네트워크 등과 같은 외부 네트워크와 프레임을 송수신할 수가 있다. 이러한 분배 시스템(DS)은 반드시 네트워크일 필요는 없으며, IEEE 802.11 표준에 규정된 소정의 분배 서비스를 제공할 수 있다면 그 형태에 대해서는 아무런 제한이 없다. 예컨대, 분배 시스템은 메쉬 네트워크(mesh network)와 같은 무선 네트워크이거나, 액세스 포인트들을 서로 연결시켜 주는 물리적인 구조물일 수 있다.
- [61] 후술할 본 발명의 일 실시예에 따른 액세스 포인트의 능동 검색 방법은 상기에서 설명한 IEEE 802.11 무선랜 시스템에 적용될 수 있으며, 더불어 IEEE 802.11 무선랜 시스템뿐만 아니라 WPAN(Wireless Personal Area Network), WBAN(Wireless Body Area Network) 등과 같은 다양한 네트워크에 적용될 수 있다.
- [62]
- [63] 도 2는 인프라스트럭처 BSS에서 단말의 연결 과정을 도시한 개념도이다.
- [64] 인프라스트럭처 BSS에서 단말(STA)이 데이터를 송수신하기 위해, 먼저 단말(STA)은 액세스 포인트(AP)와 연결되어야 한다.
- [65] 도 2를 참조하면, 인프라스트럭처 BSS에서 단말(STA)의 연결 과정은 크게 1) 액세스 포인트(AP)를 탐지하는 단계(probe step), 2) 탐지된 액세스 포인트(AP)와의 인증 단계(authentication step), 3) 인증된 액세스 포인트(AP)와의 연결 단계(association step)로 구분된다.
- [66] 단말(STA)은 먼저 탐지 프로세스(process)를 통해 이웃하는 액세스 포인트들(APs)을 탐지할 수 있다. 탐지 프로세스는 수동 스캐닝(passive scanning) 방법과 능동 스캐닝(active scanning) 방법으로 구분된다. 수동 스캐닝 방법은 이웃하는 액세스 포인트들(APs)이 전송하는 비컨을 엿들음(overhearing)으로써 수행될 수 있다. 한편, 능동 스캐닝 방법은 프로브 요청 프레임(probe request frame)을 브로드캐스팅(broadcasting)함으로써 수행될 수 있다. 프로브 요청 프레임을 수신한 액세스 포인트(AP)는 프로브 요청 프레임에 대응된 프로브 응답 프레임(probe response frame)을 해당 단말(STA)에 전송할 수 있다. 단말(STA)은 프로브 응답 프레임을 수신함으로써 이웃하는 액세스 포인트들(APs)의 존재를 알 수 있다.
- [67] 그 후, 단말(STA)은 탐지된 액세스 포인트(AP)와의 인증을 수행하며, 탐지된 복수의 액세스 포인트들(APs)과의 인증을 수행할 수 있다. IEEE 802.11 표준에

따른 인증 알고리즘(algorithm)은 두 개의 인증 프레임을 교환하는 오픈 시스템(open system) 알고리즘, 네 개의 인증 프레임을 교환하는 공유 키(shared key) 알고리즘으로 구분된다. 이러한 인증 알고리즘을 기초로 인증 요청 프레임(authentication request frame)과 인증 응답 프레임(authentication response frame)을 교환하는 과정을 통해, 단말(STA)은 액세스 포인트(AP)와의 인증을 수행할 수 있다.

- [68] 마지막으로, 단말(STA)은 인증된 복수의 액세스 포인트들(APs) 중 하나의 액세스 포인트(AP)를 선택하고, 선택된 액세스 포인트(AP)와 연결 과정을 수행한다. 즉, 단말(STA)은 선택된 액세스 포인트(AP)에 연결 요청 프레임(association request frame)을 전송하고, 연결 요청 프레임을 수신한 액세스 포인트(AP)는 연결 요청 프레임에 대응된 연결 응답 프레임(association response frame)을 해당 단말(STA)에 전송한다. 이와 같이, 연결 요청 프레임과 연결 응답 프레임을 교환하는 과정을 통해, 단말(STA)은 액세스 포인트(AP)와 연결 과정을 수행할 수 있다.

[69]

- [70] 도 3은 액세스 포인트의 데이터 전송 과정에 대한 일 실시예를 도시한 개념도이다.

- [71] 도 3을 참조하면, 액세스 포인트(AP)는 주기적으로 비컨을 브로드캐스팅(broadcasting) 하며, 3개의 비컨 간격(interval)으로 DTIM이 포함된 비컨을 브로드캐스팅할 수 있다. 전력 절감 모드(power save mode, PSM)의 단말(STA 1, STA 2)은 주기적으로 깨어나(awake) 비컨을 수신하고, 비컨에 포함된 TIM 또는 DTIM을 확인하여 자신에게 전송될 데이터가 액세스 포인트에 버퍼링되어 있는지 확인한다. 이때, 버퍼링된 데이터가 존재하는 경우 단말(STA 1, STA 2)은 깨어있는 상태를 유지하여 액세스 포인트(AP)로부터 데이터를 수신하고, 버퍼링된 데이터가 존재하지 않는 경우 단말(STA 1, STA 2)은 전력 절감 상태(즉, doze 상태)로 돌아간다.

- [72] 즉, 자신의 AID에 대응하는 TIM 내의 비트가 1로 설정되어 있는 경우, 단말(STA 1, STA 2)은 자신이 깨어 있고 데이터를 받을 준비가 되어 있음을 알리는 PS(Power Save)-Poll 프레임(또는, 트리거(trigger) 프레임)을 액세스 포인트(AP)에 전송하고, 액세스 포인트(AP)는 PS-Poll 프레임을 수신함으로써 단말(STA 1, STA 2)이 데이터 수신을 위한 준비가 되었음을 확인하고, 단말(STA 1, STA 2)에 데이터 또는 ACK(acknowledgement)을 전송할 수 있다. ACK을 단말(STA 1, STA 2)에 전송한 경우, 액세스 포인트(AP)는 적절한 시점에 데이터를 단말(STA 1, STA 2)에 전송한다. 한편, 자신의 AID에 대응하는 TIM 내의 비트가 0으로 설정되어 있는 경우, 단말(STA 1, STA 2)은 전력 절감 상태로 돌아간다.

[73]

- [74] 도 4는 능동 검색 방법의 일 실시예를 도시한 개념도이다.

- [75] 도 4를 참조하면, 단말(STA)은 프로브 요청 프레임을 브로드캐스팅할 수 있고, 프로브 요청 프레임을 수신한 액세스 포인트들(AP 1, AP 2)은 프로브 응답 프레임으로 응답할 수 있다. 단말(STA)은 최소 프로브 응답 시간(min_probe_response_time) 동안 프로브 응답 프레임을 수신하지 못한 경우 프로브 요청 프레임을 다시 전송할 수 있다. 단말(STA)은 최대 프로브 응답 시간(max_probe_response_time) 동안 프로브 응답 프레임을 수신하며, 프로브 응답 프레임을 전송한 액세스 포인트들(AP 1, AP 2) 중에서 무선 환경이 가장 좋은 액세스 포인트에 접속 요청을 한다. 즉, 무선 환경이 좋은 액세스 포인트로부터 프로브 응답 프레임을 수신한 경우에도 단말은 최대 프로브 응답 시간까지 기다린 후 액세스 포인트에 접속 요청을 해야 하므로, 불필요한 시간이 낭비되는 문제가 있다.
- [76]
- [77] 도 5는 본 발명의 일 실시예에 따른 능동 검색 방법을 도시한 흐름도이다.
- [78] 도 5를 참조하면, 단말에서 수행되는 능동 검색 방법은 단말의 신호 강도(signal strength) 정보를 포함한 프로브 요청 프레임을 생성하는 단계(S100) 및 프로브 요청 프레임을 액세스 포인트에 전송하는 단계(S110)를 포함한다. 또한, 능동 검색 방법은 임의의 액세스 포인트로부터 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신하는 단계(S120) 및 임의의 액세스 포인트와의 접속(access)을 수행하는 단계(S130)를 더 포함할 수 있다.
- [79] 단계 S100에서, 단말은 자신의 신호 강도 정보를 포함하는 프로브 요청 프레임을 생성할 수 있으며, 신호 강도 정보는 전송 파워(Tx power) 정보를 포함할 수 있다. 즉, 신호 강도는 전송 파워를 의미할 수 있다.
- [80] 도 6은 프로브 요청 프레임의 구성을 도시한 개념도이다.
- [81] 도 6을 참조하면, 프로브 요청 프레임은 전송 파워(5, Tx Power) 정보를 포함한다. 즉, 단말은 도 6에 도시된 바와 같이 전송 파워 정보를 포함한 프로브 요청 프레임을 생성할 수 있다.
- [82] 다시 도 5를 참조하면, 단계 S110에서, 단말은 프로브 요청 프레임을 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 프로브 요청 프레임을 전송할 수 있고, 또는 불특정 액세스 포인트에 프로브 요청 프레임을 전송(즉, 브로드캐스팅)할 수 있다.
- [83] 단계 S120에서, 단말은 임의의 액세스 포인트로부터 프로브 요청 프레임에 대응된 프로브 응답 프레임을 수신할 수 있다. 임의의 액세스 포인트는 프로브 요청 프레임을 수신한 액세스 포인트들 중 하나의 액세스 포인트를 의미한다. 또한, 임의의 액세스 포인트는 단말에 대한 상향링크 품질(예를 들어, 경로손실)이 미리 정의된 기준을 만족하는 액세스 포인트를 의미할 수 있다. 여기서, 미리 정의된 기준은 (상향링크) 목표 경로손실(target pathloss)을 의미하며, 임의의 액세스 포인트는 목표 경로손실보다 작거나 같은 상향링크 경로손실을 가지는 액세스 포인트를 의미할 수 있다.

PCT/KR2013/005733

WO 2014/003472

10

[84] 단계 S130에서, 단말은 임의의 액세스 포인트와의 접속(authentication)(즉, 인증(authentication))을 수행할 수 있다. 단말은 미리 설정된 최대 프로토콜 응답 시간이 지나기 전에 임의의 액세스 포인트와의 접속을 수행할 수 있다. 즉, 단말은 프로토콜 응답 프로세스를 수신한 후 즉시 임의의 액세스 포인트와의 접속을 수행할 수 있다. 상향링크 경로에 액세스 포인트와 단말 간의 상향링크 품질이 양호한 경우, 단말은 임의의 액세스 포인트와 단말 간의 상향링크 품질이 양호한 것을 의미하므로, 단말은 남은 최대 프로토콜 응답 시간 동안 다른 프로토콜 응답 프로세스를 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.

[85] 도 7은 본 발명의 다른 실시예에 따른 응용 검색 방법을 도시한 흐름도이다. 도 7을 참조하면, 단말에서 수행되는 응용 검색 방법은 단말의 신호 강도 [86] [87]

정보를 포함하는 프로토콜 응답 프로세스를 생성하는 단계(S200), 프로토콜 응답 프로세스를 액세스 포인트에 전송하는 단계(S210), 임의의 액세스 포인트로부터 프로토콜 응답 프로세스에 대응된 프로토콜 응답 프로세스를 수신하는 단계(S220), 단계(S230) 및 상향링크 경로에 액세스 포인트와 단말 간의 상향링크 품질이 양호한 경우 임의의 액세스 포인트와의 접속을 수행하는 단계(S240)를 포함한다. 단계 S200에서, 단말은 자신의 신호 강도 정보를 포함하는 프로토콜 응답 프로세스를 생성할 수 있으며, 신호 강도 정보는 전송 파워 정보 포함할 수 있다.

[88] [89] 즉, 신호 강도는 전송 파워를 의미할 수 있다. 단계 S210에서, 단말은 프로토콜 응답 프로세스를 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 프로토콜 응답 프로세스를 전송할 수 있고, 또는 물리적 액세스 포인트에 프로토콜 응답 프로세스를 전송(즉, 브로드캐스팅)할 수 있다.

[90] 단계 S220에서, 단말은 임의의 액세스 포인트로부터 프로토콜 응답 프로세스에 대응된 프로토콜 응답 프로세스를 수신할 수 있다. 임의의 액세스 포인트는 프로토콜 응답 프로세스를 수신한 액세스 포인트들 중 하나인 액세스 포인트를 의미한다. 또한, 임의의 액세스 포인트는 단말에 대한 상향링크 품질(예를 들어, 경로 손실)이 미리 정의된 기준을 만족하는 액세스 포인트를 의미할 수 있다. 여기서, 미리 정의된 기준은 (상향링크) 목표 경로 손실을 의미하며, 임의의 액세스 포인트는 목표 경로 손실보다 작거나 같은 상향링크 경로 손실을 가지는 액세스 포인트를 의미할 수 있다.

[91] 단계 S230에서, 단말은 프로토콜 응답 프로세스의 신호 강도를 기반으로 상향링크 경로 손실을 획득할 수 있다. 임의의 액세스 포인트의 전송 파워를 받고 있는 경우, 단말은 임의의 액세스 포인트의 전송 파워와 프로토콜 응답 프로세스의 수신 신호 강도 간의 차이를 통해 상향링크 경로 손실을 획득할 수 있다. 여기서, 단말은 임의의 액세스 포인트의 전송 파워를 프로토콜 응답 프로세스를 통해 획득할 수도 있다. 즉, 임의의 액세스 포인트는 자신의 전송 파워 정보 포함 프로토콜

- [92] 단계를 통해 임의의 액세스 포인트의 전송 파워를 획득할 수 있다.
- [92] 단계 S240에서, 하향링크 경로 손실이 미리 정의된 기준을 만족하는 경우 단말은 임의의 액세스 포인트와의 접속을 수행할 수 있다. 미리 정의된 기준은 (하향링크) 목표 경로 손실을 의미하며, 목표 경로 손실은 목표 응답 프레임에 포함되어 단말에 전송될 수 있다.
- [93] 도 8 및 도 9는 목표 응답 프레임의 구성을 도시한 개념도이다.
- [94] 도 8 및 도 9를 참조하면, 목표 응답 프레임은 목표 경로 손실(23, Target Pathloss) 정보를 포함한다. 즉, 임의의 액세스 포인트는 도 8 및 도 9에 도시된 바와 같이 목표 경로 손실을 포함할 목표 응답 프레임을 생성할 수 있으며, 생성된 목표 응답 프레임을 단말에 제공할 수 있다.
- [95] 다시 도 7를 참조하면, 단말은 하향링크 경로 손실이 목표 경로 손실보다 작거나 같은 경우 임의의 액세스 포인트와의 접속(즉, 인증 과정 및 연결 과정)을 수행할 수 있다. 단말은 미리 설정된 최대 목표 응답 시간 동안 다른 목표 응답 프레임 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- [97] 한편, 하향링크 경로 손실이 목표 경로 손실보다 큰 경우, 단말은 다른 액세스 포인트로부터 목표 응답 프레임 수신할 수 있다.
- [98]
- [99] 도 10은 본 발명의 또 다른 실시예에 따른 응용 검색 방법을 도시한 흐름도이다.
- [100] 도 10을 참조하면, 단말에서 수행되는 응용 검색 방법은 목표 응답 프레임 액세스 포인트에 전송하는 단계(S300), 임의의 액세스 포인트로부터 목표 응답 프레임에 대응된 목표 응답 프레임 수신하는 단계(S310), 목표 응답 프레임의 신호 강도를 기반으로 하향링크 품질 정보를 획득하는 단계(S320) 및 하향링크 품질이 미리 정의된 기준을 만족하는 경우 임의의 액세스 포인트와의 접속을 수행하는 단계(S330)를 포함한다.
- [101] 단계 S300에서, 단말은 목표 응답 프레임 액세스 포인트에 전송할 수 있다. 여기서, 단말은 특정 액세스 포인트에 목표 응답 프레임 전송할 수 있고, 또는 특정 액세스 포인트에 목표 응답 프레임 전송(즉, 브로드캐스팅)할 수 있다.
- [102] 단계 S310에서, 단말은 임의의 액세스 포인트로부터 목표 응답 프레임에 대응된 목표 응답 프레임 수신할 수 있다. 임의의 액세스 포인트는 목표 응답 프레임 수신할 수 있는 액세스 포인트들 중 하나의 액세스 포인트를 의미한다.

- [103] 단계 S320에서, 단말은 프로브 응답 프레임의 수신 신호 강도를 기반으로 하향링크 품질 정보를 획득할 수 있다. 하향링크 품질 정보는 하향링크 경로손실 정보를 포함한다. 즉, 하향링크 품질은 하향링크 경로손실을 의미할 수 있다. 임의의 액세스 포인트의 전송 파워를 알고 있는 경우, 단말은 임의의 액세스 포인트의 전송 파워와 프로브 응답 프레임의 수신 신호 강도 간의 차이를 통해 하향링크 경로손실을 획득할 수 있다. 여기서, 단말은 임의의 액세스 포인트의 전송 파워를 프로브 응답 프레임을 통해 획득할 수도 있다. 즉, 임의의 액세스 포인트는 자신의 전송 파워 정보를 포함한 프로브 응답 프레임을 생성하여 단말에 전송할 수 있고, 단말은 이러한 프로브 응답 프레임을 통해 임의의 액세스 포인트의 전송 파워를 획득할 수 있다.
- [104] 단계 S330에서, 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우 단말은 임의의 액세스 포인트와의 접속을 수행할 수 있다. 미리 정의된 기준은 (하향링크) 목표 경로손실을 의미하며, 목표 경로손실은 프로브 응답 프레임에 포함되어 단말에 전송될 수 있다.
- [105] 단말은 하향링크 경로손실이 목표 경로손실보다 작거나 같은 경우 임의의 액세스 포인트와의 접속(즉, 인증 과정 및 연결 과정)을 수행할 수 있다. 단말은 미리 설정된 최대 프로브 응답 시간이 지나기 전에 임의의 액세스 포인트와의 접속을 수행할 수 있다. 즉, 단말은 미리 정의된 기준을 만족하는 프로브 응답 프레임을 수신한 경우 즉시 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- [106] 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우는 임의의 액세스 포인트와 단말 간의 하향링크 품질이 양호한 것을 의미하므로, 단말은 남은 최대 프로브 응답 시간 동안 다른 프로브 응답 프레임을 수신하지 않고 임의의 액세스 포인트와의 접속을 수행할 수 있다.
- [107] 한편, 하향링크 경로손실이 목표 경로손실보다 큰 경우, 단말은 다른 액세스 포인트로부터 프로브 응답 프레임을 수신할 수 있다.
- [108]
- [109] 도 11은 본 발명의 일 실시예에 따른 능동 검색 응답 방법을 도시한 흐름도이다.
- [110] 도 11을 참조하면, 액세스 포인트에서 수행되는 능동 검색 응답 방법은 단말로부터 프로브 요청 프레임을 수신하는 단계(S400), 프로브 요청 프레임에 포함된 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득하는 단계(S410) 및 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 단말에 프로브 응답 프레임을 전송하는 단계(S420)를 포함한다.
- [111] 단계 S400에서, 액세스 포인트는 단말로부터 프로브 요청 프레임을 수신할 수 있다. 즉, 프로브 요청 프레임에 포함된 SSID가 자신의 SSID인 경우 또는 SSID가 null로 설정되어 있는 경우, 액세스 포인트는 해당 프로브 요청 프레임을 수신할 수 있다.
- [112] 단계 S410에서, 액세스 포인트는 프로브 요청 프레임에 포함된 단말의 신호 강도 정보를 기반으로 상향링크 품질 정보를 획득할 수 있다. 여기서, 단말의

PCT/KR2013/005733

WO 2014/003472

- [113] 단계 S420에서, 액세스 포인트는 상황링크 품질이 미리 정의된 기준을 통해 상황링크 경로손실을 획득할 수 있다.
- 포함된 단말의 전송 파워와 프로브 요청 프레임의 수신 신호 강도 간의 차이를 상황링크 경로손실을 의미한다. 즉, 액세스 포인트는 프로브 요청에 상황링크 품질 정보를 의미하고, 상황링크 품질 정보를 획득할 수 있다.
- 상황링크 품질(즉, 경로손실)이 목표 경로손실보다 작거나 같은 경우 단말에 프로브 응답 프레임 전송할 수 있다. 한편, 상황링크 품질(즉, 경로손실)이 목표 경로손실보다 큰 경우, 액세스 포인트는 단말에 프로브 응답 프레임 전송하지 않는다.
- [114] 단말에 프로브 응답 프레임 전송하는 경우, 액세스 포인트는 (상황링크) 목표 경로손실 정보를 포함한 프로브 응답 프레임 전송할 수 있다. 프로브 응답 프레임에 포함된 목표 경로손실 정보는 단말에서 상황링크 품질을 획득하는데 사용될 수 있다.
- [115]
- [116] 도 12는 본 발명의 일 실시예에 따른 액세스 포인트의 응용 검색 방법을 도시한 순서도이다.
- [117] 도 12를 참조하면, 단말(10)은 프로브 요청 프레임 브로드캐스트할 수 있다(S500). 액세스 포인트들(20, 21, 22)은 수신한 프로브 요청 프레임을 기반으로 상황링크 경로손실을 산출할 수 있다. 즉, 프로브 요청 프레임에 포함된 단말(10)의 전송 파워와 프로브 요청 프레임의 수신 신호 강도를 기반으로 상황링크 경로손실을 산출할 수 있다. 상황링크 경로손실이 미리 정의된 기준(즉, 상황링크 목표 경로손실)보다 작거나 같은 경우, 해당 액세스 포인트는 프로브 응답 프레임 단말(10)에 전송할 수 있다(S510).
- [118] 예를 들어, 제1 액세스 포인트(20)에 대한 상황링크 경로손실이 미리 정의된 기준보다 작거나 같은 경우, 제1 액세스 포인트(20)는 프로브 응답 프레임을 단말(10)에 전송할 수 있다.
- [119] 단말(10)은 제1 액세스 포인트(20)로부터 프로브 응답 프레임 수신할 수 있고, 프로브 응답 프레임 수신한 후 즉시 제1 액세스 포인트(20)와의 접속(즉, 인증 과정 및 연결 과정)을 수행할 수 있다(S520). 즉, 단말은 미리 설정된 최대 프로브 응답 시간이 지나기 전에 제1 액세스 포인트(20)와의 접속을 수행할 수 있다. 상황링크 경로손실이 미리 정의된 기준을 만족하는 경우는 제1 액세스 포인트(20)와 단말 간의 상황링크 품질이 양호한 것을 의미하므로, 단말은 다음 액세스 포인트(20)와의 접속을 수행할 수 있다.
- [120]
- [121] 이상 실시예를 참조하여 설명하였지만, 해당 기술 분야의 숙련된 당업자는

하기의 특허 청구의 범위에 기재된 본 발명의 사상 및 영역으로부터 벗어나지 않는 범위 내에서 본 발명을 다양하게 수정 및 변경시킬 수 있음을 이해할 수 있을 것이다.

청구범위

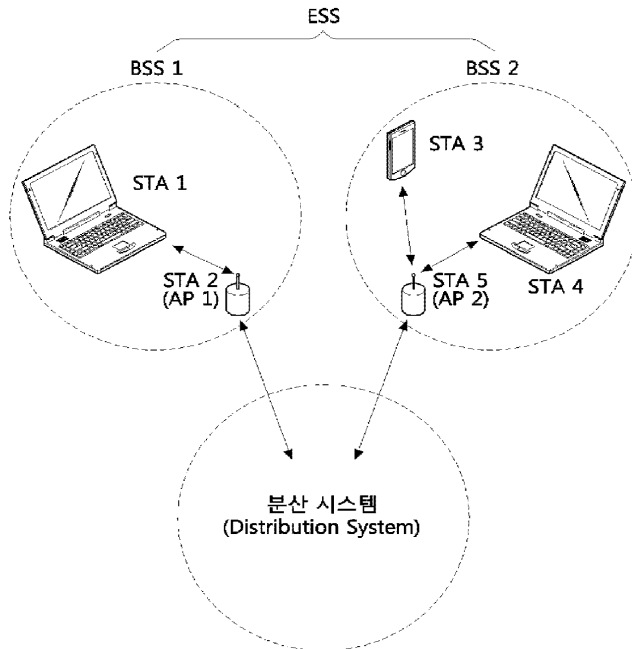
- [청구항 1] 단말(station)에서 수행되는 능동 검색 방법으로서,
상기 단말의 신호 강도(signal strength) 정보를 포함하는 프로브
요청 프레임(probe request frame)을 생성하는 단계; 및
상기 프로브 요청 프레임을 액세스 포인트(access point)에
전송하는 단계를 포함하는 것을 특징으로 하는 능동 검색 방법.
- [청구항 2] 청구항 1에 있어서,
상기 신호 강도 정보는 상기 단말의 전송 파워(Tx power) 정보를
포함하는 것을 특징으로 하는 능동 검색 방법.
- [청구항 3] 청구항 1에 있어서,
상기 능동 검색 방법은,
임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된
프로브 응답 프레임(probe response frame)을 수신하는 단계; 및
상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더
포함하되,
상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이
미리 정의된 기준을 만족하는 액세스 포인트인 것을 특징으로
하는 능동 검색 방법.
- [청구항 4] 청구항 3에 있어서,
상기 임의의 액세스 포인트와의 접속을 수행하는 단계는,
최대 프로브 응답 시간(max probe response time)이 지나기 전에
상기 임의의 액세스 포인트와의 접속을 수행하는 것을 특징으로
하는 능동 검색 방법.
- [청구항 5] 청구항 1에 있어서,
상기 능동 검색 방법은,
임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된
프로브 응답 프레임을 수신하는 단계;
상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크
경로손실을 획득하는 단계; 및
상기 하향링크 경로손실이 미리 정의된 기준을 만족하는 경우,
상기 임의의 액세스 포인트와의 접속을 수행하는 단계를 더
포함하는 것을 특징으로 하는 능동 검색 방법.
- [청구항 6] 청구항 5에 있어서,
상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표
경로손실(target pathloss) 정보를 포함하는 것을 특징으로 하는
능동 검색 방법.
- [청구항 7] 청구항 5에 있어서,

- 상기 제1 액세스 포인트와의 접속을 수행하는 단계는,
 최대 프로브 응답 시간이 지나기 전에 상기 임의의 액세스
 포인트와의 접속을 수행하는 것을 특징으로 하는 능동 검색 방법.
- [청구항 8] 청구항 5에 있어서,
 상기 임의의 액세스 포인트는 상기 단말에 대한 상향링크 품질이
 미리 정의된 기준을 만족하는 액세스 포인트인 것을 특징으로
 하는 능동 검색 방법.
- [청구항 9] 단말(station)에서 수행되는 능동 검색 방법으로서,
 프로브 요청 프레임(probe request frame)을 액세스 포인트(access
 point)에 전송하는 단계;
 임의의 액세스 포인트로부터 상기 프로브 요청 프레임에 대응된
 프로브 응답 프레임(probe response frame)을 수신하는 단계;
 상기 프로브 응답 프레임의 신호 강도를 기반으로 하향링크 품질
 정보를 획득하는 단계; 및
 하향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 임의의
 액세스 포인트와의 접속을 수행하는 단계를 포함하는 것을
 특징으로 하는 능동 검색 방법.
- [청구항 10] 청구항 9에 있어서,
 상기 하향링크 품질 정보는 하향링크 경로손실 정보를 포함하는
 것을 특징으로 하는 능동 검색 방법.
- [청구항 11] 청구항 9에 있어서,
 상기 프로브 응답 프레임은 상기 미리 정의된 기준인 목표
 경로손실(target pathloss) 정보를 포함하는 것을 특징으로 하는
 능동 검색 방법.
- [청구항 12] 액세스 포인트(access point)에서 수행되는 능동 검색 응답
 방법으로서,
 단말(station)로부터 프로브 요청 프레임(probe request frame)을
 수신하는 단계;
 상기 프로브 요청 프레임에 포함된 상기 단말의 신호 강도 정보를
 기반으로 상향링크 품질 정보를 획득하는 단계; 및
 상향링크 품질이 미리 정의된 기준을 만족하는 경우, 상기 단말에
 프로브 응답 프레임(probe response frame)을 전송하는 단계를
 포함하는 것을 특징으로 하는 능동 검색 응답 방법.
- [청구항 13] 청구항 12에 있어서,
 상기 신호 강도 정보는 상기 단말의 전송 파워(Tx power) 정보를
 포함하는 것을 특징으로 하는 능동 검색 응답 방법.
- [청구항 14] 청구항 12에 있어서,
 상기 상향링크 품질 정보는 상향링크 경로손실 정보를 포함하는

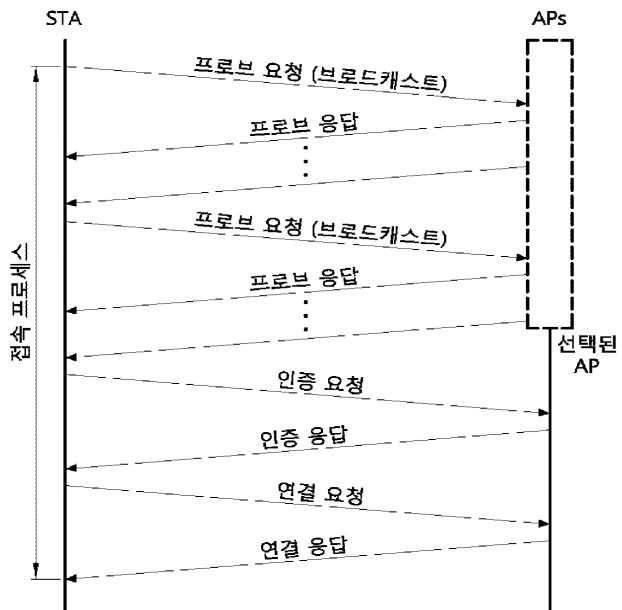
[청구항 15]

것을 특징으로 하는 능동 검색 응답 방법.
청구항 12에 있어서,
상기 프로브 응답 프레임을 전송하는 단계는,
목표 경로손실(target pathloss) 정보를 포함하는 상기 프로브 응답
프레임을 전송하는 것을 특징으로 하는 능동 검색 응답 방법.

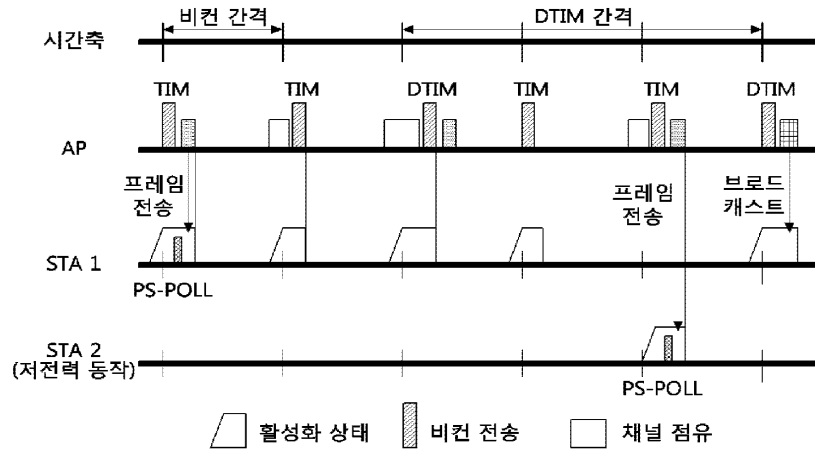
[Fig. 1]



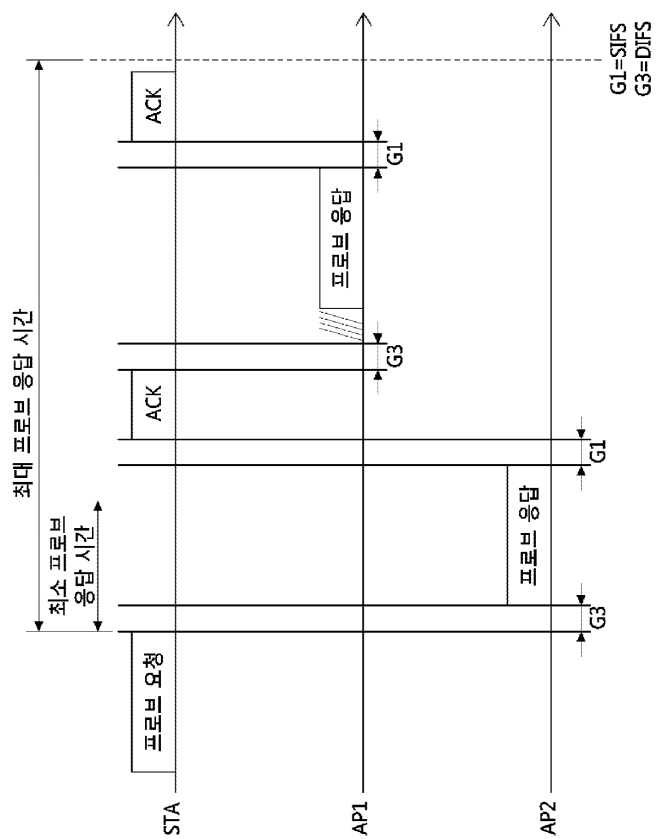
[Fig. 2]



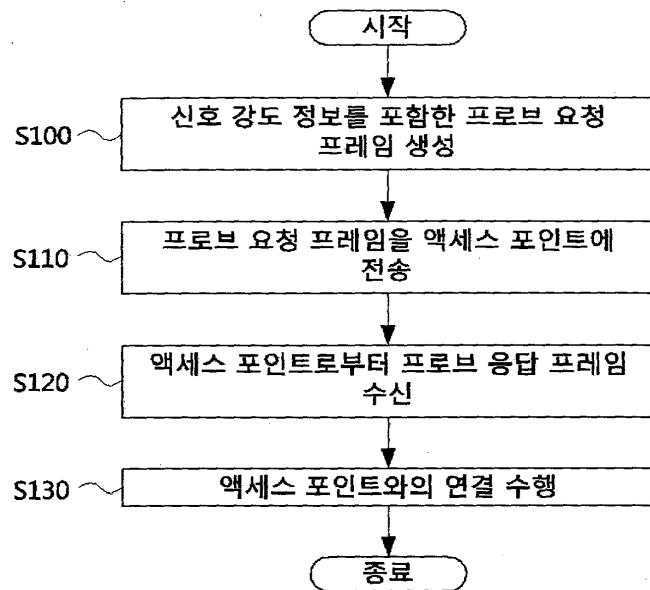
[Fig. 3]



[Fig. 4]



[Fig. 5]

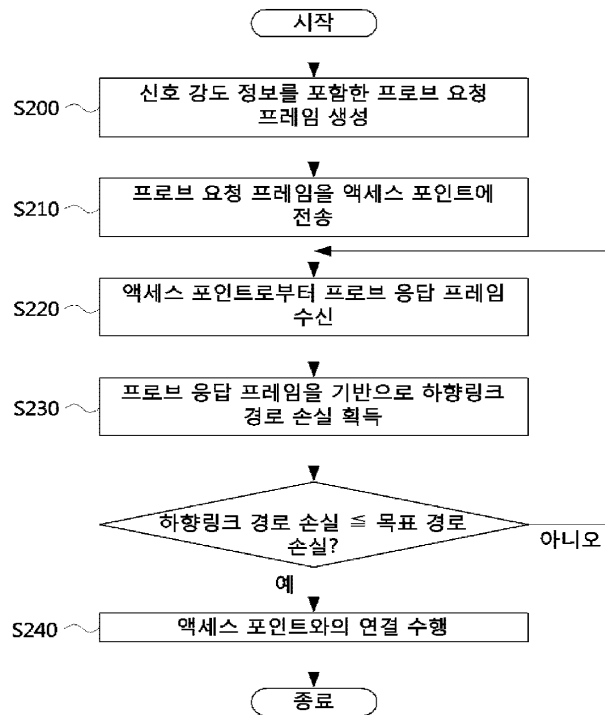


[Fig. 6]

순서	정보	메모(Notes)
1	SSID	
2	지원되는 레이트(rates)	
3	요청 정보	만일 dot11MultiDomainCapabilityEnabled가 참(true)인 경우 포함될 수 있음.
4	확장된 지원되는 레이트	확장된 지원되는 레이트 요소는 8 지원되는 레이트 이상이면 존재하고, 그렇지 않으면 선택 사항임.
5	전송 파워	
마지막	제조사 특정	하나 이상의 제조사-특정 정보 요소들은 이 프레임에 존재할 수 있음. 이러한 정보 요소는 모든 다른 정보 요소들 뒤에 위치함.

대체용지 (규칙 제26조)

[Fig. 7]



[Fig. 8]

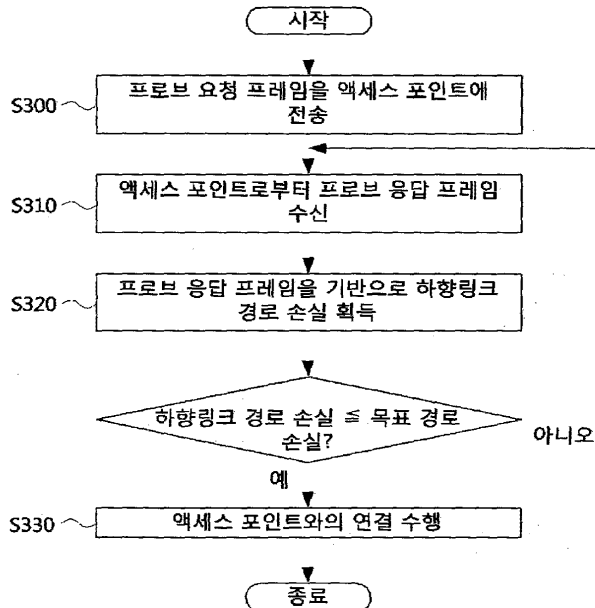
순서	정보	메모(Notes)
1	타임스탬프	
2	비컨 간격	
3	능력	
4	SSID	
5	지원되는 레이트(rates)	
6	FH 파라미터 세트(set)	FH 파라미터 세트 정보 요소는 FH PHYs를 사용하는 STAs에 의해 생성된 프로브 응답 프레임들 내에 존재함.
7	DS 파라미터 세트	DS 파라미터 세트 정보 요소는 조항(clause) 15, 조항 18 및 조항 19 PHYs를 사용하는 STAs에 의해 생성된 프로브 응답 프레임들 내에 존재함.
8	CF 파라미터 세트	CF 파라미터 세트 정보 요소는 PCF를 지원하는 APs에 의해 생성된 프로브 응답 프레임들 내에 오직 존재함.
9	IBSS 파라미터 세트	IBSS 파라미터 세트 정보 요소는 IBSS 내의 STAs에 의해 생성된 프로브 응답 프레임들 내에 오직 존재함.
10	국가(country)	만일 dot11MultiDomainCapabilityEnabled 또는 dot11SpectrumManagementRequired가 참(true)인 경우 포함됨.
11	FH 파라미터들	7.3.2.10에서 명시된 FH 파라미터들은 dot11MultiDomainCapabilityEnabled가 참인 경우 포함될 수 있음.
12	FH 패턴 테이블	7.3.2.11에서 명시된 FH 패턴 테이블 정보는 dot11MultiDomainCapabilityEnabled가 참인 경우 포함될 수 있음.
13	파워 제약	만일 dot11SpectrumManagementRequired가 참인 경우 포함되어야 함.
14	채널 전환 공지	만일 dot11SpectrumManagementRequired가 참인 경우 포함될 수 있음.

대체용지 (규칙 제26조)

[Fig. 9]

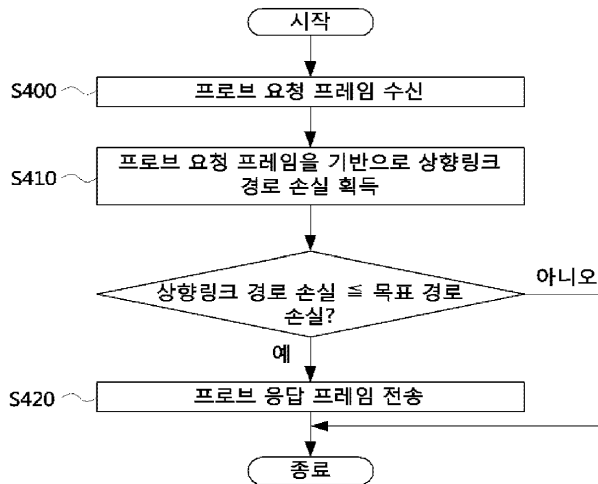
순서	정보	메모(Notes)
15	침묵(quiet)	만일 dot11SpectrumManagementRequired가 참(true)인 경우 포함될 수 있음.
16	IBSS DFS	만일 IBSS 내의 dot11SpectrumManagementRequired가 참인 경우 포함되어야 함.
17	TPC 보고	만일 dot11SpectrumManagementRequired가 참인 경우 포함되어야 함.
18	ERP 정보	ERP 정보 요소는 ERPs를 사용하는 STAs에 의해 생성된 프로브 응답 프레임들 내에 존재하고, 다른 경우들에서 ERP 정보 요소는 선택 사항으로 존재함.
19	확장된 지원되는 레이트(rates)	확장된 지원되는 레이트 요소는 8 지원되는 레이트 이상이면 존재하고, 그렇지 않으면 선택 사항임.
20	RSN	RSN 정보 요소는 참으로 설정된 dot11RSNAEnabled를 가지는 STAs에 의해 생성된 프로브 응답 프레임들 내에 오직 존재함.
21	BSS 부하(load)	BSS 부하 요소는 dot11QosOption-Implemented와 dot11QBSSLoadImplemented가 모두 참인 경우 존재함.
22	EDCA 파라미터 세트(set)	EDCA 파라미터 세트 요소는 dot11QosOptionImplemented가 참인 경우 존재함.
23	타겟 패스로스(pathloss)	

[Fig. 10]



대체용지 (규칙 제26조)

[Fig. 11]



[Fig. 12]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2013/005733**A. CLASSIFICATION OF SUBJECT MATTER*****H04W 48/16(2009.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04W 48/16; H04W 88/02; H04W 52/36; H04W 16/14; H04W 48/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: wireless LAN|LAN|access point|AP|access point, active|active, search|scan|scan|scanning

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2011-0071884 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 29 June 2011	1-2
A	See abstract, paragraphs 42-50, 58-63 and figures 4, 6	3-15
A	KR 10-2011-0090734 A (LG ELECTRONICS INC.) 10 August 2011	1-15
	See abstract, paragraphs 75-79 and figure 7	
A	KR 10-2011-0111033 A (SAMSUNG ELECTRONICS CO., LTD. et al.) 10 October 2011	1-15
	See abstract, paragraphs 26-46 and figure 3	
A	KR 10-2011-0085836 A (LG ELECTRONICS INC.) 27 July 2011	1-15
	See abstract, claims 1-9 and figure 5	

☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

24 OCTOBER 2013 (24.10.2013)

Date of mailing of the international search report

25 OCTOBER 2013 (25.10.2013)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701,
 Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2013/005733

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 10-2011-0071884 A	29/06/2011	US 2011-0149766 A1	23/06/2011
KR 10-2011-0090734 A	10/08/2011	CN 102742333 A	17/10/2012
		EP 2532196 A2	12/12/2012
		JP 2013-519255A	23/05/2013
		KR 10-2011-0090746 A	10/08/2011
		US 2011-0188486 A1	04/08/2011
		US 8509173 B2	13/08/2013
		WO 2011-096746 A2	11/08/2011
		WO 2011-096746 A3	08/12/2011
KR 10-2011-0111033 A	10/10/2011	US 2011-0243013 A1	06/10/2011
KR 10-2011-0085836 A	27/07/2011	US 2012-0307685 A1	06/12/2012
		WO 2011-090257 A1	28/07/2011

Form PCT/ISA/210 (patent family annex) (July 2009)

A. 발명이 속하는 기술분류(국제특허분류(IPC)) H04W 48/16(2009.01)i		
B. 조사된 분야 조사된 최소문헌(국제특허분류를 기재) H04W 48/16; H04W 88/02; H04W 52/36; H04W 16/14; H04W 48/20 조사된 기술분야에 속하는 최소문헌 이외의 문헌 한국등록실용신안공보 및 한국공개실용신안공보: 조사된 최소문헌란에 기재된 IPC 일본등록실용신안공보 및 일본공개실용신안공보: 조사된 최소문헌란에 기재된 IPC 국제조사에 이용된 전산 데이터베이스(데이터베이스의 명칭 및 검색어(해당하는 경우)) eKOMPASS(특허청 내부 검색시스템) & 키워드: 무선랜 LAN 엑세스포인트 AP access point, 능동 active, 검색 스캔 탐지 scanning		
C. 관련 문헌		
카테고리*	인용문헌명 및 관련 구절(해당하는 경우)의 기재	관련 청구항
X	KR 10-2011-0071884 A (한국전자통신연구원) 2011.06.29 요약, 단락 42-50, 58-63 및 도면 4, 6 참조	1-2
A		3-15
A	KR 10-2011-0090734 A (엘지전자 주식회사) 2011.08.10 요약, 단락 75-79 및 도면 7 참조	1-15
A	KR 10-2011-0111033 A (삼성전자주식회사 외 2명) 2011.10.10 요약, 단락 26-46 및 도면 3 참조	1-15
A	KR 10-2011-0085836 A (엘지전자 주식회사) 2011.07.27 요약, 청구항 1-9 및 도면 5 참조	1-15
☐ 추가 문헌이 C(계속)에 기재되어 있습니다. ☒ 대응특허에 관한 별지를 참조하십시오.		
* 인용된 문헌의 특별 카테고리: “A” 특별히 관련이 없는 것으로 보이는 일반적인 기술수준을 정의한 문헌 “E” 국제출원일보다 빠른 출원일 또는 우선일을 가지나 국제출원일 이후에 공개된 선출원 또는 특허 문헌 “L” 우선권 주장에 의문을 제기하는 문헌 또는 다른 인용문헌의 공개일 또는 다른 특별한 이유(이유를 명시)를 밝히기 위하여 인용된 문헌 “O” 구두 개시, 사용, 전시 또는 기타 수단을 언급하고 있는 문헌 “P” 우선일 이후에 공개되었으나 국제출원일 이전에 공개된 문헌 “T” 국제출원일 또는 우선일 후에 공개된 문헌으로, 출원과 상충하지 않으며 발명의 기초가 되는 원리나 이론을 이해하기 위해 인용된 문헌 “X” 특별한 관련이 있는 문헌. 해당 문헌 하나만으로 청구된 발명의 신규성 또는 진보성이 없는 것으로 본다. “Y” 특별한 관련이 있는 문헌. 해당 문헌이 하나 이상의 다른 문헌과 조합하는 경우로 그 조합이 당업자에게 자명한 경우 청구된 발명은 진보성이 없는 것으로 본다. “&” 동일한 대응특허문헌에 속하는 문헌		
국제조사의 실제 완료일 2013년 10월 24일 (24.10.2013)		국제조사보고서 발송일 2013년 10월 25일 (25.10.2013)
ISA/KR의 명칭 및 우편주소 대한민국 특허청 (302-701) 대전광역시 서구 청사로 189, 4동 (문산동, 정부대전청사) 팩스 번호 +82-42-472-7140		심사관 장상배 전화번호 +82-42-481-8201

서식 PCT/ISA/210 (두 번째 용지) (2009년 7월)

국제조사보고서에서 인용된 특허문헌	공개일	대응특허문헌	공개일
KR 10-2011-0071884 A	2011/06/29	US 2011-0149766 A1	2011/06/23
KR 10-2011-0090734 A	2011/08/10	CN 102742333 A	2012/10/17
		EP 2532196 A2	2012/12/12
		JP 2013-519255A	2013/05/23
		KR 10-2011-0090746 A	2011/08/10
		US 2011-0188486 A1	2011/08/04
		US 8509173 B2	2013/08/13
		WO 2011-096746 A2	2011/08/11
		WO 2011-096746 A3	2011/12/08
KR 10-2011-0111033 A	2011/10/10	US 2011-0243013 A1	2011/10/06
KR 10-2011-0085836 A	2011/07/27	US 2012-0307685 A1	2012/12/06
		WO 2011-090257 A1	2011/07/28

서식 PCT/ISA/210 (대응특허 추가용지) (2009년 7월)