Femtocells

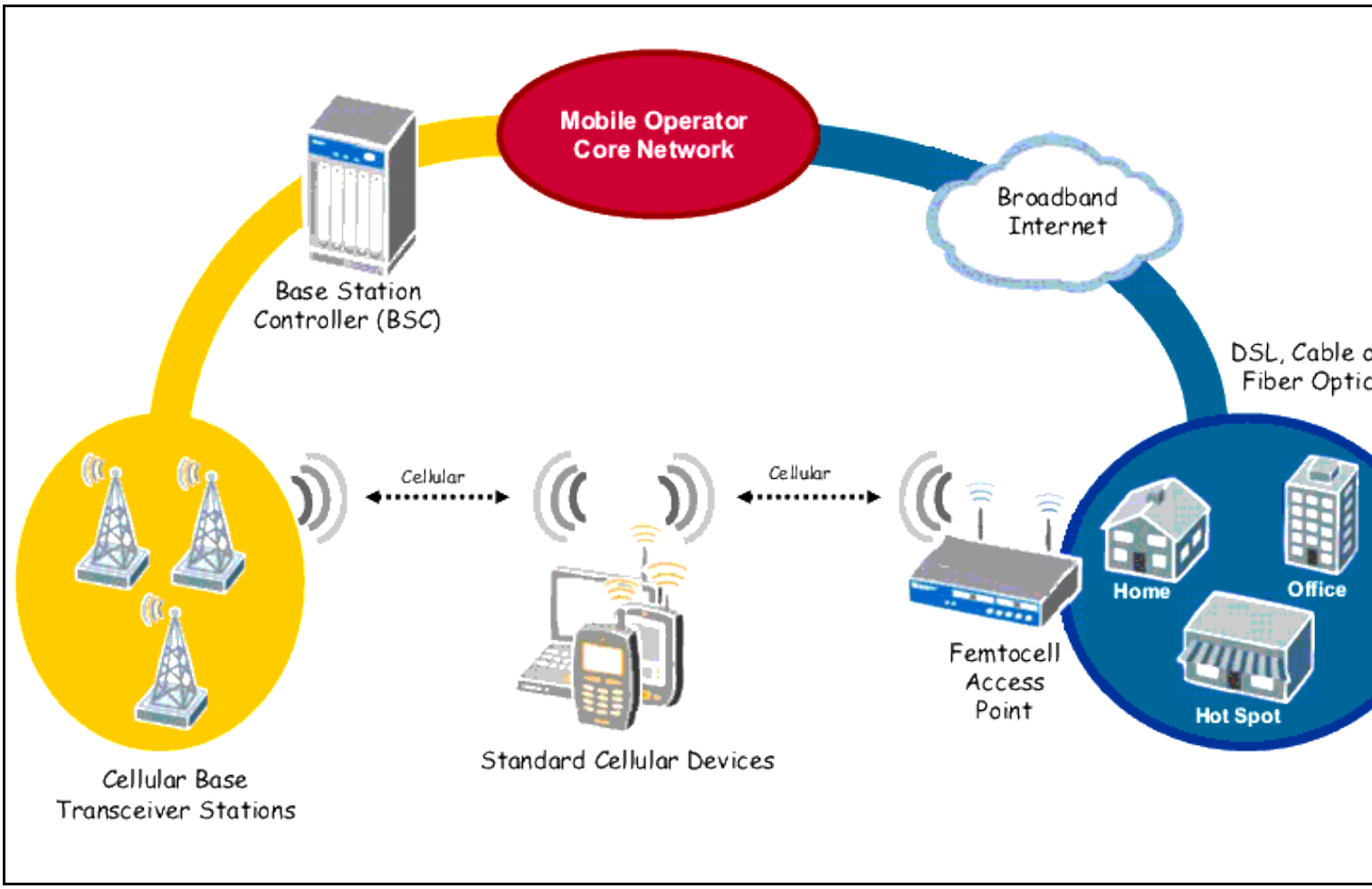
This report presents a brief summary about femtocells and also focuses on its various applications. A detailed taxonomy is presented which covers all the aspects related to femtocells. A detailed landscape analysis of patent and non-patent literature is done. The product information of major players in the market is also captured. The final section of the report also covers the existing and future market predictions.

Dolcera Landscape Procedure

- Background study - Background study is done with web search depending on the area of client interest.
- Finding key player/inventors - Web search is carried out to find the products and technologies of key players.
- Patents Search -
  - Key patents search.
  - Prepared search queries using keywords and classification and finalized these in Micropat/Thompson.
- Patents Classification - Classify all patents by creating taxonomy.
- Specific analysis as required by client like SWOT, SOA, PEST, Claim, and White Space analysis.
- Reporting -
  - All necessary data are presented in format of wiki or in form of power point slides.
  - Dashboard - Graphical representation of Patents classification.

Key Findings

- Qualcomm, Samsung and NEC are the major players in femtocells technology
- Key patents in the femtocells are held by Ericsson, Kineto Wireless and Qualcomm.
- Patenting activity has seen a very high growth rate in the last two years.
- US and WO are very active in femtocell technology research.



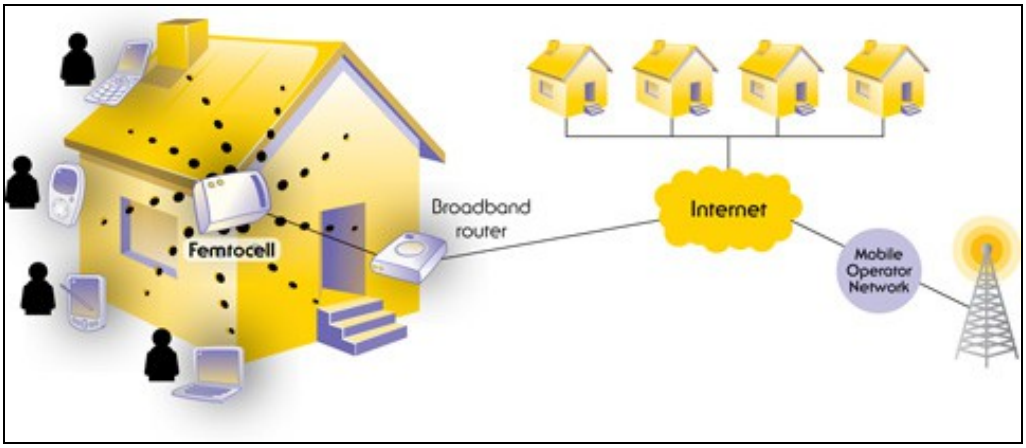
Femtocell Access to the Core Mobile Network via Broadband Internet

Contents

Introduction

A femtocell is a small cellular base station designed for use in residential or small business environments. It connects to the service provider?s network via broadband (such as DSL or cable) and typically supports 2 to 5 mobile phones in a residential setting. A femtocell allows service providers to extend service coverage inside of your home - especially where access would otherwise be limited or unavailable - without the need for expensive cellular towers. It also decreases the backhaul costs since it routes your mobile phone traffic through the IP network. Source

A femtocell is sometimes referred to as a ?home base station?, ?access point base station?, ?3G access point?, ?small cellular base station? and ?personal 2G-3G base station?.



Femtocell
Femtocells are low-power wireless access points that operate in licensed spectrum to connect standard mobile devices to a mobile operator?s network using residential DSL or cable broadband connections.

Read More?

Click on Femtocell Background to read more about Femtocell.

Taxonomy

- *Use the mouse(click and drag/scroll up or down/click on nodes) to explore nodes in the detailed taxonomy*

Click here for femtocell taxonomy definition

Femtocell - Search Strategy

Control Patents

Control patents are mostly used

- to prepare concepts
- to search classes, and
- to verify the search strategy

			Assignee / Applicant	Title

S. No.	Patent/Publication No.	Publication Date (mm/dd/yy)		
1	US20110047011A1	02/24/11	Motorola	Incentives to optimize the performance of femto cell groups
2	US20110039560A1	02/17/11	Cisco Technology	System and method for providing access in a network environment
3	WO2011005654A2	01/13/11	Intel Corporation	Initializing femtocells
4	US7855977B2	12/21/10	AT&T	Alarming in a femto cell network
5	US20100309790A1	12/09/10	Alcatel-Lucent	Femto base stations and methods for operating the same
6	US20100285812A1	11/11/10	Hitachi	Call admission priority control determination device and mobile wireless communication system
7	US20100279704A1	11/04/10	NEC Corporation	Method for controlling access to a mobile communications network
8	US20100267386A1	10/21/10	Qualcomm Incorporated	Methods and apparatus for facilitating handoff between a femtocell base station and a cellular base station
9	US20100177695A1	07/15/10	Samsung Electronics	Technique for interference mitigation using mobile station signaling
10	JP2010157807A	07/15/10	NEC Corporation	Communication system, femto cell base station, authentication device, communication method, and communication program
11	US20100165957A1	07/01/10	Airvana	Providing a cellular network with connectivity to a different network
12	WO2010063227A1	06/10/10	Huawei Technologies	Positioning method and device for the home base station
13	US20100135201A1	06/03/10	AT&T	Registration notification for mobile device management
14	US20100130212A1	05/27/10	ZTE	Femto cell handover in wireless communications
15	GB2461845A	01/20/10	Ubiquisys	Femtocell basestation scrambling code selection
16	US20090286540A1	11/19/09	AT&T	Femtocell architecture for information management
17	EP2112854A1	10/28/09	Nokia Siemens Networks	Access control method for cellular networks comprising femto-cells
18	US20090253421A1	10/08/09	Sony Ericsson Mobile Communications	Local network management of femtocells
19	GB2456503A	07/22/09	ip.access	Using global cell identifier for handover in a combined femto-cell/macro-cell environment

Patent Classes

S. No.	Class Code	Class Type	Class Definition
1	370328	USPC	Multiplex communications - Communication over free space - **Having a plurality of contiguous regions served by respective fixed stations**
2	370329	USPC	Multiplex communications - Communication over free space - Having a plurality of contiguous regions served by respective fixed stations ? **Channel assignment**
3	370331	USPC	Multiplex communications - Communication over free space - Having a plurality of contiguous regions served by respective fixed stations - Channel assignment ? **Hand-off control**
4	370338	USPC	Multiplex communications - Communication over free space - Having a plurality of contiguous regions served by respective fixed stations ? **Contiguous regions interconnected by a local area network**
5	4554221	USPC	Telecommunications - Radiotelephone system - **Zoned or cellular telephone system**
6	455434	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Control or access channel scanning**
7	4554351	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Registration**
8	4554352	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? Registration ? **System selection**
9	4554353	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? Registration - System selection ? **Based on priority**
10	455436	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Handoff**
11	455444	USPC	

			Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? Handoff ? **Between macro and micro cells**
12	455445	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Call routing**
13	455446	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Including cell planning or layout**
14	455450	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Channel allocation**
15	4554522	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system - Channel allocation - Dynamic allocation ? **Based on service quality**
16	4554561	USPC	Telecommunications - Radiotelephone system - Zoned or cellular telephone system ? **Location monitoring**
17	455522	USPC	Telecommunications - Transmitter and receiver at separate stations - Plural transmitters or receivers - To or from mobile station ? **Transmission power control technique**
18	455561	USPC	Telecommunications - transmitter and receiver at same station - Radiotelephone equipment detail ? **Base station detail**
19	H04B7*	IPC	Electric communication technique - Transmission - **Radio transmission systems, i.e. using radiation field**
20	H04L001228	IPC	Electric communication technique - Transmission of digital information - Data switching networks - **characterised by path configuration, e.g. local area networks (LAN), wide area networks (WAN)**
21	H04L001256	IPC	Electric communication technique - Transmission of digital information - Data switching networks - Stored and forward switching systems - **Packet switching systems**
22	H04L002906	IPC	Electric communication technique - Transmission of digital information - Arrangements, apparatus, circuits or systems, not covered by a single one of groups - Communication control; Communication processing - **characterised by a protocol**
23	H04W4*	IPC	Electric communication technique - Wireless communication networks - **Services or facilities specially adapted for wireless communication networks**
24	H04W16*	IPC	Electric communication technique - Wireless communication networks - **Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures**
25	H04W28*	IPC	Electric communication technique - Wireless communication networks - **Network traffic or resource management**
26	H04W36*	IPC	Electric communication technique - Wireless communication networks - **Hand-off or reselecting arrangements**
27	H04W40*	IPC	Electric communication technique - Wireless communication networks - **Communication routing or communication path finding**
28	H04W48*	IPC	Electric communication technique - Wireless communication networks - **Access restriction; Network selection; Access point selection**
29	H04W60*	IPC	Electric communication technique - Wireless communication networks - **Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation**
30	H04W68*	IPC	Electric communication technique - Wireless communication networks - **Notification of users, e.g. alerting for incoming communication or change of service**
31	H04W72*	IPC	Electric communication technique - Wireless communication networks - **Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources**
32	H04W88*	IPC	Electric communication technique - Wireless communication networks - **Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices**
33	H04W003638N	ECLA	Electric communication technique - Wireless communication networks - Hand-off or reselecting arrangements - Reselection control - by fixed network equipment - **Of the core network**
34	H04W003600P6R	ECLA	Electric communication technique - Wireless communication networks - Hand-off or reselecting arrangements - Control or signalling for completing the hand-off - Transmission and use of information for re-establishing the radio link - **Of resource information of target access point**
35	H04W003600P6T	ECLA	Electric communication technique - Wireless communication networks - Hand-off or reselecting arrangements - Control or signalling for completing the hand-off - Transmission and use of information for re-establishing the radio link - **of access information of target access point**
36	H04W007204F	ECLA	Electric communication technique - Wireless communication networks - Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources - Wireless resource selection or allocation ? **Control information exchange between nodes**
37	H04W008404C2	ECLA	Electric communication technique - Wireless communication networks - Network topologies - Hierarchical pre-organized networks, e.g. paging networks, cellular networks, WLAN or WLL - Large scale networks; Deep hierarchical networks - Public Land Mobile systems, e.g. cellular systems - **using private Base Stations, e.g. femto Base Stations**
38	H04W000824N	ECLA	Electric communication technique - Wireless communication networks - Network data management - Processing or transfer of terminal data, e.g. status or physical capabilities - Transfer of terminal data ? **From**

			a network towards a terminal

Concept Table

English Keywords

S. No.	Concept-1	Concept-2	Concept-3
	Femtocell	Access point	Gateway
1	femtocell	access point	gateway
2	femto cell	access terminal	home gateway
3	home base station	3g access point	security gateway (segw)
4	small cellular base station	access point base station	
5	personal 2g-3g base station	low power wireless access points	
6	femto base station	miniature cellphone access points	
7	femto network	miniature cell phone access points	
8		femtocell access point (fap)	
9		cellular network access points	

French Keywords

S. No.	Concept-1	Concept-2	Concept-3
	Femtocell	Point d?accès	Gateway
1	femtocell	point d?accès	gateway
2	cellules femto	terminal d?accès	accueil passerelle
3	station de base home	point d?accès 3g	security gateway (segw)
4	petite station de base cellulaire	accès station de point de base	
5	personnel de station de base 2g-3g	low power points d?accès sans fil	
6	station de base femto	miniature points d?accès cellulaire	
7		miniature points d?accès de téléphonie cellulaire	
8		point d?accès femtocell (fap)	
9		points d?accès au réseau cellulaire	

German Keywords

S. No.	Concept-1	Concept-2	Concept-3
	Femtocell	Access Point	Gateway
1	femtocell	access point	gateway
2	femto-zelle	access terminal	home-gateway
3	home basisstation	3g access point	security gateway (segw)
4	kleine zelluläre basisstation	access point basisstation	
5	persönliche 2g-3g-basisstation	low-power-wireless access points	
6	femto-basisstation	miniatur-handy-zugangspunkte	
7		miniatur-handy-zugangspunkte	
8		femtocell access point (fap)	
9		cellular network access points	

Search Query

Database: Micropat
Databases covered: USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA
Years searched: 1836 - 8th March 2011

S. No.	Concept	Scope	Query	No. of Hits
1	Femtocell keywords	Full patent spec.	femtocell*1 OR (femto ADJ cell*1) OR (femto NEAR base NEAR station) OR (femto NEAR3 network*1)	3795
2	Femtocell keywords	Claims, Title or Abstract	femtocell*1 OR (femto ADJ cell*1) OR (home NEAR5 base NEAR5 station*1) OR (access NEAR5 point NEAR5 base NEAR5 station*1) OR (small NEAR5 cellular NEAR5 base NEAR5 station*1) OR (personal NEAR5 "2g-3g" NEAR5 base NEAR5 station*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1)	3176
3	Assignees Search (Restricted with Keywords)	Assignee/Applicant	Qualcomm OR Intel OR Picochip OR Ericsson OR ip.access OR (ip ADJ access) OR (Nokia ADJ Siemens) OR Motorola OR ZTE OR Agilent OR NEC OR Ubiquisys OR (AirWalk ADJ Communications) OR (Alcatel ADJ Lucent) OR Hitachi OR Cisco OR Airvana OR (Tatara ADJ System*1) OR Vodafone OR AT&T OR (Sprint ADJ Nextel) OR Verizon OR (Mobile ADJ TeleSystem*1)	2145
		Full patent spec.	(((access ADJ point*1) OR (access NEAR5 terminal*1) OR (3g NEAR5 access NEAR5 point*1) OR (access NEAR5 point*1 NEAR5 base NEAR5 station) OR (low NEAR5 power NEAR5 wireless NEAR5 access NEAR5 point*1) OR (miniature NEAR5 (cellphone OR (cell ADJ phone)) NEAR5 access NEAR5 point*1) OR ((femtocell*1 OR (femto ADJ cell*1)) NEAR5 access point) OR fap OR (cellular NEAR5 network NEAR5 access NEAR5 point*1)) AND (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1) OR femto*1)) OR (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1) OR femto*1) OR ((gateway OR (home ADJ gateway) OR (security ADJ gateway) OR segw) AND (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1) OR femto*1)) (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1) OR femto*)	
4	Access Points Keywords with Femtocell	Claims, Title or Abstract	((access ADJ point*1) OR (access NEAR5 terminal*1) OR (3g NEAR5 access NEAR5 point*1) OR (access NEAR5 point*1 NEAR5 base NEAR5 station) OR (low NEAR5 power NEAR5 wireless NEAR5 access NEAR5 point*1) OR (miniature NEAR5 (cellphone OR (cell ADJ phone)) NEAR5 access NEAR5 point*1) OR ((femtocell*1 OR (femto ADJ cell*1)) NEAR5 access point) OR fap OR (cellular NEAR5 network NEAR5 access NEAR5 point*1)) AND (femtocell*1 OR (femto ADJ cell*1) OR (home NEAR5 base NEAR5 station*1) OR (access NEAR5 point NEAR5 base NEAR5 station*1) OR (small NEAR5 cellular NEAR5 base NEAR5 station*1) OR (personal NEAR5 "2g-3g" NEAR5 base NEAR5 station*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1))	1191
5	Gateway Keywords with Femtocell	Claims, Title or Abstract	(gateway OR (home ADJ gateway) OR (security ADJ gateway) OR segw) AND (femtocell*1 OR (femto ADJ cell*1) OR (home NEAR5 base NEAR5 station*1) OR (access NEAR5 point NEAR5 base NEAR5 station*1) OR (small NEAR5 cellular NEAR5 base NEAR5 station*1) OR (personal NEAR5 "2g-3g" NEAR5 base NEAR5 station*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1))	359
6	Classification Search (Restricted with Keywords)	Any Classification	370328 OR 370329 OR 370331 OR 370338 OR 4554221 OR 455434 OR 4554351 OR 4554352 OR 4554353 OR 455436 OR 455444 OR 455445 OR 455446 OR 455450 OR 4554522 OR 4554561 OR 455522 OR 455561 OR H04B7* OR H04L001228 OR H04L001256 OR H04L002906 OR H04W4* OR H04W16* OR H04W28* OR H04W36* OR H04W40* OR H04W48* OR H04W60* OR H04W68* OR H04W72* OR H04W88* OR H04W003638N OR H04W003600P6R OR H04W003600P6T OR H04W007204F OR H04W008404C2 OR H04W000824N	1212
		Full patent spec.	(((access ADJ point*1) OR (access NEAR terminal*1) OR (3g NEAR access NEAR point*1) OR (access NEAR point*1 NEAR base NEAR station) OR (low NEAR power NEAR wireless NEAR access NEAR point*1) OR (miniature NEAR (cellphone OR (cell ADJ phone)) NEAR access NEAR point*1) OR ((femtocell*1 OR (femto ADJ cell*1)) NEAR access point) OR fap OR (cellular NEAR network NEAR access NEAR point*1)) AND (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1))) OR (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1)) OR ((gateway OR (home ADJ gateway) OR (security ADJ gateway) OR segw) AND (femtocell*1 OR (femto ADJ cell*1) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 base NEAR5 station) OR ((femto OR (femto ADJ cell*1) OR femtocell*1) NEAR5 network*1)))	
7	Combined Query		1 OR 2 OR 3 OR 4 OR 5 OR 6	2990 Unique families (5694)

Sample Analysis

Patent Analysis

S.No.	Patent/Publication No.	Title	Dolcera Analysis	
			Problem	Solution

1	US20110047011A1	Incentives to optimize the performance of femto cell groups	The convergence of wireless communication and mobile computing devices continues to spur demand for wireless broadband communication services. As the demand grows, so too must the network infrastructure needed to support wireless communications.	Method of incentivizing an operator of femto cell infrastructure to efficiently utilize the femto cell infrastructure. The method can include establishing, for an end user device, telecommunication network presence on a femto cell. At least one parameter measured within the femto cell can be received. Based on the measured parameter, a determination can be made as to whether to award at least one incentive to the operator of the femto cell, and the incentive can be awarded to the operator.
2	US20110039560A1	System and method for providing access in a network environment	Networking architectures have grown increasingly complex in communication environments. Femtocells have gained recent notoriety due to their capabilities. For many femto scenarios, connectivity and/or access protocols can pose a number of problems for end users.	A method includes evaluating geolocation information associated with a mobile node and using the geolocation information to identify a femtocell capable of providing network access to the mobile node. A primary scrambling code is provided to the mobile node for operation in an idle mode. The method also includes communicating a secondary scrambling code to initiate access to the femtocell by the mobile node when operating in an active mode.
3	WO2011005654A2	Initializing femtocells	Femto access points generally cannot be initiated into an operator?s network, such as a WiMAX network.	The femtocell may be pre-provisioned with certain credentials so that a femtocell access point can authenticate itself to the operator?s network and become attached to that network. The pre-provisioned parameters may include non-operator specific parameters such as the specific credentials for a particular wireless protocol, such as a WiMAX protocol. It may also include operator specific credentials including the fully qualified domain name (FQDN) of a bootstrap server in the femtocell network service provider (NSP)
4	US7855977B2	Alarming in a femto cell network	To efficiently gauging performance of a femto cell network through generation of alarms based on performance rules for aggregated operational data of multiple femto cell access points.	System(s) and method(s) to monitor operation quality of a femto cell network is provided. Operational data received from deployed femto cell access points are aggregated and monitored; aggregation and monitoring take place within a femto cell network platform.
5	US20100309790A1	Femto base stations and methods for operating the same	A major obstacle to using GPS systems to determine and track the location of a femto base station is presented when the femto base station is located indoors because satellite signal penetration indoors is highly unreliable.	The femto base stations and methods to suppress the need for external global positioning system (GPS) antennas and cables, while continually enabling a network service provider to obtain desired position information. It also provide user with the flexibility to place the femto base station at the location of his/her choice within the home or business regardless of GPS signal strength.
6	US20100285812A1	Call admission priority control determination device and mobile wireless communication system	When more than one terminal is present in the same cell and these terminals communicate with one base station, the wireless resources of that base station are shared among the plural terminals. As a result, the communication rate becomes lower than when communication is performed by only one terminal. Thus, there is a problem that the use of the femtocell base station by other users deteriorates the quality of communication by specified terminal users such as the femtocell base station administrator.	It can be solved by a call admission priority control determination device including a registration table containing base station ID numbers of base stations and an ID number of a high-priority first terminal, and a call admission determination unit that determines call admission with reference to the registration table, wherein, when a connection request or a switching-over request for a third terminal has been received from a base station control device, the call admission determination unit, on the basis of this request, references the registration table and determines whether or not call admission for the third terminal is to be permitted.
7	US20100279704A1	Method for controlling access to a mobile communications network	Current 3G redirection features do not allow for redirection of UE?s from a first cell to another cell operating at the same frequency as the first cell. Therefore, if the 3G femtocell is operating at the same frequency as a neighboring 3G RAT or macrocell, then the current redirection mechanism cannot be used for balancing the load. This is due to interference between cells.	For particular femtocells which have reached or are nearing full capacity, a UE such as a mobile telephone or mobile communication device can be redirected from a 3G femtocell to another macrocell operating at the same or different frequency as the femtocell (access point). This provides improved communications for existing users within the femtocell, as well as for new users whose communications have been redirected to another cell.
8	US20100267386A1	Methods and apparatus for facilitating handoff between a femtocell base station and a cellular base station	The resources of a wireless communication system (e.g., bandwidth and transmit power) may be shared among multiple subscriber stations. A variety of multiple access techniques are known, including CDMA, TDMA, FDMA, OFDMA, SC-FDMA etc. Benefits may be	A method to facilitate femtocell-to-cellular base station handoff is provided. The femtocell base station may receive a neighbor list from the cellular base station. The neighbor list may include information about other cellular base stations. The femtocell base station may broadcast the neighbor list to subscriber stations that are located within a coverage area

			realized by improved methods and apparatus related to the operation of wireless communication systems.	of the femtocell base station.
9	US20100177695A1	Technique for interference mitigation using mobile station signaling	MS cannot access the neighboring FBS because the neighboring FBS is a CSG FBS and therefore does not allow access to an unauthorized MS, except for an emergency service. Therefore, the MS falls into a black hole in the network, even though the MS is located within the service coverage area of the FBS it is authorized to receive service from. In worse scenario, the MS is prohibited from sending any signal to the neighboring FBS since the neighboring FBS is a CSG FBS	A method to operate an MS for Interference Mitigation (IM) in a wireless communication system including a plurality of Closed Subscriber Group (CSG) FBSs is provided. The method includes determining if the MS cannot access a first CSG FBS due to interference from a second CSG FBS, the first CSG FBS being a CSG FBS that the MS is authorized to receive service from and the second CSG FBS being a CSG FBS that the MS is not authorized to receive service from, and in the case when MS cannot access the first CSG FBS due to interference received from the second CSG FBS, transmitting an IM-Signal to the second CSG FBS requesting that the second CSG FBS mitigate the interference to the MS
10	JP2010157807A	Communication system, femto cell base station, authentication device, communication method, and communication program	To provide a communication system for assuring communication security in communication between a femto cell base station and an UE.	Communication system is presented which includes: the UE (User Equipment) and an HLR (Home Location Register) to be used in an IMS (IP Multimedia subsystem) network; and the femto cell base station (Femto AP) organizing a prescribed communication area. The femto cell base station (Femto AP) is a communication system existing between the UE and the HLR, to keep the UE confidential through the use of authentication information corresponding to the UE obtained from the HLR when the UE is authenticated.
11	US20100165957A1	Providing a cellular network with connectivity to a different network	An access point in a cellular network for providing a cellular device with network connectivity to a different network.	A System is provided for use in wireless communication which includes a first device communicating via a first protocol in a first network, a cellular device communicating via a second protocol in a cellular network, the second protocol being incompatible with the first protocol, and an access point in the cellular network, the access point being accessible by the cellular device and being configured to enable communication between the first device and the cellular device.
12	US20100135201A1	Registration notification for mobile device management	To notification of registration of a mobile device within femto coverage area for device content management.	A method is presented in which notification is conveyed to a network component or platform that manages firmware content(s) updates when a mobile device for which an update is available, hands off from wireless macro network coverage onto a femto cell coverage. The notification is delivered in response to a firmware update notification delivered to a component that administers location of the mobile device, or an update flag delivered to a femto access point that can provide femto coverage to the mobile device.
13	US20100130212A1	Femto cell handover in wireless communications	Techniques and systems for performing handover of a mobile station between a cellular wireless network and a private cell or private network.	Presented a techniques and systems for performing handover of a mobile station between a cellular wireless network and a private cell or private network which includes operating a macrocell base station to provide wireless service to mobile stations, determining a candidate group of one or more femtocell base station candidates based at least on respective one or more proximities to the macrocell base station to perform a handover of a mobile station that is being served by the macrocell base station, causing the mobile station to take measurements of signals from one or more base stations identified by the candidate group, and selecting a target femtocell base station from the candidate group for the handover based on the measurements.
14	GB2461845A	Femtocell basestation scrambling code selection	The mobile network operator may allocate only a small number of scrambling codes for use by all of the deployed femtocell basestations, and in fact it is possible that there may be only one scrambling code allocated for use by all of the femtocell basestations in an operator?s network, and so there is a possibility that two femtocell basestations that are located very close together may need to use the same scrambling code.	A method for reducing the possibility of interference between femtocell basestations that are located very close together may need to use the same scrambling code which includes method of selecting a scrambling code, for use in a basestation of a cellular communications network, the method comprising: receiving from a management system a list comprising at least one allowed scrambling code for femtocell basestations; and detecting, in information broadcast by at least one macrocell basestation, at least one allowed

				scrambling code available in an area containing the basestation.
15	US20090286540A1	Femtocell architecture for information management	Congestion in the backhaul network and delays during communication increases because an increase in the number of devices attached to a femto cell, the traffic on the backhaul network of the femto cell can increase significantly	The method presented can facilitate reduction in backhaul network traffic and communication delay by employing an enterprise femto architecture. The enterprise femto architecture employs a routing platform to connect multiple femtos access points to a common femto gateway to generate a mesh network.
16	EP2112854A1	Access control method for cellular networks comprising femto-cells	It is not necessary that the femto system may know at each time the cell locations of all user equipments camping in its area because it will be unable to track those user terminals entering the femto-cell while in the Idle Mode, and also taking into account the fact that up to 6 minutes might be necessary for the user terminal to trigger its periodic location update. Because of this it would not be possible to distribute paging messages from the Core Network to individual femto-cells without running the risk that paging may not be received by the user equipment addressed thereby.	A method is provided to control access of user terminals to a femto system which includes Non Access Stratum (NAS) Mobility Management (MM) messages as well as Access Stratum (AS) Radio Resource Control (RRC) messages.
17	US20090253421A1	Local network management of femtocells	Femtocells could suffer from interference problems without unique spectrum for the femtocell underlay network such as, in a high-rise apartment complex environment, a number of femtocells may be placed near each other, and may be separated only by the floor and/or walls of adjacent apartment units. If these femtocells operate on the same channel, then one femtocell may interfere with the operation of the other femtocell, and vice-versa.	A method to minimize signal interference within a wireless network, the wireless network including a controller communicatively coupled to at least one femtocell, wherein the femtocell is operative to wirelessly transmit and receive data, the method includes: using a portable electronic device to collect signal environment data; analyzing the collected signal environment data; and based on the analyzed signal environment data, commanding the at least one femtocell to alter at least one signal transmission characteristic.
18	GB2456503A	Using global cell identifier for handover in a combined femto-cell/macro-cell environment	When large number of femto cells compared to the number of macro cells is present, it is not possible to ensure that all the femto cells within the coverage area of a macro cell have individual and different frequencies and scrambling codes. So in a combined femto cell-macro cell environment, the macro cell RNC will be unable to determine, from the measurement report received from the UE, which cell (either a femto cell or macro cell) was measured.	A method is provided which includes a network element for a cellular communication system, network element comprises a receiver for receiving a message that comprises a measurement report from a wireless communication unit. The network element further comprises signal processing logic, operably coupled to the receiver, for processing the received measurement report and extracting a global cell identifier therefrom, so the inventive concept provides an improvement to the use of measurement reports, which may be used to facilitate handover between cells in a cellular communication system.

- Click here to download excel sheet of sample patent

Article Analysis

S. No.	Title	Publication Date	Journal/Conference	Dolcera Summary
1	Cognitive Femtocell	Mar. 2011	IEEE Vehicular Technology Magazine	Because of the fact that femtocells can access a resource, sufficiently and locally, to known users with higher throughput, considerable attention has been devoted to the potential cognitive femtocell to allow for higher capacity and intelligent coverage, with guaranteed quality of service (QoS) for future indoor service. Cognitive femtocell is presented as a solution for spectrum-scarcity problems and local-convergence demands for indoor network applications. To control the data packet delivery between the macrocell and cognitive femtocell, A developed gateway broadband router based on novel cross-layer management optimization is used.
2	Interference Analysis for Femtocell Deployment in OFDMA Systems Based on Fractional Frequency Reuse	Mar. 2011	Communications IEEE Letters	A method of optimal power allocation for femtocells with different orthogonal subbands, based on analysis of macrocell interferences is presented.
3	On-Demand Resource-Sharing Mechanism Design in Two-Tier OFDMA Femtocell Networks	Mar. 2011	IEEE Vehicular Technology Society	Discussed two main design issues in orthogonal frequency-division multiple-access (OFDMA) femtocell networks, i.e., resource sharing and femtocell access control. More comprehensive perspective on self-organizing femtocell networks, where users optimize their performance in a distributed manner is presented.

4	Open vs. Closed Access Femtocells in the Uplink	Dec. 2010	IEEE Transactions on Wireless Communications	Since open access deployment provides an inexpensive way to expand their network capabilities, so it would be preferred by the network operator whereas the femtocell owner would prefer closed access, in order to keep the femtocell?s capacity and backhaul to himself, but best approach depends heavily on whether the multiple access scheme is orthogonal (TDMA or OFDMA, per subband) or non-orthogonal (CDMA)
5	Robust Transmission and Interference Management For Femtocells with Unreliable Network Access	Dec. 2010	IEEE Journal on Selected Areas in Communications	Since each femtocell is served by a home base station (HBS) that is connected to the macrocell base station (BS) via an unreliable network access link, such as DSL followed by the Internet, A scenario with a single macrocell and a single femtocell is presented, and is then extended to include multiple macrocells and femtocells, both with standard single-cell processing and with multicell processing (or network MIMO). Two main issues are presented regarding uplink channel: (i) Interference management between femto and macrocells; (ii) Robustness to uncertainties on the quality of the femtocell (HBSto-BS) access link.

Top Cited Patents

S. No.	Patent/Publication No.	Publication Date (mm/dd/yy)	Assignee/Applicant	Title	Citation Count
1	US20070097939A1	05/03/07	Ericsson	Automatic configuration of pico radio base station	60
2	US20070254620A1	11/01/07	Ericsson	Dynamic building of monitored set	33
3	US20080132239A1	06/05/08	Kineto Wireless	Method and apparatus to enable hand-in for femtocells	20
4	US20050144647A1	06/30/05	Mordechai Zussman (Inventor)	Wireless provider monitoring of catv segment	17
5	US20070270152A1	11/22/07	Ericsson	Access control in a mobile communication system	16
6	US20080261602A1	10/23/08	Qualcomm	Backhaul network for femto base stations	12
7	US20080076425A1	03/27/08	Kineto Wireless	Method and apparatus for resource management	11
8	US20080244148A1	10/02/08	Go2Call.com	VoIP enabled femtocell with a USB transceiver station	8
9	US20090040972A1	02/12/09	Julius Robson (Inventor)	Radio resource allocation for cellular wireless networks	7
10	US20080305801A1	12/11/08	Lucent Technologies	Method and apparatus to allow hand-off from a macrocell to a femtocell	7

Top Cited Articles

S. No.	Title	Publication Date	Journal/Conference	Citations Count
1	Femtocell networks: a survey	Sep. 2008	IEEE Communications Magazine	272
2	Performance of Macro- and Co-Channel Femtocells in a Hierarchical Cell Structure	Sep. 2007	IEEE 18th International Symposium on Personal, Indoor and Mobile Radio Communications, 2007	93
3	Effects of User-Deployed, Co-Channel Femtocells on the Call Drop Probability in a Residential Scenario	Sep. 2007	IEEE 18th International Symposium on Personal, Indoor and Mobile Radio Communications, 2007	75
4	Uplink capacity and interference avoidance for two-tier femtocell networks	Jul. 2009	IEEE Transactions on Wireless Communications	62
5	OFDMA femtocells: A roadmap on interference avoidance	Sep. 2009	IEEE Communications Magazine	55
6	WiMAX femtocells: a perspective on network architecture, capacity, and coverage	Oct. 2008	IEEE Communications Magazine	55
7	An overview of the femtocell concept	May. 2008	Bell Labs Technical Journal	53
8	Self-optimization of coverage for femtocell deployments	Apr. 2008	Wireless Telecommunications Symposium, 2008	49
9	Power control in two-tier femtocell networks	Aug. 2008	IEEE Transactions on Wireless Communications	34
10	Interference management and performance analysis of UMTS/HSPA+ femtocells	Sep. 2009	IEEE Communications Magazine	26

Patent Ranking

S.no	Patent/Publication No.	US Class (primary)	Title	Publication Year	Priority Year(s)	Legal Status	Rank
1	US7855983B2	370280	Time Division Duplex Front End Module	2010	2006 | 2007 | 2007 | 2008	Patented Case	3
2	US7613444B2	455403	Dynamic Building Of Monitored Set	2009	2006	Patented Case	1
3	US20110105129A1	455443	Femtocell Search Method For Macro To Femto Handover	2011	2008 | 2008 | 2010	Docketed New Case - Ready for Examination	2
4	US20110047011A1	7050141	Incentives To Optimize The Performance Of Femto Cell Groups	2011	2009	Docketed New Case - Ready for Examination	2

Disclaimer: Patent ranking has been done according to the following logic:

- **Rank-1:** Granted + Femtocell related (claims)
- **Rank-2**: Published + Femtocell related (claims)
- **Rank-3**: Femtocell related (Full spec)
- **Rank-4**: May be relevant
- **Rank-5**: Abandoned or Expired

Products

S. No.	Company	Product	Specification
1	AT&T	 AT&T 3G MicroCell	**Power Supply:** 100-120 VAC, 15 W; 12 VDC, 1.25 A Output. **Status Indicators:** Power, Ethernet, GPS, Computer, 3G. **Dimensions (H x D x W):** 8.5 in.x6.3 in.x1.5 in. (at top), 4 in. (at legs). **Unit Weight:** 1 lb 2 ounces (AC power adapter not included). **Ambient Temperature Range:** 0° to 38°C
2	Cisco	 Cisco 3G Femtocell	**Front panel indicators:** Power, Ethernet, GPS, PC, 3G. **GPS antenna extender:** Optional external GPS antenna input. **Ethernet connection:** RJ-45, WAN connection with broadband modem. **PC connection:** RJ-45, LAN connection with PC or network router. **Reboot button:** Restarts device initialization and authentication. **UMTS bands:** 1900 MHz and 850 MHz (Bands 2 and 5). **Output power:** 5mW. **HSDPA aggregate throughput:** Up to 3.6 Mbps. **AC power adapter:** Input: 90-120VAC; **Maximum output:** 12V, 1.67A, 20W. **Temperature range:** 0° to 45°C (32° to 113°F). **Dimensions:** 7.0 in x 8.0 in. x 2.0 in. **Weight:** 1.0 lb
3	AirWalk Communications		**Dual Mode:** EVDO and 1xRTT, Ethernet backhaul, Self-optimizing, Plug-and-play installation, Single band 800/1900 MHz, 2G and 3G handset compatibility, IOS/SIP interface

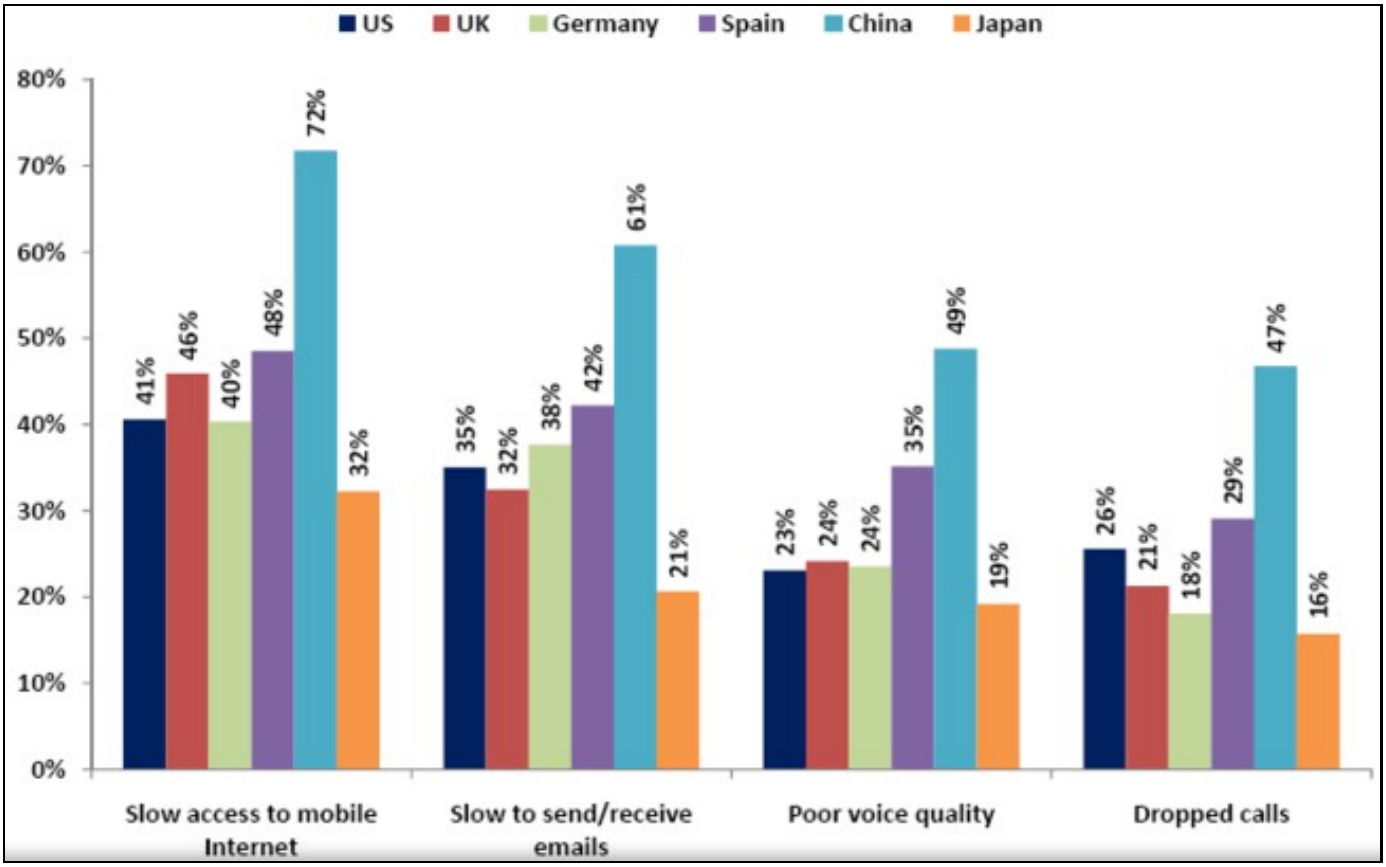
		EdgePoint Femtocell	
4	AirWalk Communications	 EdgePoint PRO Enterprise Femtocell	**Dual-mode:** CDMA 1xRTT and EVDO Rev. A (Rev B+ capable) in one device, Integrated BTS, BSC, RN, RNC, PCF and O&M, Self-optimizing, Plug-and-play installation, Advanced handoff capability (clustering), 10/100 Ethernet backhaul, Single band 450/800/1900 MHz, 2G/3G handset compatibility, IOS or SIP/IMS core network compatibility
5	Airvana	 HubBub CDMA	Simultaneous 1xRTT and EV-DO Rev-A, Flat IP-based architecture, SIP/IMS Core Network Interface, Plug-and-Play Install, Automated Network Planner, Comprehensive Remote Management, Compatible with standard CDMA 1xRTT and EV-DO Rev-A handsets, Ethernet Backhaul
6	Airvana	 HubBub UMTS	**RF output power:** 20 dBm, Supports 4 Simultaneous AMR Channels (voice calls), 7.2 Mbps HSDPA & 1.5 Mbps HSUPA, Range 50m to 200m, Ethernet Backhaul
7	Samsung	 CDMA UbiCell	**RF output power:** Up to 50mW**, System Capacity:** 1carrier / Omni, **Traffic Channel:** Up to 4 simultaneous users, **Air Interface:** CDMA2000 1X, **Frequency:** 1.9GHz (SCS-26UC2), 800MHz (SCS-26UC3), Dual Band (SCS-26UC4), **Input Power:** 00~250VAC, **Network Interface:** 10/100 Base-T Ethernet, **Volume:** 95 in^3 (1.5 Liters), **Weight:** 1.41 lb (640g), **Operating Temperature:** 32°F to 113°F (0°C to 45°C), **Dimension:** 6.1 x 8.2 x 1.9 inch (154 x 208 x 47 mm, HWD)
8	Samsung	 HSPA UbiCell	**RF Output:** Up to 20mW, **System Capacity:** 1carrier / Omni, **Traffic Channel:** Up to 4 simultaneous users, **Air Interface:** WCDMA / HSPA, **Frequency:** 2.1GHz, **Input Power:** 100~240VAC, **Network Interface:** 10/100 Base-T Ethernet, **Volume:** 1.4 Liters, **Weight:** 600g, **Operating Temperature:** 0°C to 45°C, **Dimension:** 185 x 210 x 36 mm (HWD)
9	ip.access	 nano3G S8	**RF output power:** 5mW (+7dBm), **UMTS bands:** 1,4,2/5, **Simultaneous users:** 8, **Electrical power:** <8W, **External antennas:** No, **Oscillator: VCTCXO**, **NTP: Time stamp & sync**, **Temp. range:** 0° to 40°C, **Dimensions(mm):** 193x171x53

10	Huawei	 Huawei?s Home Media Center	**RF output power:** 20mW, **Traffic Channel:** Up to 4 simultaneous users
11	Argela	 Femtocell[3G]	**Radio frequency:** UMTS FDD band I support, **Transmit power:** 23 dBm (200 mW) maximum, **Cell radius:** 200m maximum, **Maximum active UEs:** 8, Access control: Closed, Open, or Hybrid, **UMTS services:** 12.2 kbps AMR for voice, 64 kbps video (128 kbps can be supported), PS data services at upto 384 kbps, HSDPA 14 Mbps downlink (limited by DSL speed), HSUPA 5.7 Mbps uplink (limited by DSL speed), **Physical characteristics:** Max power consumption of 10W during normal operation, 18cm x 11cm x 2.5cm, 12V DC supply, Weight 400g, RJ-45 10/100 Ethernet connection to the DSL CPE

Market Research

Mobile Communication Problems

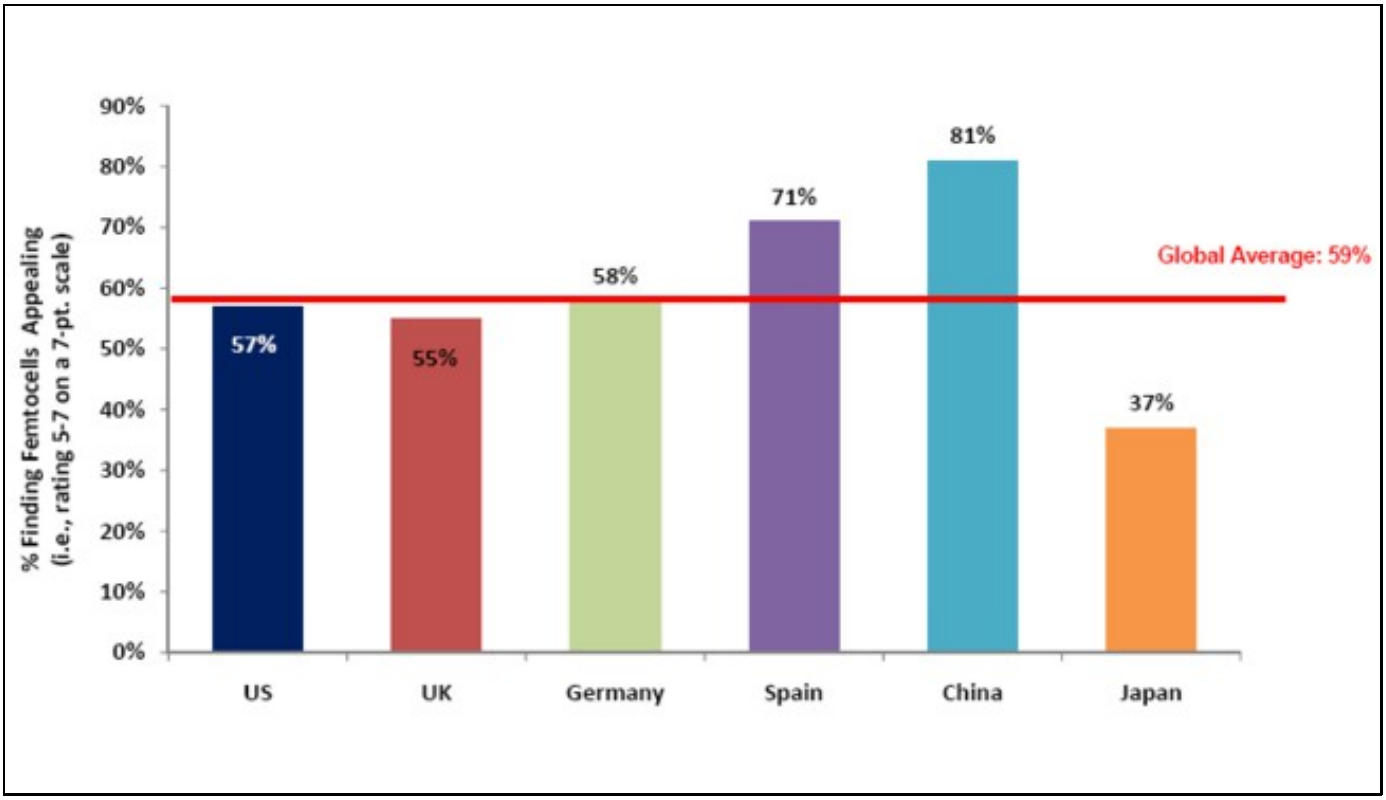
- Parks Associates, commissioned by the Femto Forum, has conducted this custom consumer research in six nations: the U.S., the U.K., Germany, Spain, China, and Japan. The following chart illustrates the problem associated with mobile communication, from which we can conclude that China has severe problems in mobile based services.



Problems with Mobile Service
Source: **Parks Associates**

Demand of Femtocells

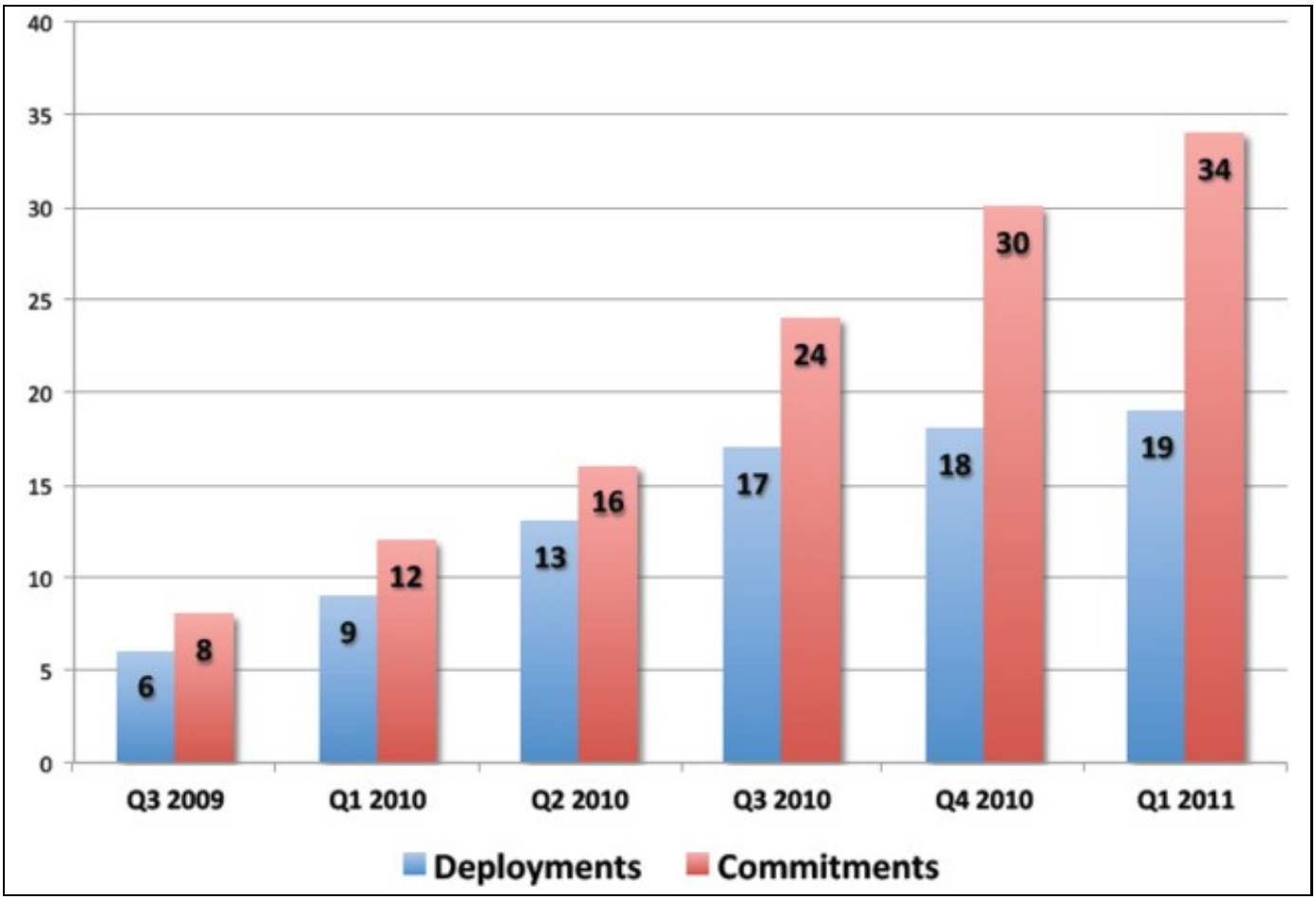
- From the above chart we can see that China has severe problems in mobile based services, therefore, the demand of femtocells is more in China.



Femtocell Demand Varies by Market(Q3 2010)
Source: **Parks Associates**

Deployment and Commitments of Femtocell Service

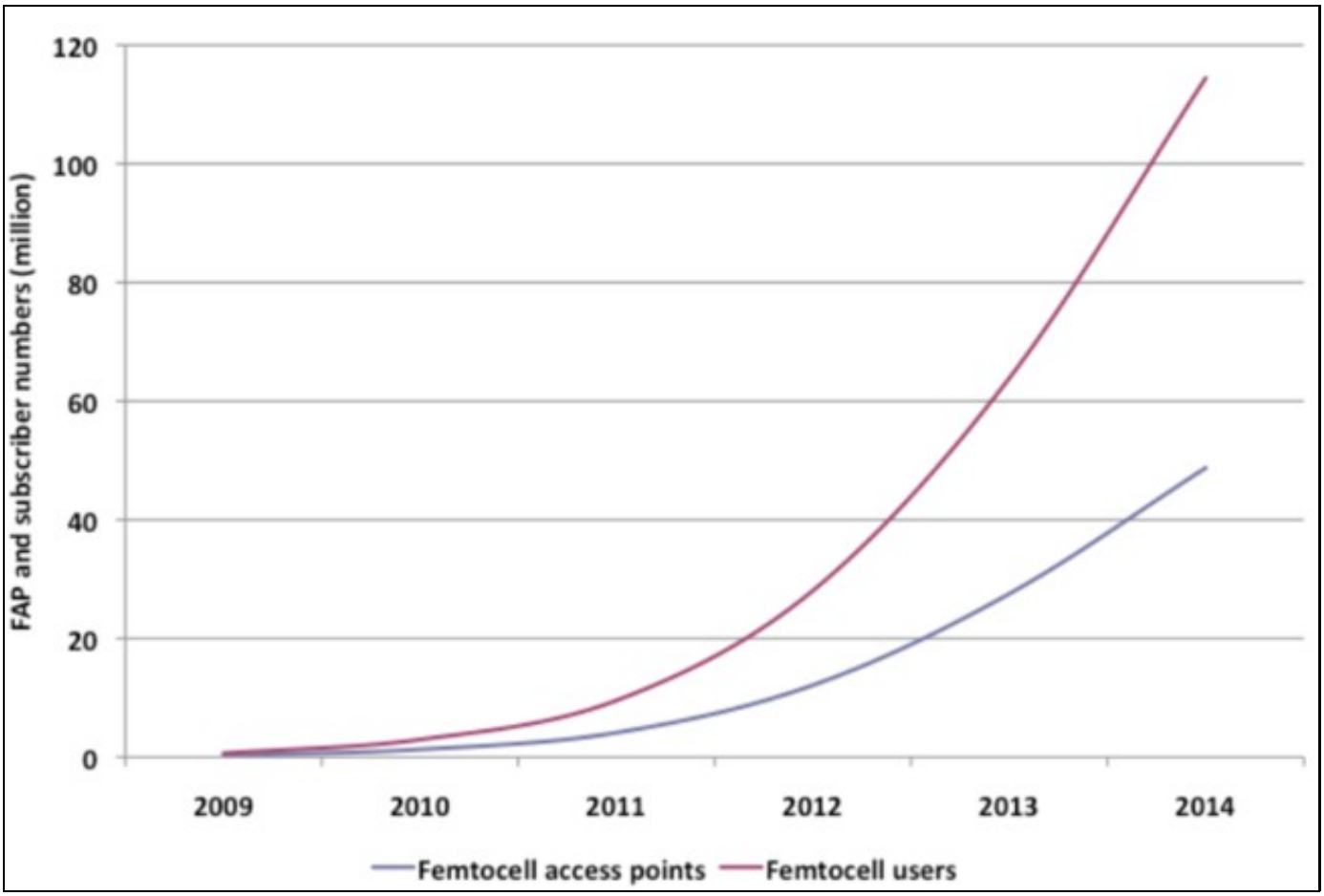
- This chart exemplifies a historical representation of deployments and commitments, both of which have increased almost 300% within a year.



Femtocell Service Deployments & Commitments
Source:**Informa Telecoms & Media**

Market Forecast

- The following chart exemplifies Informa?s forecasts (January 2010) for femtocell access point shipments and users.



Femtocell access point and user forecasts
Source:**Informa Telecoms & Media**

The following table provides a summary of publicly announced statements, sorted by reverse chronological order. The table is followed by more information regarding each statement:

- Strategy Analytics expects femtocell access point shipments to reach 2 million during 2010 (Strategy Analytics ? November 2010).
- ABI research expects 1 million femtocells to have been shipped by the end of 2010,increasing to 54 million femtocell shipments during 2015. ABI research estimates that 1.3 million femtocells have been shipped to operators from vendors during 2010. The estimate for femtocell shipments for 2011 is 3.8 million and 70 million for 2015(ABI Research ? September 2010).
- IDate has updated its femtocell market forecasts, with 11.7 million femtocell access point shipments during 2013, increasing to 23 million during 2014 (iDate ? September 2010).
- Alcatel Lucent has performed research on consumer attitudes to a variety of femtocell marketing propositions and forecasts more than 34 million femtocell users in the US, UK, Germany, Singapore and Taiwan by 2014, at which point the market will be worth over ?6 billion (Alcatel Lucent? September 2010)
- In-–Stat has published updated femtocell forecasts, and expects that worldwide annual enterprise femtocell revenue CAGR will be 125.7% from 2009-–2014 (In-–Stat - September 2010).
- Dell?Oro expects estimates 1 million femtocell access points to ship this year, reaching 62 million during 2014, more than 80% of which will be WCDMA femtocells (Dell?Oro - August 2010).
- iSuppli forecasts that shipments will rise to 1.9 million during 2010, up from 571,000 in 2009. A period of expansion then will follow, with shipments reaching 7.2m units in 2011, up 289% from 2010. Shipments are forecast to rise by 232% to reach 23.9m units in 2012 and by 657% to hit 39.6m units in 2013. (iSuppli - March 2010).
- GIA projects the femtocell market to surpass 75.8 million by the year 2015, driven by the ongoing migration of mobile operators from smaller access points to large base stations. (Global Industry Analysts - March 2010).

Source:**Informa Telecoms & Media**

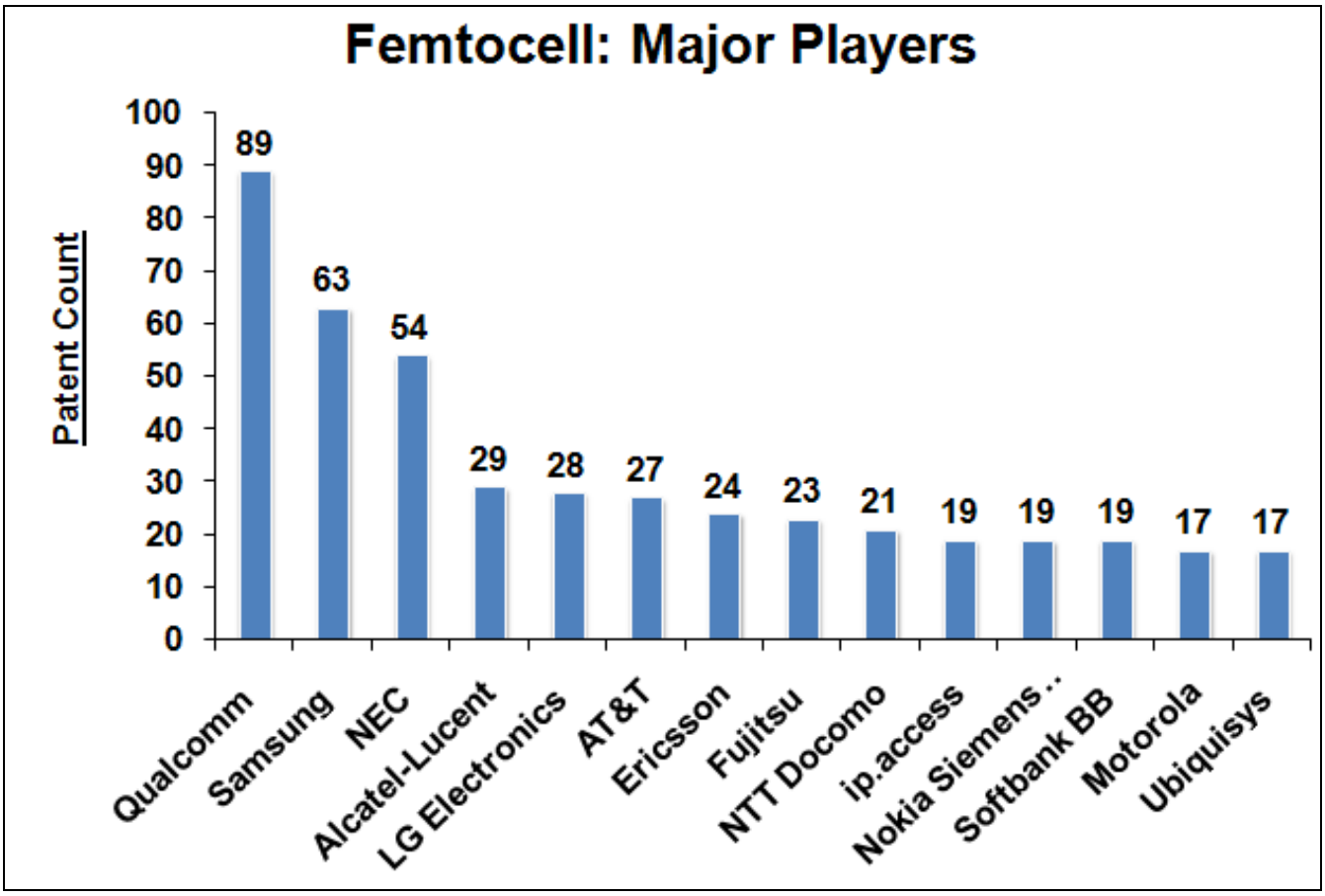
Key Findings

Note: Total 864 Sample patents were taken into consideration for analysis (Data upto 8th March 2011).

- Qualcomm, Samsung and NEC are the major players in femtocells technology
- Key patents in the femtocells are held by Ericsson, Kineto Wireless and Qualcomm.
- Patenting activity has seen a very high growth rate in the last two years.
- US and WO are very active in femtocell technology research.

Major Players

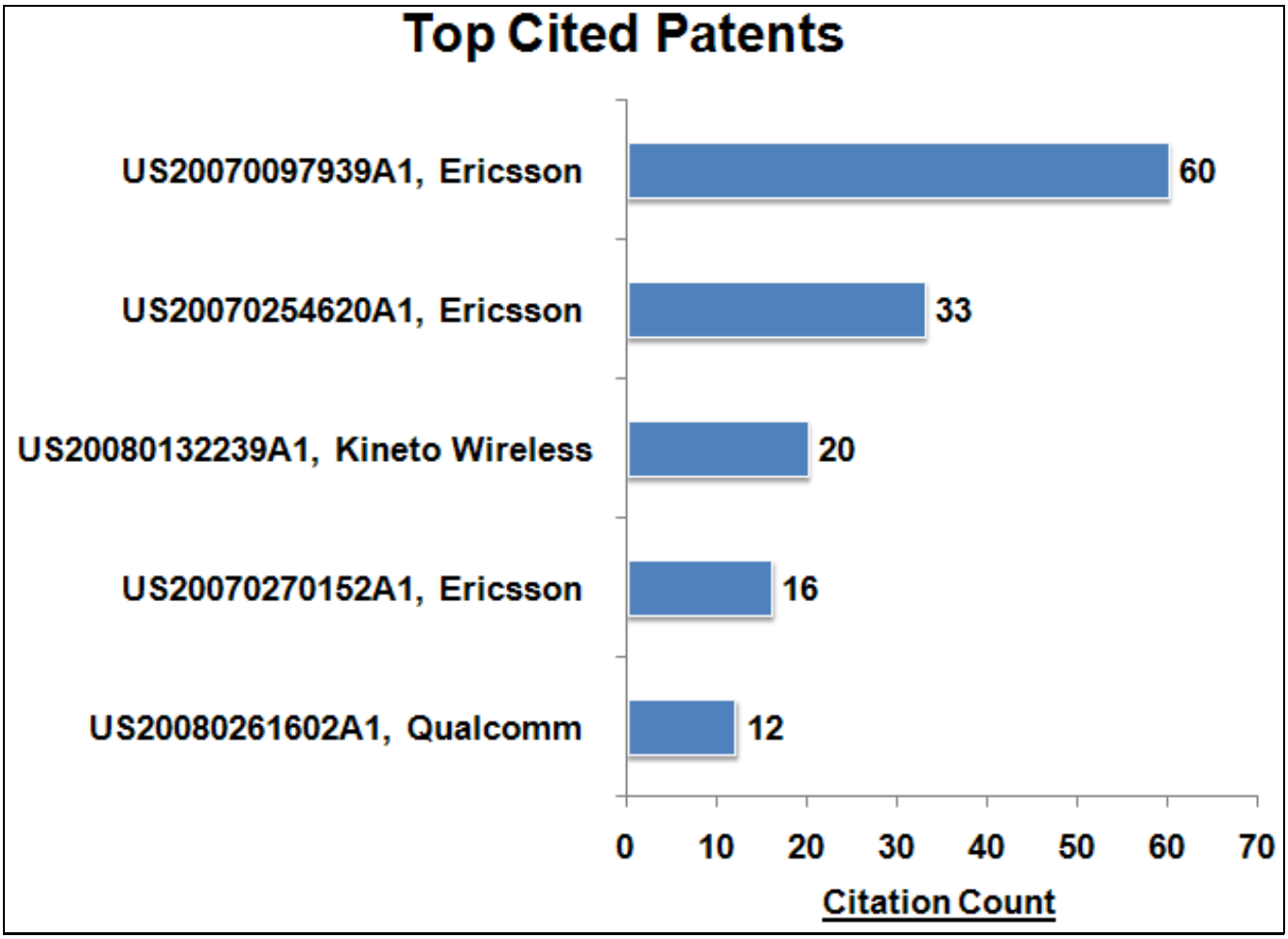
- The following chart illustrates the **Major Players** in femtocells technology from which it can be concluded that the Qualcomm, Samsung and NEC are the major players in femtocells technology.



Major Players

Key Patents

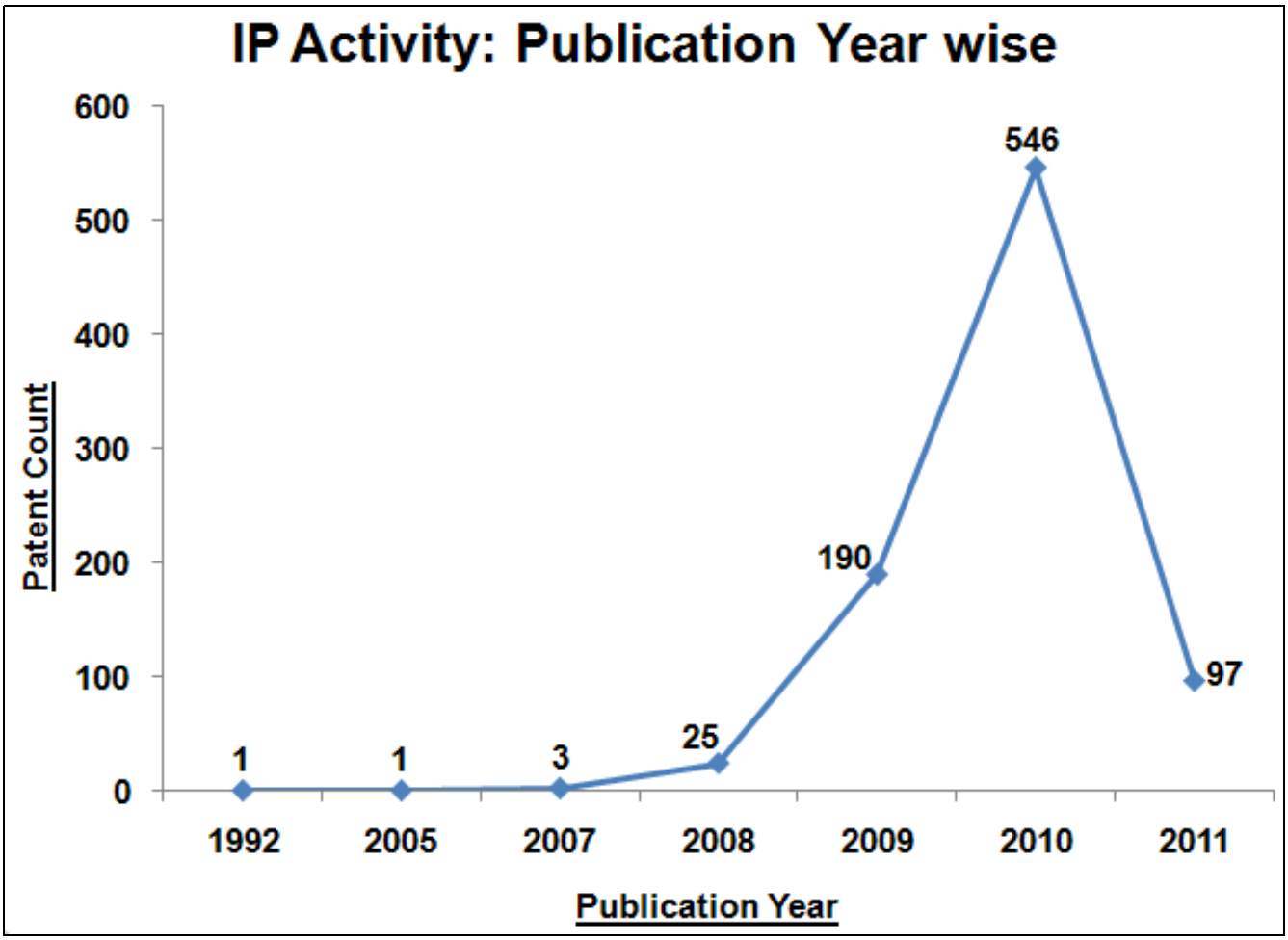
- The following chart illustrates the **Key Patents** in femtocells technology from which it can be concluded that the key patents in the femtocells are held by Ericsson, Kineto Wireless and Qualcomm.



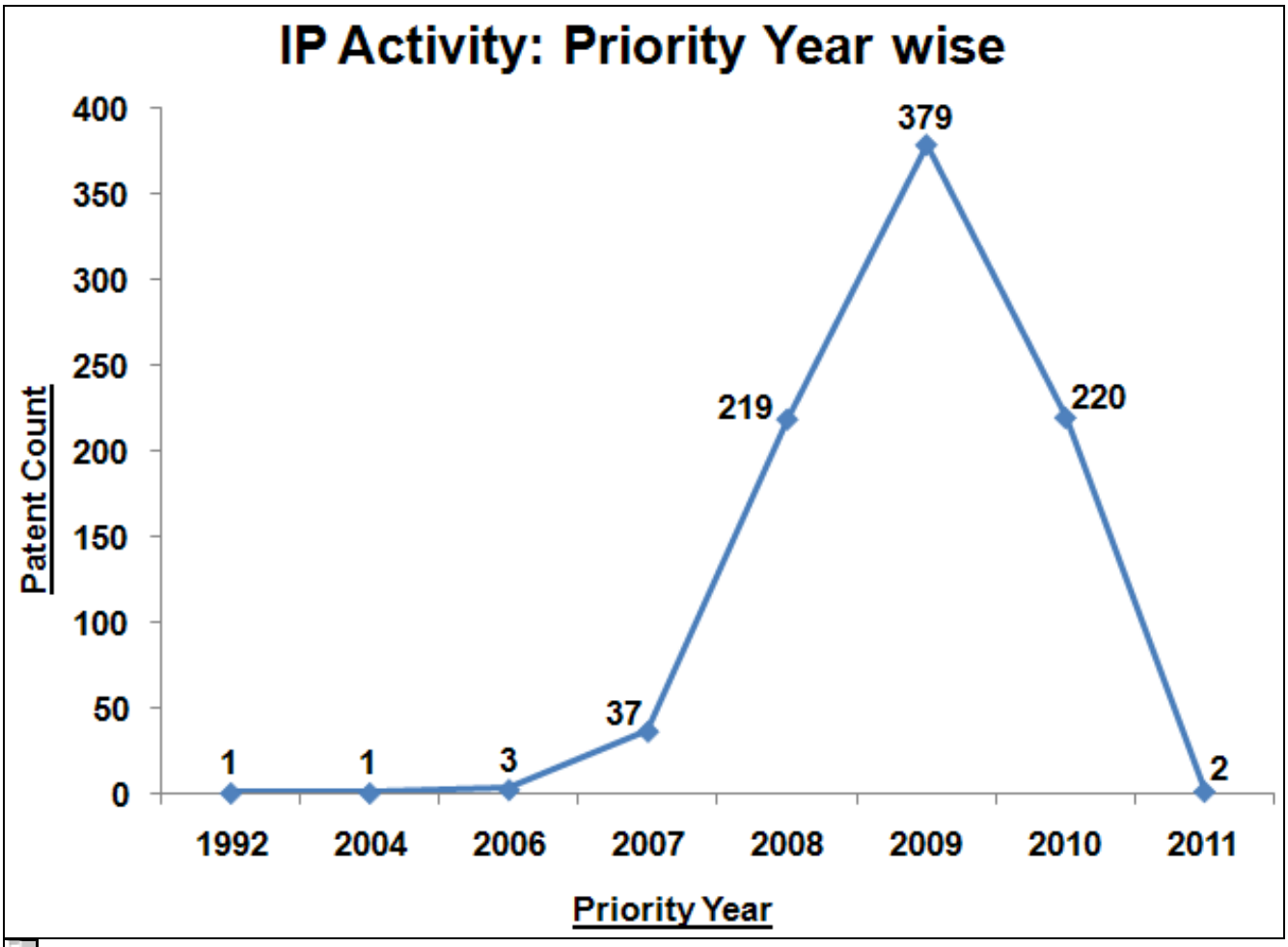
Key Patents

IP Activity

- The following charts illustrate the **Patent Publication**/**Priority** activity in previous years from which it can be concluded that the Patenting activity has seen a very high growth rate since 2008.



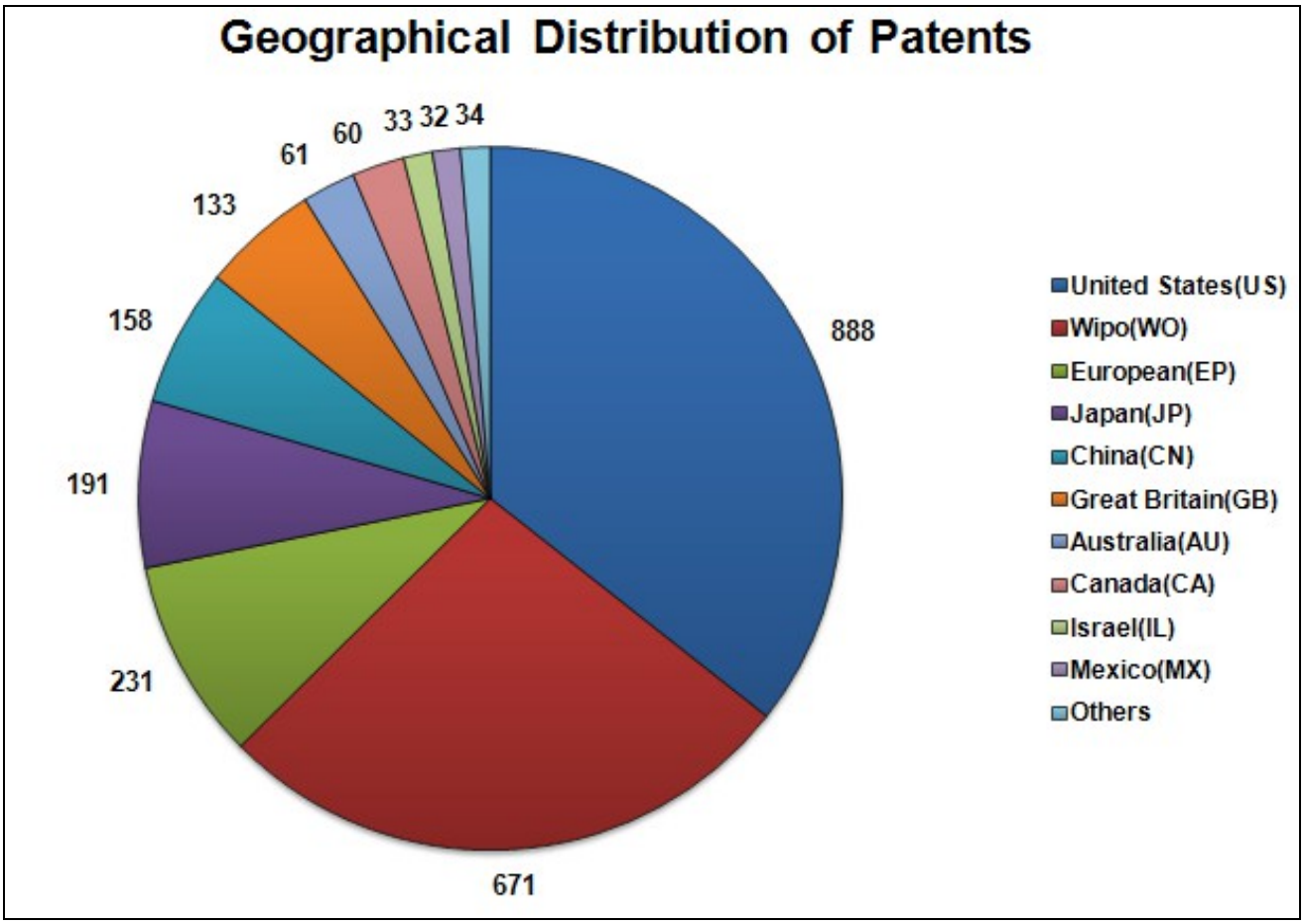
IP Activity Based on Publication Years



IP Activity Based on Priority Years

Geographical Activity

- The following chart illustrates the **Geographical Distribution** of patents from which it can be concluded that the US and WO are very active in femtocell technology research.



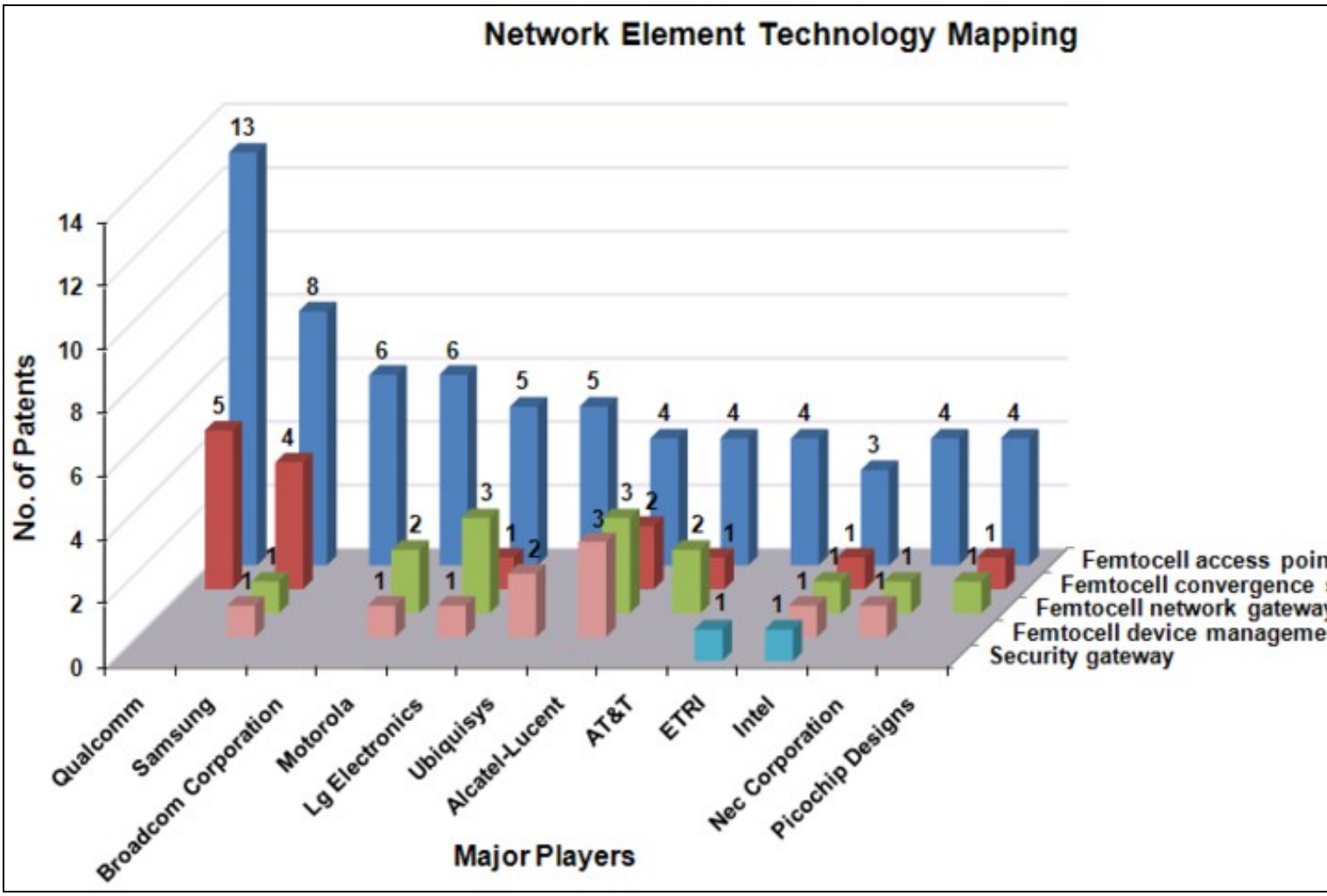
Geographical Activity

- Others includes 13 Patents from Germany(DE), 8 Patents from South Korea(KR), 6 Patents from Austria(AT), 5 Patents from France(FR) and 2 Patents from Brazil(BR).

Market Player Analysis

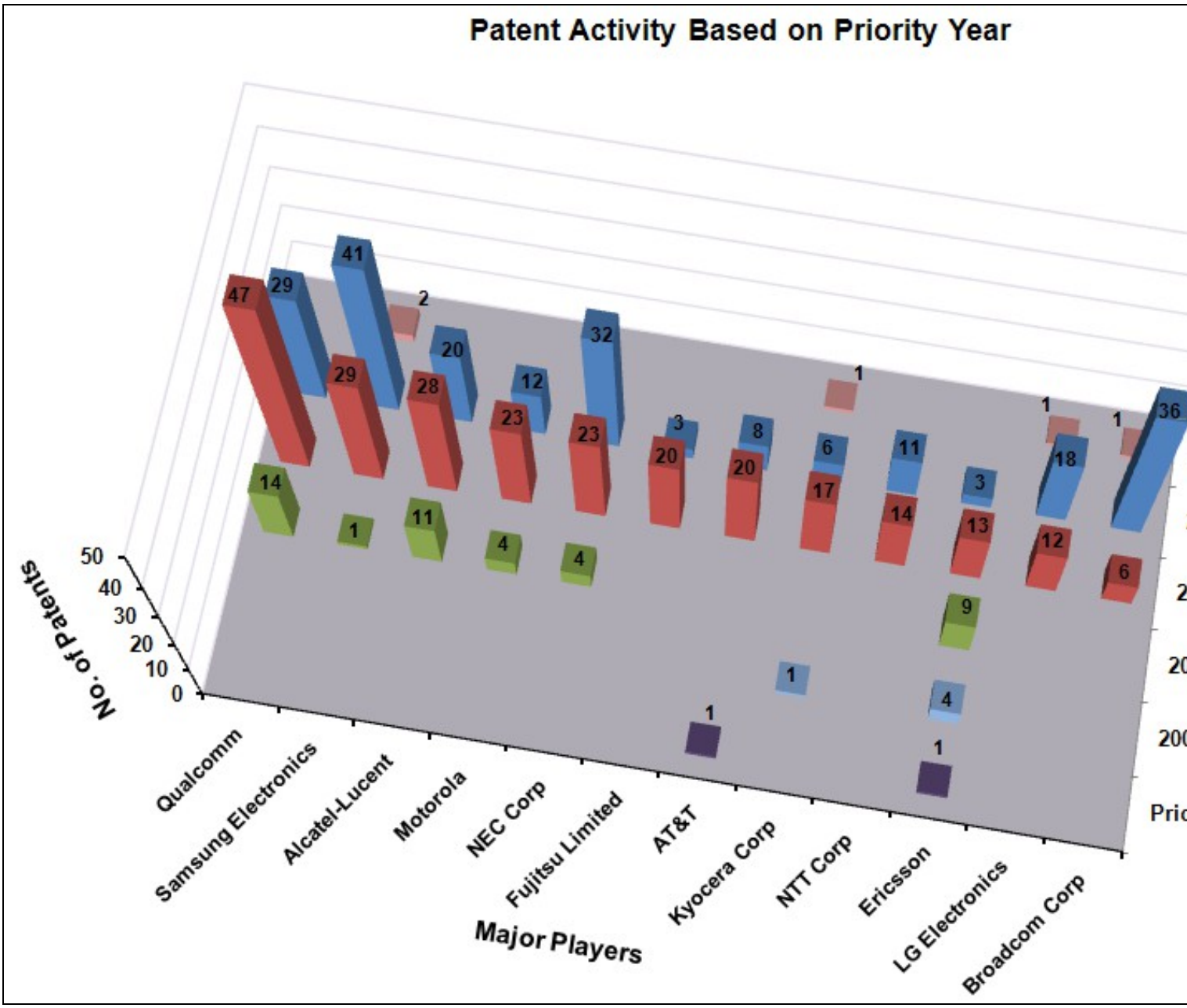
Network Element Technology Mapping

The following chart illustrates Network element technology mapping with top market players and drawn based on **100 sample patents as given on the dashboard** from which it can be concluded that significant work is being done on Femtocell access point.



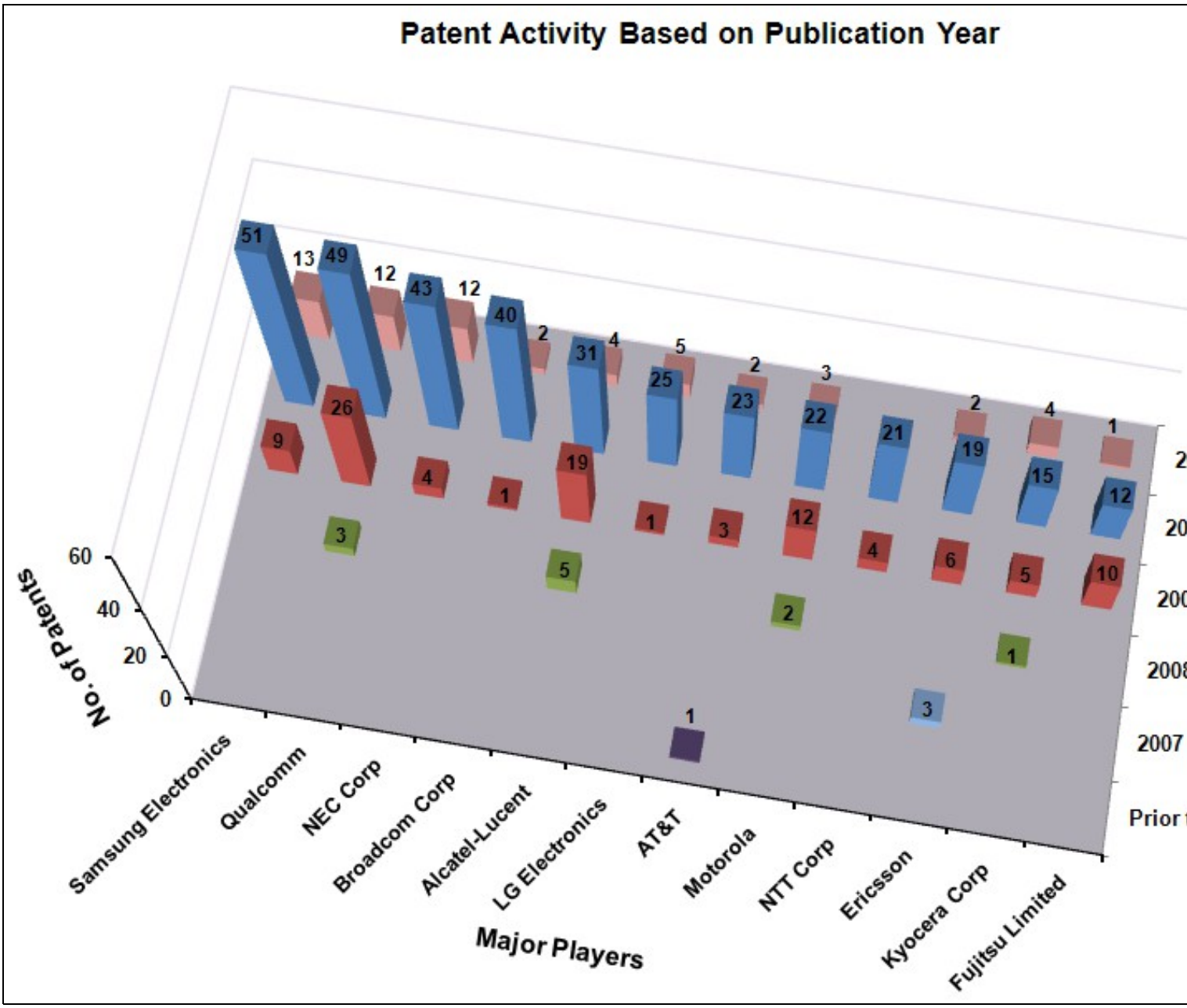
Femtocell Network Element Technology Mapping
Patent Activity Based on Priority Year

The following chart illustrates Patent/Publication activity year by year for top market players from which it can be concluded that significant research activity has taken place in the years 2008 and 2009



Patent Activity Based on Priority Year
Patent Activity Based on Publication Year

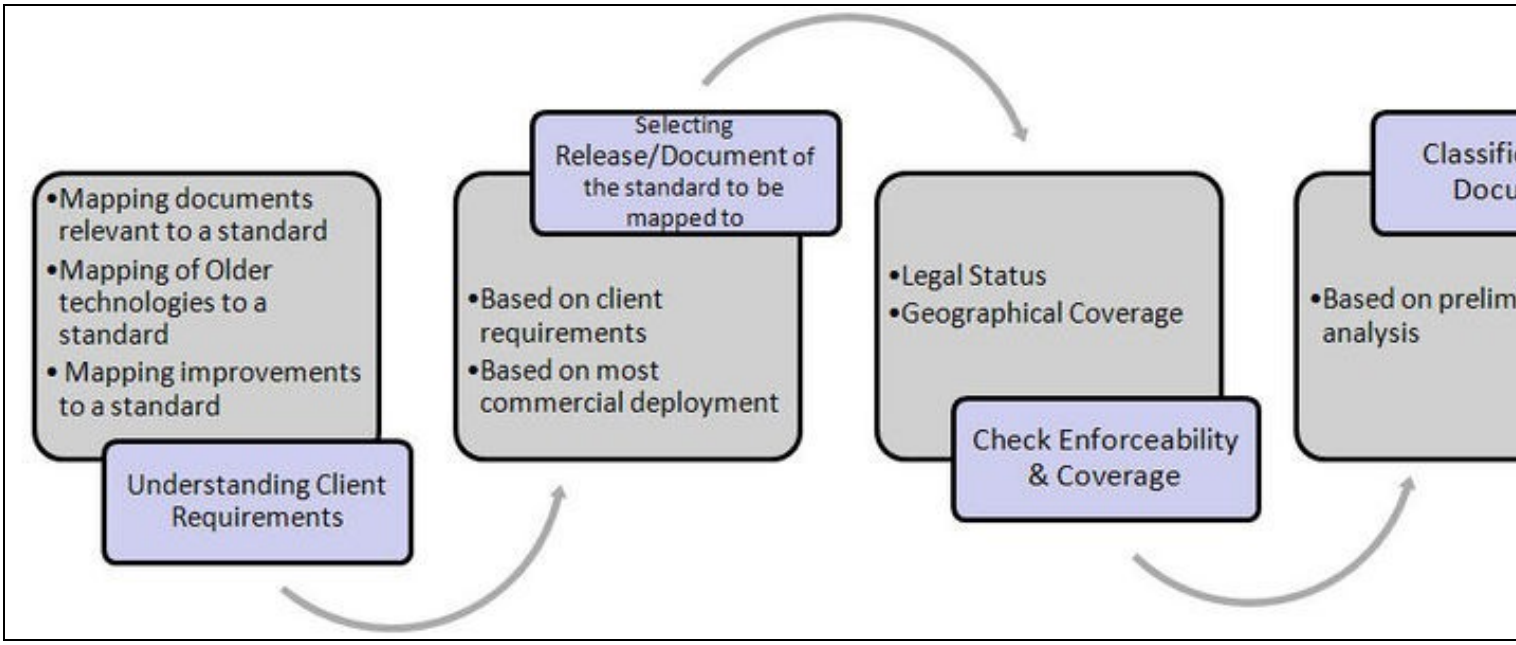
The following chart illustrates Patent/Publication activity year by year for top market players from which it can be concluded that significant research activity has been published from 2009 onwards.



Patent Activity Based on Publication year

Claim Mapping

Process Flow



Sample claim charting

S.No.	Patent/Publication No.	Claim Language	Relevant Section in Femtocell Release	Technical Comment
1	WO2010082874A1	**Claim1**	**4 Overview** 3GPP TS 25.367 V9.5.0 (2010-12) **Mobility procedures for Home Node B (HNB); Overall description; Stage 2 (Release 9)**	
		A method performed in a communication system (100) by a device (120) that is communicatively coupled to the communication system, and where the communication system includes one or more closed subscriber group (CSG) cells, comprising: searching (505) for the one or more CSG cells; attempting (510) to access the one or more CSG cells; **determining (515) whether access to the one or more CSG cells is granted; and updating (520) a CSG White List corresponding to the one or more CSG cells in which access is granted, where the CSG White List indicates to the device which of the one or more CSG cells the device is allowed to access.**	To facilitate access control, a UE with CSG subscription would have an CSG whitelist, which contains one or more CSG Identities associated with the CSG cells on which the UE is allowed access.	UE is allowed access to HNB based on CSG whitelist
		Claim2		
		The method of claim 1 , where the communication system includes one or more of a Long Term Evolution (LTE) network or a Wideband Code Division Multiple Access/Universal Mobile Telecommunications System (UMTS) Terrestrial Radio Access Network (WCDMA/UTRAN) and the one or more CSG cells includes one or more femto cells.	The claim is generic	HNB can be connected to any of the following networks like LTE, WCDMA/UTRAN etc.
		Claim3	**4 Overview** 3GPP TS 25.367 V9.5.0 (2010-12) **Mobility procedures for Home Node B (HNB); Overall description; Stage 2 (Release 9)**	
		The method of claim 1 , where the device includes the CSG White List	To facilitate access control, a UE with CSG subscription would have an CSG whitelist	To gain access UE must have CSG whitelist
		and the method is performed to update the CSG White List.	**6.1 Manual CSG ID Selection** 3GPP TS 25.367 V9.5.0 (2010-12) **Mobility procedures for Home Node B (HNB); Overall description; Stage 2 (Release 9)**	
			Based on the outcome of a Location Registration procedure initiated on a CSG cell, the UE?s CSG whitelist is updated.	CSG whitelist is updated based on the process carried out by Location register

		Claim4	**6.1 Manual CSG ID Selection** 3GPP TS 25.367 V9.5.0 (2010-12) **Mobility procedures for Home Node B (HNB); Overall description; Stage 2 (Release 9)**	
		The method of claim 3, where the attempting comprises: attempting to access the one or more CSG cells, where one of the one or more CSG cells is not included in the CSG White List.	During manual CSG ID selection a UE is allowed to perform Location Registration procedure on a CSG cell whose CSD ID is not in the CSG whitelist.	CSG ID?s which are not included in CSG whitelist are allowed to access CSG cell after following a location register procedure
		Claim5	**6.1 Manual CSG ID Selection** 3GPP TS 25.367 V9.5.0 (2010-12) **Mobility procedures for Home Node B (HNB); Overall description; Stage 2 (Release 9)**	
		The method of claim 1 , where the device includes a user equipment, and the method further comprises: updating the CSG White List corresponding to the one or more CSG cells in which access is denied.	During manual CSG ID selection a UE is allowed to perform Location Registration procedure on a CSG cell whose CSD ID is not in the CSG whitelist. Based on the outcome of a Location Registration procedure initiated on a CSG cell, the UE?s CSG whitelist is updated.	CSG whitelist is updated based on the process carried out by Location Registration procedure initiated on a CSG cell

- Click here to download the excel sheet.
- Click here to download the release for 3GPP TS 25.367 V9.5.0 (2010-12) Mobility procedures for Home Node B (HNB); Overall description; Stage 2; (Release 9)

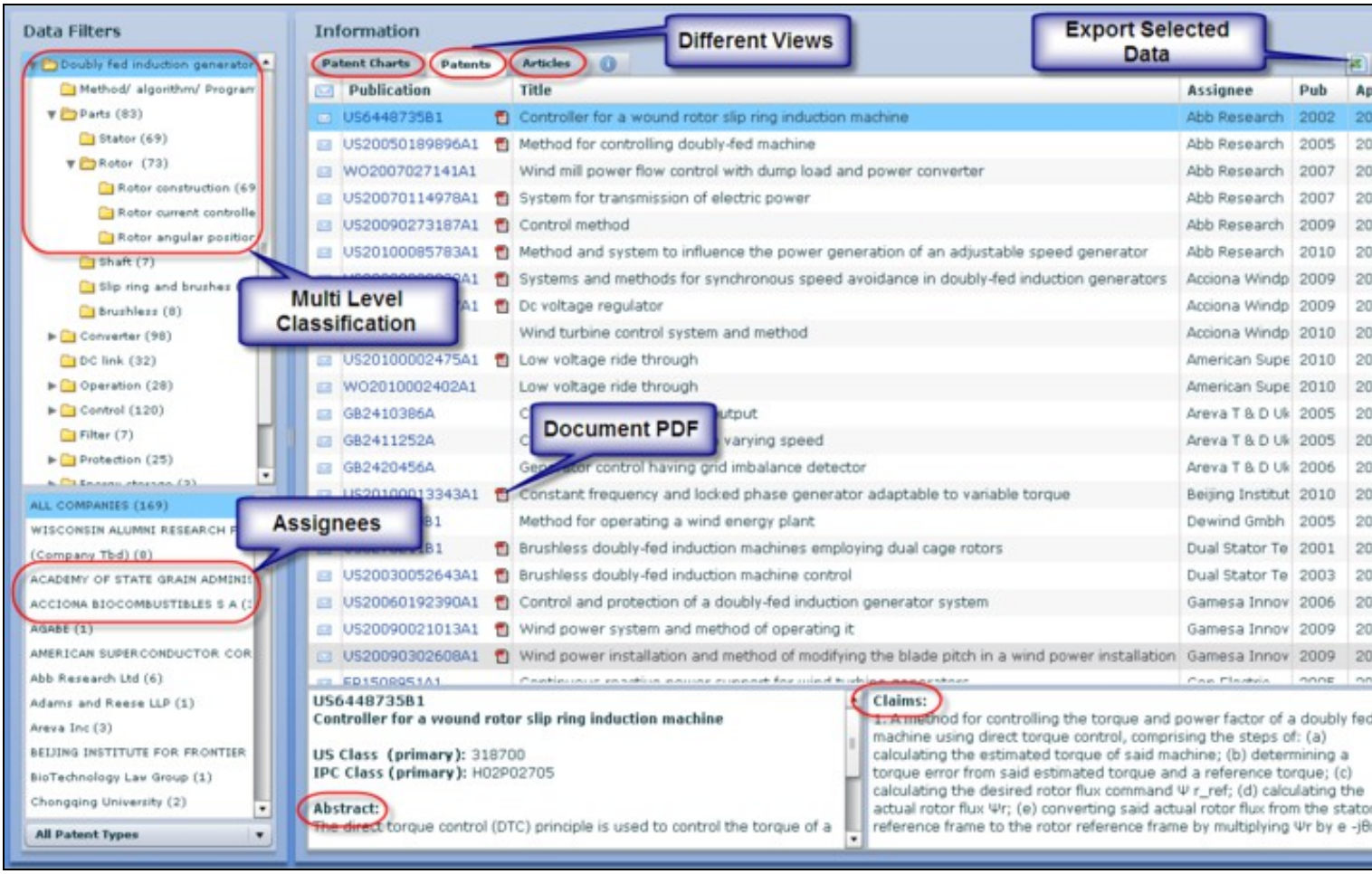
Interactive Taxonomy

- *Use the mouse(click and drag/scroll up or down/click on nodes) to explore nodes in the detailed taxonomy*
- *Click on the red arrow adjacent to the node name to view the content for that particular node in the dashboard*

Dolcera Dashboard

The Dashboard is Dolcera's visualization platform to present the organized patent landscape

- Best viewed in Internet explorer 6 and higher versions
- To view dashboard you would require a flash player. Kindly install a flash player if its not installed in your system



Dashboard Links

Femtocell-Network Category - Dashboard	
Femtocell-Problem Solution Mapping of Handover Node- Dashboard	

- Note1: Use the following credentials to view the dashboard 1.1
  - Username: demo@dolcera.com
  - Password: demo123
- Note2: A total of 100 patents were considered for the creation of the sample dashboard

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References

Background References

1. Femtocell?
2. Femtocells: Why Now?
3. Femtocell Network Architecture

Image References

1. Femtocell Access to the Core Mobile Network via Broadband Internet
2. Femtocell?
3. How Femtocell Work

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