Briefly, in accordance with one or more embodiments, a femto access point scans an area of a network to find a serving base station in the area, requests one or more physical link profiles from a network server on the network, receives one or more physical link profiles from the network server in response to the requesting, determines which one of the physical link profiles exhibit a lower amount of interference with the serving base station, and then operates with the physical link profile determined to exhibit a lower amount of interference with the serving base station.
K = No. of Phy Profiles in List

PF_INDEX = 1
PF_MIN_INTF = 1
MIN_RSSI = 0 dBm

CURRENT_RSSI = MEASURE (PHY_PROFILE(PF_INDEX))

CURRENT_RSSI < MIN_RSSI ?

MIN_RSSI = CURRENT_RSSI
PF_MIN_INTF = PF_INDEX

PF_INDEX = PF_INDEX + 1

PF_INDEX > K ?

PHY_PROFILE (PF_MIN_INTF)

FIG. 6
FREQUENCY SELECTION FOR FEMTO ACCESS POINT

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND

[0002] A femto access point (FAP) is a lower power micro base station (BS) operating in a licensed spectrum to be deployed at a local area to enhance wireless service coverage and/or performance in a wireless wide area network (WWAN). Typically, such femto access points are deployed by end users in a home or office location wherein the end user is not involved in extensive configuration of the femto access point. A femto access point may be deployed at the edge of service coverage and/or inside a building where service quality may be lower such. Femto access points may be back-hauled to the network via a broadband connection to the network, for example via a cable, fiber, and/or digital subscriber line, such that a client device connects to the network via the locally disposed femto access point rather than via a remotely disposed base station (BS) or a base transceiver station (BTS) of the network.

[0003] In wireless networks such as cellular or other wireless broadband networks, frequency spectrum is a valuable resource that should be controlled to optimize network performance. In general, such frequency spectrum control involves frequency reuse while minimizing interference among two or more devices operating in the same vicinity.

DESCRIPTION OF THE DRAWING FIGURES

[0004] Claimed subject matter is particularly pointed out and distinctly claimed in the concluding portion of the specification. However, such subject matter may be understood by reference to the following detailed description when read with the accompanying drawings in which:

[0005] FIG. 1 is block diagram of a wireless wide area network in accordance with one or more embodiments;

[0006] FIG. 2 is a block diagram of a femto access point in accordance with one or more embodiments;

[0007] FIG. 3 is a diagram of a cellular type network illustrating one particular frequency reuse pattern in accordance with one or more embodiments;

[0008] FIG. 4 is a diagram of a cellular type network illustrating another frequency reuse pattern in accordance with one or more embodiments;

[0009] FIG. 5 is a flow diagram of a frequency selection control flow in accordance with one or more embodiments; and

[0010] FIG. 6 is a flow diagram of a method for automatic frequency selection in accordance with one or more embodiments.

[0011] It will be appreciated that for simplicity and/or clarity of illustration, elements illustrated in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity. Further, if considered appropriate, reference numerals have been repeated among the figures to indicate corresponding and/or analogous elements.

DETAILED DESCRIPTION

[0012] In the following detailed description, numerous specific details are set forth to provide a thorough understanding of claimed subject matter. However, it will be understood by those skilled in the art that claimed subject matter may be practiced without these specific details. In other instances, well-known methods, procedures, components and/or circuits have not been described in detail.

[0013] In the following description and/or claims, the terms coupled and/or connected, along with their derivatives, may be used. In particular embodiments, connected may be used to indicate that two or more elements are in direct physical and/or electrical contact with each other. Coupled may mean that two or more elements are in direct physical and/or electrical contact. However, coupled may also mean that two or more elements may not be in direct contact with each other, but yet may still cooperate and/or interact with each other. For example, “coupled” may mean that two or more elements do not contact each other but are indirectly joined together via another element or intermediate elements. Finally, the terms “on,” “overlying,” and “over” may be used in the following description and claims. “On,” “overlying,” and “over” may be used to indicate that two or more elements are in direct physical contact with each other. However, “over” may also mean that two or more elements are not in direct contact with each other. For example, “over” may mean that one element is above another element but not contact each other and may have another element or elements in between the two elements. Furthermore, the term “and/or” may mean “and”, it may mean “or”, it may mean “exclusive-or”, it may mean “one”, it may mean “some, but not all”, it may mean “neither”, and/or it may mean “both”, although the scope of claimed subject matter is not limited in this respect. In the following description and/or claims, the terms “comprise” and “include,” along with their derivatives, may be used and are intended as synonyms for each other.

[0014] Referring now to FIG. 1, a block diagram of a wireless wide area network in accordance with one or more embodiments will be discussed. As shown in FIG. 1, network 100 may be an internet protocol (IP) type network comprising an Internet 110 type network or the like that is capable of supporting mobile wireless access and/or fixed wireless access to Internet 110. In one or more embodiments, network 100 may be in compliance with a Worldwide Interoperability for Microwave Access (WiMAX) standard or future generations of WiMAX, and in one particular embodiment may be in compliance with an Institute for Electrical and Electronics Engineers 802.16 standard (IEEE 802.16-2009). In one or more alternative embodiments network 100 may be in compliance with a Third Generation Partnership Project Long Term Evolution (3GPP LTE) or a 3GPP2 Air Interface Evolution (3GPP2 AIE) standard, and/or a future generation cellular broadband network standard. In general, network 100 may comprise any type of orthogonal frequency division multiple access (OFDMA) based wireless network, and the scope of the claimed subject matter is not limited in these respects. As an example of mobile wireless access, access service network gateway (ASN-GW) 112 is capable of coupling with base station (BS) 114 to provide wireless communication between subscriber station (SS) 116 and Internet 110. Subscriber station 116 may comprise a mobile type
device or information handling system capable of wirelessly communicating via network 100, for example a notebook type computer, a cellular telephone, a personal digital assistant, or the like. ASN-GW 112 may implement profiles that are capable of defining the mapping of network functions to one or more physical entities on network 100. Base station 114 may comprise radio equipment to provide radio-frequency (RF) communication with subscriber station 116, and may comprise, for example, the physical layer (PHY) and media access control (MAC) layer equipment in compliance with an IEEE 802.16-2009 type standard. Alternatively, base station 112 may also be referred to as a base transceiver station (BTS) in one or more embodiments. Base station 114 may further comprise an IP backbone to couple to Internet 110 via ASN-GW 112, although the scope of the claimed subject matter is not limited in these respects.

[0015] Network 100 may further comprise a visited connectivity service network/authentication, authorization, and accounting (CSN/AAA) server 124 capable of providing one or more network functions including but not limited to proxy and/or relay type functions, for example authentication, authorization and accounting (AAA) functions, dynamic host configuration protocol (DHCP) functions, or domain name service controls or the like, domain gateways such as public switched telephone network (PSTN) gateways or voice over internet protocol (VoIP) gateways, and/or internet protocol (IP) type server functions, or the like. However, these are merely examples of the types of functions that are capable of being provided by visited CSN/AAA or home CSN/AAA 126, and the scope of the claimed subject matter is not limited in these respects. Visited CSN/AAA 124 may be referred to as a visited CSN/AAA in the case for example where visited CSN/AAA 124 is not part of the regular service provider of subscriber station 116, for example where subscriber station 116 is roaming away from its home CSN/AAA such as home CSN/AAA 126, or for example where network 100 is part of the regular service provider of subscriber station but where network 100 may be in another location or state that is not the main or home location of subscriber station 116. In a fixed wireless arrangement, WiMAX type customer premises equipment (CPE) 122 may be located in a home or business to provide home or business customer broadband access to internet 110 via base station 120, ASN-GW 118, and home CSN/AAA 126 in a manner similar to access by subscriber station 116 via base station 114, ASN-GW 112, and visited CSN/AAA 124. A difference being that WiMAX CPE 122 is generally disposed in a stationary location, although it may be moved to different locations as needed, whereas subscriber station may be utilized at one or more locations if subscriber station 116 is within range of base station 114 for example. In accordance with one or more embodiments, operation support system, self organizing networks (OSS (SON)) server 128 may be part of network 100 to provide management functions for network 100 and to provide interfaces between functional entities of network 100. Network 100 of FIG. 1 is merely one type of wireless network showing a certain number of the components of network 100, however the scope of the claimed subject matter is not limited in these respects.

[0016] In one or more embodiments, subscriber station 116 may couple to Internet 110 via a wireless communication link with femto access point (FAP) 128 rather than a wireless communication link with base station 114. As shown in FIG. 1, femto access point 128 comprises a lower power base station device designed enhance the coverage area for subscriber stations 116 located at or near the edge, or outside of the coverage are of one or more base stations 114 and/or base stations 120 of network 100. Alternatively, femto access point 128 may increase performance of subscriber stations located within buildings that may attenuate or otherwise interfere with wireless communications with base station 114. In such an arrangement, subscriber station 116 may communicate with femto access point 128 which is coupled to a modem 130 such as a cable modem, digital subscriber line (DSL) modem, or the like. Femto access point 128 may couple to network 100 via an Internet service provider (ISP) network 132 which may allow femto access point 128 to access the WiMAX network 100 and services via WiMAX gateway 134. As a result, subscriber station 128 is capable of coupling to Internet 110 and/or to the femto access point 128 networked by WiMAX network 100, such as, for example, software services, voice over internet protocol (VoIP) services, database access, and so on. Thus, a locally deployed femto access point 128 can enhance access of subscriber station 116 to network 100 in situations where subscriber station 116 may have difficulty communicating with base station 114 and/or base station 120, although the scope of the claimed subject matter is not limited in this respect. An example block diagram of femto access point 128 is discussed with respect to FIG. 2, below.

[0017] Referring now to FIG. 2, a block diagram of a femto access point in accordance with one or more embodiments will be discussed. FIG. 2 illustrates an example block diagram of femto access point 128 as shown in and described with respect to FIG. 1, above. FIG. 2 depicts the major elements of an example femto access point 128, however fewer or additional elements may be included in alternative embodiments in addition to various other elements that are not shown herein, and the scope of the claimed subject matter is not limited in these respects. Femto access point 128 may comprise a baseband processor 210 coupled to memory 212 for performing the control functions of femto access point 128. Input/output (I/O) block 214 may comprise various circuits for coupling femto access point 128 to one or more other devices. For example, I/O block 214 may include one or more Ethernet ports and/or one or more universal serial bus (USB) ports for coupling femto access point 128 to modem 130 or other devices. For wireless communication, femto access point 128 may further include a radio-frequency (RF) modulator/demodulator for modulating signals to be transmitted and/or for demodulating signals received via a wireless communication link. A digital-to-analog (D/A) converter 216 may convert digital signals from baseband processor 210 to analog signals for modulation and broadcasting by RF modulator/demodulator via analog and/or digital RF transmission techniques. Likewise, analog-to-digital (A/D) converter 218 may convert analog signals received and demodulated by RF modulator/demodulator 220 digital signals in a format capable of being handled by baseband processor 210. Power amplifier (PA) 222 transmits outgoing signals via one or more antennas 228 and/or 230, and low noise amplifier (LNA) 224 receives one or more incoming signals via antennas 228 and/or 230, which may be coupled via duplexer 226 to control such bidirectional communication. In one or more embodiments, femto access point 128 may implement single input, single output (SISO) type communication, and in one or more alternative embodiments femto access point 128 may implement multiple input, multiple output (MIMO) communications, although the scope of the claimed subject matter is not limited in these respects. Example deployments of one or...
more femto access points 128 such as shown in FIG. 2 are shown in and described with respect to FIG. 3 and FIG. 4 below.

[0018] Referring now to FIG. 3, a diagram of a cellular type network illustrating one particular frequency reuse pattern in accordance with one or more embodiments will be discussed. FIG. 3 illustrates an arrangement of the cells 310 of a wireless wide area network such as a WiMAX or cellular type network in one or more embodiments. In a typical deployment, one base station 114 may handle three cells and implement a (3, 3, 1/3) frequency reuse pattern. In such an arrangement, there are three cells 310 in a cluster of cells that utilize three frequencies, frequency F1, frequency F2, and frequency F3. Each cell 310 comprises three sectors 312 as delineated by dashed lines in FIG. 3 within a given cell. A given cell 310 uses one of the three available frequencies, and each sector 312 of the cell 310 uses one-third of the bandwidth of the frequency assigned to that cell 310, delineated as F1a for the first sector, F1b for the second sector, and F1c for the third sector for a cell utilizing frequency F1.

[0019] As shown in FIG. 3 as an example of frequency allocation and reuse, one sector of cell 314 may include five femto access points labeled as femto access point A (A), femto access point B (B), femto access point C (C), femto access point D (D), and femto access point E (E). In order to assign a frequency and bandwidth portion of the frequency to the access points under the such that interference may be reduced or minimized, the allowable operating frequencies of respective femto access points (FAP) 128 in cell 314 may be assigned as follows in one particular arrangement:

<table>
<thead>
<tr>
<th>FAP A:</th>
<th>F3, F1</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAP B:</td>
<td>F2b, F2a, F2c, F3a, F3b, F3c</td>
</tr>
<tr>
<td>FAP C:</td>
<td>F2c, F3b</td>
</tr>
<tr>
<td>FAP D:</td>
<td>F2a, F2b, F3b, F3c</td>
</tr>
<tr>
<td>FAP E:</td>
<td>F1b, F1c, F2a, F2b, F2c, F3a, F3b, F3c</td>
</tr>
</tbody>
</table>

In the above frequency assignment table, OSS (SON) server 136 may assign the respective femto access points 128 of the frequencies available to the femto access point 128 according to the table, and by doing so interference among the femto access points may be relatively reduced or minimized, or nearly minimized to an acceptable level. However, this is merely one example of frequency reuse and allocation, and other arrangements may be likewise implemented, and the scope of the claimed subject matter is not limited in this respect. Another type of frequency allocation and reuse pattern is shown in and described with respect to FIG. 4, below.

[0020] Referring now to FIG. 4, a diagram of a cellular type network illustrating another frequency reuse pattern in accordance with one or more embodiments will be discussed. FIG. 4 illustrates an alternative arrangement of the cells 310 of a wireless wide area network such as a WiMAX or cellular type network in one or more embodiments. In another typical deployment, three base stations 114 may be colocated at a single site and implement a (3, 3, 1) frequency reuse pattern. In such an arrangement, there are three cells 310 in a cluster of cells that utilize three frequencies, frequency F1, frequency F2, and frequency F3. Each cell 310 comprises three sectors 312 as delineated by dashed lines in FIG. 4 within a given cell. A given cell 310 uses one of the three available frequencies, and each sector 312 of the cell 310 uses all or nearly all of the bandwidth of the frequency assigned to that cell 310.

[0021] As shown in FIG. 4 as an example of frequency allocation and reuse, one sector of cell 314 may include five femto access points labeled as femto access point A (A), femto access point B (B), femto access point C (C), femto access point D (D), and femto access point E (E). In order to assign a frequency and bandwidth portion of the frequency to the access points under the such that interference may be reduced or minimized, the allowable operating frequencies of respective femto access points (FAP) 128 in cell 314 may be assigned as follows in one particular arrangement:

<table>
<thead>
<tr>
<th>FAP A:</th>
<th>F3, F1</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAP B:</td>
<td>F3, F2</td>
</tr>
<tr>
<td>FAP C:</td>
<td>F2, F1</td>
</tr>
<tr>
<td>FAP D:</td>
<td>F2, F3</td>
</tr>
<tr>
<td>FAP E:</td>
<td>F1, F2, F3</td>
</tr>
</tbody>
</table>

In the above frequency assignment table, OSS (SON) server 136 may assign the respective femto access points 128 of the frequencies available to the femto access point 128 according to the table, and by doing so interference among the femto access points may be relatively reduced or minimized, or nearly minimized to an acceptable level. However, this is merely one example of frequency reuse and allocation, and other arrangements may be likewise implemented, and the scope of the claimed subject matter is not limited in this respect. Selection of a frequency assigned to one or more femto access points 128 by OSS (SON) server 136 is shown and described with respect to FIG. 5, below.

[0022] Referring now to FIG. 5, a flow diagram of a frequency selection control flow in accordance with one or more embodiments will be discussed. FIG. 5 shows one particular arrangement of a flow for frequency selection for one or more femto access points 128, and other arrangements may likewise be implemented, including fewer or more procedures, and the scope of the claimed subject matter is not limited in this respect. Likewise, a FIG. 5 illustrates a WiMAX implementation of a frequency selection control flow 500, however frequency selection control flow 500 may also be adapted to other types of networks such as cellular networks or the like, and the scope of the claimed subject matter is not limited in this respect. In operation of frequency selection control flow 500 on network 100 of FIG. 1, which in this example comprises a WiMAX network, WiMAX femto access point 128 and CSN/AAA server 124 perform authentication and authorization procedures at block 510. If WiMAX femto access point 128 is authenticated and authorized by CSN/AAA server 124 to provide femto access point services, a backhaul connection is created between femto access point 128 and ASN-GW at the service provider network. In one or more embodiments, since the connection for authentication and authorization to take place goes through public Internet 110 and/or ISP network 132, the connection may comprise a secure connection, although the scope of the claimed subject matter is not limited in this respect.

[0023] At block 512, femto access point 132 performs scanning of base stations 114 in the area without association with a base station 114 to find a serving base station 114 in that area based at least in part on the best, or nearly the best, received signal strength indication (RSSI) measurement between the base station 114 and the femto access point 128. The serving base station 114 may be identified by a 48-bit base station identification (BSID) that contains a 24-bit Operator identi-
fication (ID) and a 24-bit base Station ID. At block 514, femto access point 128 sends a scan physical link profile request (SCAN_PHY_PROFILE_REQ) message along with the serving base station ID and measured RSSI parameters to OSS (SON) server 136. Based at least in part on the serving base station ID and RSSI parameters, OSS (SON) server 136 will look up in a preconfigured database the list of available physical link (PHY) Profiles that femto access point 128 may utilize without causing unacceptable interference to the base stations 114 in the area. The PHY Profile contains attributes such as center frequency, frame duration, cyclic prefix, fast Fourier transform (FFT) size, and so on, of the physical (PHY) layer that femto access point 128 may utilize to transmit signals over the air interface. Example correlations between a location of one of more femto access points 128 and a list of PHY Profiles are shown in and described with respect to FIG. 3 and/or FIG. 4, above. For example, as shown in FIG. 3, if a measured RSSI is low, then that particular femto access point 128, such as FAP A, FAP C, and/or FAP D, is likely located far away from the serving base station 114. As a result, the list of available frequencies to be selected for these femto access points 128 may include the sectors F2a, F2b, F2c, F3a, F3b, and/or F3c, and so on.

At block 516 OSS (SON) server 136 returns a SCAN_PHY_PROFILE_REQ message with the list of available PHY Profiles to femto access point 128. At block 518, in response to receiving the list of available PHY Profiles from OSS (SON) server 136, femto access point 128 selects an operating frequency by selecting a PHY Profile having a minimum, or nearly minimum, RSSI. At block 520, after selecting an operating frequency, femto access point 128 sends a reply physical profile request (REP_PHY_PROFILE_E_REQ) message to OSS (SON) server for the PHY Profile that is expected to result in an acceptable level interference with base station 114 to OSS (SON) server 136. Upon receiving the PHY profile request message from femto access point 128, OSS (SON) server 136 returns a reply PHY profile acknowledgement (REP_PHY_PROFILE_ACK) message to femto access point 128 at block 522 to indicate to femto access point 128 that it is okay for femto access point 128 to use the requested PHY Profile. It should be noted that FIG. 5 shows one example frequency selection control flow, and the scope of the claimed subject matter is not limited in this respect. Details of an example frequency selection algorithm implemented by femto access point 128 are shown in and described with respect to FIG. 6, below.

Referring now to FIG. 6, a flow diagram of a method for automatic frequency selection in accordance with one or more embodiments will be discussed. Although FIG. 6 illustrates one particular arrangement of the method 600 for automatic frequency selection, various other arrangements may likewise be implemented with a different order of the blocks of method 600, and/or with greater or fewer blocks than shown in FIG. 6, and the scope of the claimed subject matter is not limited in this respect. In method 600, K number of physical (PHY) profiles are contained in a list of PHY profiles that stored are provided by OSS (SON) server 136 to femto access point 128 as the PHY profiles that are available candidates for femto access point 128. The PHY profiles in the list may be referenced with an index value. At block 612, femto access point 128 starts with an initial PHY profile having an index value of 1. This PHY profile having a minimum amount of interference is assigned an index value of 1, and the minimum RSSI is assigned a predetermined initial minimum RSSI value, for example a value of 0 dBm. At block 614, the current RSSI for the currently selected PHY profile is measured by femto access point 128 by obtaining an RSSI value between femto access point 128 and the serving base station 114. A determination is made at block 616 whether the current RSSI for the current PHY profile is less than the predetermined minimum RSSI. If the current RSSI is not less than the minimum RSSI, then block 620 executes at which the PHY profile index is increased by one to the next PHY profile. A determination is then made at block 622 whether the value of the PHY profile index is greater than K. If the PHY profile index is not greater than K, meaning that not all of the candidate PHY profile values have been tested for RSSI by femto access point 128, method 600 continues at block 614 to execute another iteration of current RSSI measurement for the next PHY profile.

For each such iteration, block 616 executes to determine if the current RSSI value for the current PHY profile value is less than the predetermined minimum RSSI value. If the current RSSI value is less than the minimum RSSI, then the current RSSI value is assigned as the new minimum RSSI value at block 618, and the PHY profile having the minimum interference is updated as being the present PHY profile using the index of the present PHY profile to identify the minimum interference PHY profile. The PHY profile index is increased by one at block 620, and method 600 may continue with additional iterations of measuring the current RSSI value of each of the PHY profiles until all of the PHY profiles have been tested for current RSSI values. At this time, the PHY profile index value will have been increased to a value greater than K as determined at block 622 at which time the PHY profile having a minimum interference will have been identified at block 624. Femto access point 128 may then select this identified PHY profile as the PHY profile for the reply PHY profile request to send to OSS (SON) server 136 as indicated at block 520 of flow 500 shown in and described with respect to FIG. 5. As a result of method 600 and method 600, a PHY profile including a selected frequency of operation for femto access point 128 that is expected to result in a minimum amount of interference with serving base station 114 will be determined and selected for utilization by femto access point 128. It should be noted that such a method 500 and/or method 600 are merely example implementations to allocate a frequency of operation for femto access point 128 that will result in an acceptable level of interference, and/or at least a minimum or nearly minimum amount of interference with serving base station 114, and other various methods may likewise be implemented. For example, instead of and/or in addition to using a measured RSSI value, a quality of service (QoS) value may be measured by femto access point 128 wherein a PHY profile resulting in a lowest QoS value may be selected such as the PHY profile having the greatest number of dropped packets. However, this is merely one of various parameters that may be measurable to select a PHY profile for femto access point 128, and the scope of the claimed subject matter is not limited in this respect.

Although the claimed subject matter has been described with a certain degree of particularity, it should be recognized that elements thereof may be altered by persons skilled in the art without departing from the spirit and/or scope of claimed subject matter. It is believed that the subject matter pertaining to frequency selection for a femto access point and/or many of its attendant utilities will be understood by the foregoing description, and it will be apparent that vari-
ous changes may be made in the form, construction and/or arrangement of the components thereof without departing from the scope and/or spirit of the claimed subject matter or without sacrificing all of its material advantages, the form herein before described being merely an explanatory embodiment thereof, and/or further without providing substantial change thereto. It is the intention of the claims to encompass and/or include such changes.

What is claimed is:

1. A method, comprising:
scanning an area of a network to find a serving base station in the area;
requesting one or more physical link profiles from a network server on the network;
receiving one or more physical link profiles from the network server in response to said requesting;
determining which one of the physical link profiles exhibit a lower amount of interference with the serving base station; and
operating with the physical link profile determined to exhibit a lower amount of interference with the serving base station.

2. A method as claimed in claim 1, further comprising:
requesting authorization from the network server to operate with the physical link profile determined at said determining to exhibit a lower amount of interference with the serving base station;
receiving an acknowledgement from the remote server authorizing operation using the requested physical link profile; and
executing said operating upon receiving the acknowledgement from the remote server authorizing operating using the requested physical link profile.

3. A method as claimed in claim 1, said determining comprising:
obtaining a received signal strength indication value for one communication with the serving base station for one or more of the received physical link profiles; and
identifying one or more physical profiles having a receiving signal strength indication value less than a threshold value.

4. A method as claimed in claim 1, said determining comprising:
obtaining a received signal strength indication value for one communication with the serving base station for one or more of the received physical link profiles; and
identifying one or more physical profiles having a minimum or nearly minimum receiving signal strength indication value.

5. A method as claimed in claim 1, wherein the one or more physical link profiles received from the network server are based at least in part on an operating frequency of the serving base station, a frequency reuse pattern, or one or more currently assigned physical link profiles, or combinations thereof.

6. A method as claimed in claim 1, further comprising establishing a secure communication link with the network server prior to executing said requesting one or more physical link profiles from a network server on the network.

7. A method as claimed in claim 1, wherein the network server comprises an operation support system, self organizing network server.

8. A method as claimed in claim 1, wherein the one or more physical link profile comprise center frequency, frame duration, cyclic prefix, fast Fourier transform size, or combinations thereof.

9. A method, comprising:
receiving a request for one or more physical link profiles from a femto access point, the physical link profiles corresponding to a network base station serving an area in which the femto access point is deployed;
sending one or more physical link profiles to the femto access point in response to the request;
receiving a request from the femto access point to operate with the physical link profile determined by the femto access point to exhibit a lower amount of interference with the serving base station; and
sending an acknowledgement to the femto access point authorizing operation using the requested physical link profile;
wherein the femto access point is capable of operating with the authorized physical link profile.

10. A method as claimed in claim 9, said determining comprising:
obtaining a received signal strength indication value for one communication with the serving base station for one or more of the received physical link profiles; and
identifying one or more physical profiles having a receiving signal strength indication value less than a threshold value.

11. A method as claimed in claim 9, wherein the physical link profile determined by the femto access point to exhibit a lower amount of interference with the serving base station comprises a physical link profile having a minimum or nearly minimum receiving signal strength indication value for communication between the femto access point and the serving base station.

12. A method as claimed in claim 9, wherein the one or more physical link profiles sent to the femto access point are based at least in part on an operating frequency of the serving base station, a frequency reuse pattern, or one or more currently assigned physical link profiles, or combinations thereof.

13. A method as claimed in claim 9, further comprising establishing a secure communication link with the femto access point prior to executing said receiving a request for one or more physical link profiles from the femto access point.

14. A method as claimed in claim 9, wherein the one or more physical link profile comprise center frequency, frame duration, cyclic prefix, fast Fourier transform size, or combinations thereof.

15. An apparatus, comprising:
a baseband processor and a memory coupled to the baseband processor; and
an RF modulator/demodulator coupled to the baseband processor and one or more antennas to transmit and/or receive information via a wireless communication link;
wherein the baseband processor is configured to:
scan an area of a network to find a serving base station in the area;
request one or more physical link profiles from a network server on the network;
receive one or more physical link profiles from a network server in response to said requesting;
determine which one of the physical link profiles exhibit a lower amount of interference with the serving base station; and
operate using the physical link profile determined to exhibit a lower amount of interference with the serving base station.

16. An apparatus as claimed in claim 15, wherein the baseband processor is further configured to:
request authorization from the network server to operate with the physical link profile determined at said determining to exhibit a lower amount of interference with the serving base station;
receive an acknowledgement from the remote server authorizing operation using the requested physical link profile; and
operate using the physical link profile determined to exhibit a lower amount of interference with the serving base station upon receiving the acknowledgment from the remote server authorizing operation using the requested physical link profile.

17. An apparatus as claimed in claim 15, wherein the baseband processor is further configured to determine which one of the physical link profiles exhibit a lower amount of interference with the serving base station by being configured to:

obtain a received signal strength indication value for one communication with the serving base station for one or more of the received physical link profiles; and
identify one or more physical profiles having a receiving signal strength indication value less than a threshold value.

18. An apparatus as claimed in claim 15, wherein the baseband processor is further configured to determine which one of the physical link profiles exhibit a lower amount of interference with the serving base station by being configured to:
obtain a received signal strength indication value for one communication with the serving base station for one or more of the received physical link profiles; and
identify one or more physical profiles having a minimum or nearly minimum receiving signal strength indication value.

19. An apparatus as claimed in claim 15, wherein the baseband processor is further configured to establish a secure communication link with the network server prior to executing said requesting one or more physical link profiles from a network server on the network.

20. An apparatus as claimed in claim 15, wherein the one or more physical link profile comprise center frequency, frame duration, cyclic prefix, fast Fourier transform size, or combinations thereof.

* * * * *