

EXHIBIT A-4 – CHOUDHARY

Invalidity Chart for U.S. Patent No. 10,051,556 Based On U.S. Patent No. 9,161,293

This chart is subject to all reservations, objections, and disclaimers in Cisco’s Invalidity Contentions and any amendment, supplement, or modification thereof, which are incorporated herein by reference in their entirety.

U.S. Patent No. 9,161,293 (“Choudhary”) was filed on September 28, 2011 and issued on October 13, 2015. Thus, Choudhary is prior art under at least pre-AIA 35 U.S.C. § 102(e). Choudhary anticipates and/or renders obvious the Asserted Claims of U.S. Patent No. 10,051,556, at least as Cisco understands Golden Eye’s application of the Asserted Claims in an effort to show infringement.

To the extent Golden Eye argues that any element below is not disclosed by Choudhary, a person of ordinary skill in the art would have found it obvious to combine the teachings of Choudhary with the background knowledge of a person of ordinary skill in the art and/or the additional references, and exemplary teachings, set forth in Cisco’s Invalidity Contentions and accompanying charts. The chart below provides representative examples of where each element of each claim is found within Choudhary. Citations are meant to be exemplary, not exhaustive, and Cisco reserves the right to identify and discuss additional portions of the reference in support of their contentions and/or to rebut arguments made by Golden Eye. Citations to figures, drawings, tables, and the like include reference to any accompanying or related text. All internal cross references are meant to incorporate the cross-referenced material as if fully set forth therein. Where Cisco states that Choudhary “discloses” a limitation, that disclosure may be express, implicit, and/or inherent.

It is Cisco’s position that Golden Eye’s Infringement Contentions have not established that any accused product or service infringes any valid claim. Thus, Cisco’s statements below should not be treated as an admission, implication, or suggestion that Cisco agrees with Golden Eye regarding either the scope, construction, or interpretation of any of the Asserted Claims or the infringement theories advanced by Golden Eye in its Infringement Contentions, including whether any Asserted Claim satisfies 35 U.S.C. §§ 101 or 112.

Golden Eye has yet to identify any limitation of the Asserted Claims that they contend is not anticipated and/or rendered obvious by Choudhary. Cisco therefore expressly reserves the right to respond to any such contention, including by identifying additional obviousness combinations, if Golden Eye makes any such contention.

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Claim Element	Disclosure of Claim Element in Choudhary
<p>9[pre] A method for active scanning performed by an access point, the method comprising:</p>	<p>To the extent the preamble is limiting, Choudhary discloses, either expressly or inherently, a method for active scanning performed by an access point.</p> <p><i>See, e.g.,</i></p> <p>A method, apparatus and computer program product for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is presented. At least one message is received at an Access Point (AP) from a mobile unit (MU). A determination is made by the AP whether a received Signal Strength indicator (RSSI) associated with the at least one message from an MU is greater than a predetermined threshold. When the RSSI value associated with the at least one message from na MU is greater than to said predetermined threshold, then a response is generated by the AP and sent to the MU.</p> <p>Choudhary at Abstract.</p> <p>A wireless client (also referred to as a mobile device or mobile unit (MU)) scans the presence of desired SSID on a wireless medium on a given RF using active probing or passive scanning. A wireless device may include, but is not limited to a laptop computer, a cellular telephone, a tablet, a Personal Digital Assistant (PDA) or the like. In active probing, an MU sends an 802.11 broadcast probe request at a lowest supported data rate on a specific frequency and listens for a response from AP(s) on that frequency. The broadcast probe request may be heard by multiple APs on a given frequency. All the APs that hear the broadcast probe may send a unicast response to the wireless client that sent the probe request. Probe responses have almost the same information that is present in the AP beacon. The SSID is always present in the probe response. Probe responses are sent at the same data rate as beacons so they take almost the same time to transmit on the air as beacons. Since the probe responses are unicast, an AP may send one or more retries if the probe response is not acknowledged by the client. Probe responses and probe response retries decrease the wireless medium airtime available for application data communication.</p> <p>Choudhary at 1:16–36.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>All clients must rely on active probing to detect the presence of SSIDs in their RF neighborhood since passive scanning alone may not be sufficient to detect the SSID in some scenarios. Also, because passive scanning time is unpredictable, most client implementations of RF neighborhood scanning depend on active probing. Hiding the SSID in the beacon is an option supported by 802.11 standard that leaves probing as the only option for client to discover presence of SSID in the RF neighborhood.</p> <p>Choudhary at 1:52–60.</p> <p>The received power of an AP signal (RSSI-AP) at an MU falls as it moves away from the AP. Data rates on the downlink depend on RSSI-AP values with higher downlink data rates possible at higher RSSI-AP values. The received power of an MU signal (RSSI-MU) at an AP falls as MU moves away from the AP. Data rates on the uplink depend on the RSSI-MU values with higher uplink data rates possible at higher RSSI-MU values. Data rates on the downlink depend on RSSI-AP values and higher downlink data rates are possible with higher RSSI-AP values.</p> <p>Choudhary at 5:61–6:3.</p> <p>Referring to FIG. 2A, a symmetric link is shown. In this scenario, both the uplink from the MU to the AP and the downlink from the AP to the MU occur at the same data rate. Here, the MU is in the highest data rate of the AP cell, while the AP is in the highest data rate of the MU cell.</p> <p>Choudhary at 6:4–8.</p> <p>Referring now to FIG. 3, an aggressive MU environment is shown. The MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all the APs (AP-2, AP-3 and AP-4) in the neighboring cells. The APs send probe responses at lowest supported data rate consuming wireless medium bandwidth in their cell. Probe responses for 802.11n are very big and can take much longer time to transmit on the air. Each aggressive MU wastes bandwidth in multiple neighboring cells. Multiple MUs can compound this effect.</p> <p>Choudhary at 6:14–23.</p>

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	<p>Referring to FIG. 4, a sticky MU environment is shown. Here the MU is associated with AP-1 even though there is a much better option available (AP-2). The MU sends all communication with AP-1 at the lowest data rate wasting airtime in the AP-1's cell. Other MUs associated with the AP-1 (MU-2 and MU-3) suffer because of the non-aggressive MU. Eliminating lowest supported data rates can solve some of the problems associated with aggressive probing and lazy roaming. Eliminating lowest data rate reduces the effective AP cell size by eliminating outer zones that support lower data rate. Eliminating lowest data rates can completely prevent some clients from associating with the AP(s). Reducing AP radiated power reduces the effective AP cell size, however it also reduces the effective area per cell over which high data rate communication can occur. Reducing AP power makes the AP-MU link asymmetric since clients do not reduce the power (see FIG. 2B).</p> <p>Choudhary at 6:24–40.</p> <p>The presently disclosed invention utilizes RSSI filtering for selectively accepting or responding to an 802.11 frame based on RSSI or some metric derived from RSSI. An AP will respond to probes only when the probe request is received with sufficient RSSI, will accept authentication only when the RSSI is sufficiently high, and will acknowledge received frames based on some criterion derived from RSSI. RSSI filtering may also be used to dissociate clients based on some RSSI derived criterion. RSSI filtering provides additional control for the administrator besides those provided by eligible data rate set, AP power and directional antenna.</p> <p>Choudhary at 7:4–14.</p> <p>An AP radio is configured with an RSSI threshold for sending probe response. Probe responses are not sent if the received probe requests do not meet the required RSSI threshold. Effectively this is a way of testing if the client is close enough to the AP to benefit from associating with the AP. If the client is not close enough then there is no point indicating anything to the client since it won't associate with the AP anyway. Because of restrained probe responses, a client does not detect presence of an AP until it is close enough.</p> <p>Choudhary at 7:15–23.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<div data-bbox="461 646 831 1033" data-label="Diagram"><p>The diagram shows a central Mobile User (MU) device surrounded by four Access Points (AP-1, AP-2, AP-3, AP-4) arranged in a square pattern. Each AP is represented by a circular area with a grid pattern. Arrows indicate communication between the MU and each AP. The MU is positioned in the center, and the APs are labeled AP-1, AP-2, AP-3, and AP-4.</p></div> <p data-bbox="607 1081 675 1100" style="text-align: center;">FIGURE 5</p> <p data-bbox="461 1136 669 1163">Choudhary at Fig. 5.</p> <p data-bbox="461 1192 1471 1388">Referring now to FIG. 5, the MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all APs (AP-2, AP-3, and AP-4) in the neighboring cells. The APs send probe responses only if the received probe request is above a configured RSSI threshold. Since probe responses consume more air-time than probe request, selectively pruning out probe responses reduces airtime consumed by aggressive clients for probes. The AP radio is configured with an RSSI threshold for sending probe response. Additionally, it is possible to drop authentication requests that do not meet the required RSSI threshold at AP.</p> <p data-bbox="461 1419 691 1446">Choudhary at 7:24–35.</p>

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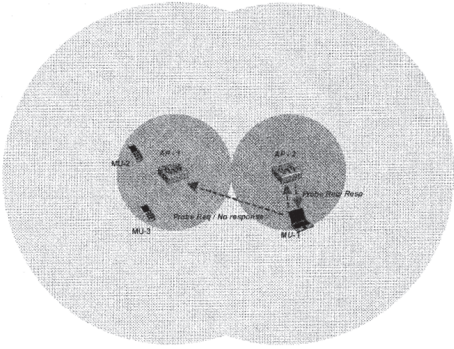
Claim Element	Disclosure of Claim Element in Choudhary
	<p>When a client sends active probes it will receive responses from closest AP(s) only as defined by configured RSSI threshold. If client determines the AP(s) based on passive scanning, then the authentication attempt to a far-away AP would fail. When a client roams away from an AP its RSSI level at the AP would drop. An AP can accumulate an average of some consecutive samples of the RSSI for the received frames from the client. When this average drops below a threshold then the AP radio can dissociate a client or a more advanced radio can deliberately stop 802.11 ACK for uplink frames from the client. A client in this case would either immediately start looking for another AP in its neighborhood (increased retries due to ACK failures) or will be dissociated for bad behavior and discover another AP nearby.</p> <p>Choudhary at 7:36–49.</p>  <p>FIGURE 6</p> <p>Choudhary at Fig. 6.</p> <p>FIG. 6 shows where an MU scans all channels using active broadcast probing. AP-1 does not respond to probe request since the received RSSI is below the configured threshold for probes. AP-2 responds</p>

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	<p>to the probe request. The MU discovers only AP-2 by active probing. MU-1 authenticates and associates with AP-2 which is the desired AP for MU-1 in this case.</p> <p>Choudhary at 7:50–56.</p> <p>FIG. 7 shows where an MU (MU-1) scans channels passively and hears an AP-1 beacon. The MU attempts to connect to AP-1 right away but fails because it does not meet the RSSI threshold required by AP-1. The MU now moves on to another frequency and discovers AP-2(s) beacon. The MU authenticates and associates with AP-2 which is the ideal AP for MU in this case.</p> <p>Choudhary at 7:57–63.</p> <div data-bbox="467 951 922 1293" data-label="Diagram">A diagram showing two overlapping circles representing Access Points (AP-1 and AP-2) within a larger shaded area. Two Mobile Units (MU) are positioned at the bottom, one under each circle. Arrows point from the MUs towards the APs. The circles overlap in the center, and the MU is positioned between the two circles.</div> <p style="text-align: center;">FIGURE 8</p> <p>Choudhary at Fig. 8.</p>

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	<p>In FIG. 8, the MU is associated to AP-2 and starts roaming away from AP-2 towards AP-1. The RSSI received from MU at AP-2 decreases. The average RSSI over few consecutive samples also decreases. When the average RSSI drops below a threshold value, AP-2 stops sending ACK(s) for uplink 802.11 frames from the MU. It is also possible to penalize the MU for not roaming and simply send a dissociate to the MU. The MU detects an increase in retries on the uplink and probes other channels to find a nearby AP-1. The MU then associates with AP-1 and dissociates with AP-2.</p> <p>Choudhary at 7:64–8:6.</p> <p>Referring to FIG. 10, a particular embodiment of a method 100 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and unassociated mobile units. Method 100 begins with processing block 102 which discloses receiving at the AP at least one message from an unassociated mobile unit (MU) from which RSSI can be determined. As shown in processing block 104, in this embodiment the message comprises a probe request message and wherein the response comprises a probe response message.</p> <p>Choudhary at 9:60–10:3.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>150</p> <p align="center">FIGURE 11</p> <p>Choudhary at Fig. 11.</p> <p>Referring now to FIG. 11 another particular embodiment of a method 150 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and associated mobile units. Method 150 begins with processing block 152 which discloses receiving at the AP at least one message from an associated mobile unit (MU). As</p>

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	<p>further shown in processing block 154 the receiving at the AP at least one message from an MU comprises receiving a predetermined number of consecutive frames from the AP.</p> <p>Choudhary at 10:22–31.</p> <p>Processing block 156 states determining whether a Received Signal Strength indicator (RSSI) associated with the at least one message from the associated MU is greater than a predetermined threshold. As shown in processing block 158, in one embodiment the determining whether an RSSI value associated with the at least one message from an associated MU is greater than a predetermined threshold comprises determining an average RSSI value of RSSI values associated with the predetermined number of consecutive frames from the AP and determining whether the average RSSI value is greater than the predetermined threshold. As shown in processing block 160, in certain deployments such as a pico-cell deployment the threshold is dependent upon a density of APs within an area. As shown in processing block 162, in certain embodiments the threshold is automatically tuned based on at least one criteria.</p> <p>Choudhary at 10:32–47.</p> <p>1.A computer-implemented method in which an Access Point (AP) performs operations comprising: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_hi threshold, wherein said RSSI_hi threshold is dependent upon a density of APs within an area and wherein said RSSI_hi threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said predetermined RSSI_hi threshold.</p> <p>Choudhary at Claim 1.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco’s Invalidation Contentions and the associated Exhibits, incorporated by reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.</p>
<p>9[a] receiving, from a station, a probe request frame including information on a signal strength; and</p>	<p>Choudhary discloses, either expressly or inherently, receiving, from a station, a probe request frame including information on a signal strength.</p> <p><i>See, e.g.,</i></p> <p>Embodiments of the invention significantly overcome such deficiencies and provide mechanisms and techniques that provide Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks. In a particular embodiment the method includes receiving at the AP at least one message from a mobile unit (MU). The method further includes determining whether an RSSI value associated with the at least one message from a MU is greater than a predetermined threshold. The method additionally includes responding to the at least one message from a MU when the RSSI value associated with the at least one message from a MU is greater than to the predetermined threshold.</p> <p>Choudhary at 2:63–3:6.</p> <p>The received power of an AP signal (RSSI-AP) at an MU falls as it moves away from the AP. Data rates on the downlink depend on RSSI-AP values with higher downlink data rates possible at higher RSSI-AP values. The received power of an MU signal (RSSI-MU) at an AP falls as MU moves away from the AP. Data rates on the uplink depend on the RSSI-MU values with higher uplink data rates possible at higher RSSI-MU values. Data rates on the downlink depend on RSSI-AP values and higher downlink data rates are possible with higher RSSI-AP values.</p> <p>Choudhary at 5:61–6:3.</p> <p>Referring to FIG. 4, a sticky MU environment is shown. Here the MU is associated with AP-1 even though there is a much better option available (AP-2). The MU sends all communication with AP-1 at</p>

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	<p>the lowest data rate wasting airtime in the AP-1's cell. Other MUs associated with the AP-1 (MU-2 and MU-3) suffer because of the non-aggressive MU. Eliminating lowest supported data rates can solve some of the problems associated with aggressive probing and lazy roaming. Eliminating lowest data rate reduces the effective AP cell size by eliminating outer zones that support lower data rate. Eliminating lowest data rates can completely prevent some clients from associating with the AP(s). Reducing AP radiated power reduces the effective AP cell size, however it also reduces the effective area per cell over which high data rate communication can occur. Reducing AP power makes the AP-MU link asymmetric since clients do not reduce the power (see FIG. 2B).</p> <p>Choudhary at 6:24–40.</p> <p>The presently disclosed invention utilizes RSSI filtering for selectively accepting or responding to an 802.11 frame based on RSSI or some metric derived from RSSI. An AP will respond to probes only when the probe request is received with sufficient RSSI, will accept authentication only when the RSSI is sufficiently high, and will acknowledge received frames based on some criterion derived from RSSI. RSSI filtering may also be used to dissociate clients based on some RSSI derived criterion. RSSI filtering provides additional control for the administrator besides those provided by eligible data rate set, AP power and directional antenna.</p> <p>Choudhary at 7:4–14.</p> <p>An AP radio is configured with an RSSI threshold for sending probe response. Probe responses are not sent if the received probe requests do not meet the required RSSI threshold. Effectively this is a way of testing if the client is close enough to the AP to benefit from associating with the AP. If the client is not close enough then there is no point indicating anything to the client since it won't associate with the AP anyway. Because of restrained probe responses, a client does not detect presence of an AP until it is close enough.</p> <p>Choudhary at 7:15–23.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<div data-bbox="461 621 831 1003" data-label="Diagram"> </div> <p align="center"><i>FIGURE 5</i></p> <p>Choudhary at Fig. 5.</p> <p>Referring now to FIG. 5, the MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all APs (AP-2, AP-3, and AP-4) in the neighboring cells. The APs send probe responses only if the received probe request is above a configured RSSI threshold. Since probe responses consume more air-time than probe request, selectively pruning out probe responses reduces airtime consumed by aggressive clients for probes. The AP radio is configured with an RSSI threshold for sending probe response. Additionally, it is possible to drop authentication requests that do not meet the required RSSI threshold at AP.</p> <p>Choudhary at 7:24–35.</p> <p>When a client sends active probes it will receive responses from closest AP(s) only as defined by configured RSSI threshold. If client determines the AP(s) based on passive scanning, then the</p>

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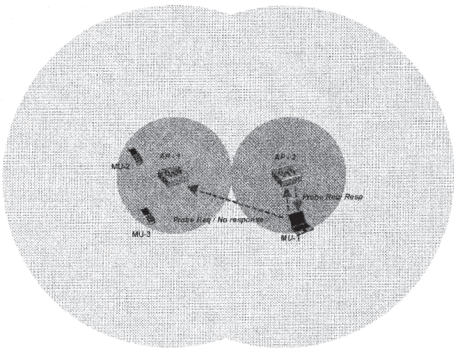
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	<p>authentication attempt to a far-away AP would fail. When a client roams away from an AP its RSSI level at the AP would drop. An AP can accumulate an average of some consecutive samples of the RSSI for the received frames from the client. When this average drops below a threshold then the AP radio can dissociate a client or a more advanced radio can deliberately stop 802.11 ACK for uplink frames from the client. A client in this case would either immediately start looking for another AP in its neighborhood (increased retries due to ACK failures) or will be dissociated for bad behavior and discover another AP nearby.</p> <p>Choudhary at 7:36-49.</p>  <p align="center">FIGURE 6</p> <p>Choudhary at Fig. 6.</p> <p>FIG. 6 shows where an MU scans all channels using active broadcast probing. AP-1 does not respond to probe request since the received RSSI is below the configured threshold for probes. AP-2 responds to the probe request. The MU discovers only AP-2 by active probing. MU-1 authenticates and associates with AP-2 which is the desired AP for MU-1 in this case.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>Choudhary at 7:50–56.</p> <p>FIG. 7 shows where an MU (MU-1) scans channels passively and hears an AP-1 beacon. The MU attempts to connect to AP-1 right away but fails because it does not meet the RSSI threshold required by AP-1. The MU now moves on to another frequency and discovers AP-2(s) beacon. The MU authenticates and associates with AP-2 which is the ideal AP for MU in this case.</p> <p>Choudhary at 7:57–63.</p> <div data-bbox="467 894 922 1234" data-label="Diagram"><p>The diagram shows two overlapping circles representing the coverage areas of two access points, AP-1 and AP-2. AP-1 is on the left and AP-2 is on the right. A Mobile User (MU) is positioned at the bottom center, between the two circles. An arrow points from the MU towards AP-2, indicating the direction of movement or association.</p></div> <p style="text-align: center;">FIGURE 8</p> <p>Choudhary at Fig. 8.</p> <p>In FIG. 8, the MU is associated to AP-2 and starts roaming away from AP-2 towards AP-1. The RSSI received from MU at AP-2 decreases. The average RSSI over few consecutive samples also decreases.</p>

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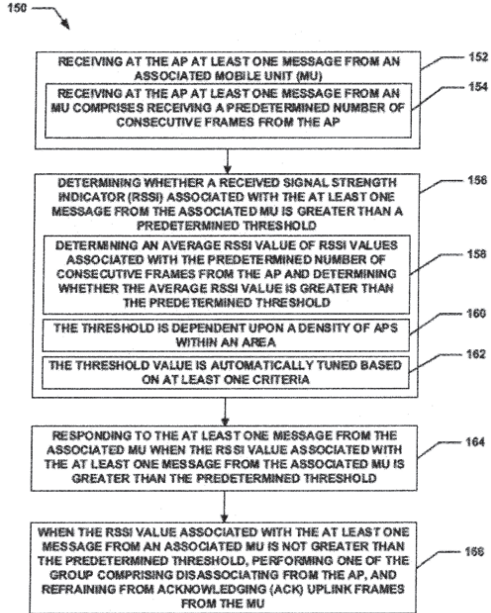
Claim Element	Disclosure of Claim Element in Choudhary
	<p>When the average RSSI drops below a threshold value, AP-2 stops sending ACK(s) for uplink 802.11 frames from the MU. It is also possible to penalize the MU for not roaming and simply send a dissociate to the MU. The MU detects an increase in retries on the uplink and probes other channels to find a nearby AP-1. The MU then associates with AP-1 and dissociates with AP-2.</p> <p>Choudhary at 7:64–8:6.</p>  <pre> graph TD 150 --> 152 152 --> 154 154 --> 156 156 --> 158 158 --> 160 160 --> 162 162 --> 164 164 --> 166 </pre> <p align="center">FIGURE 11</p>

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	<p>Choudhary at Fig. 11.</p> <p>Referring to FIG. 10, a particular embodiment of a method 100 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and unassociated mobile units. Method 100 begins with processing block 102 which discloses receiving at the AP at least one message from an unassociated mobile unit (MU) from which RSSI can be determined. As shown in processing block 104, in this embodiment the message comprises a probe request message and wherein the response comprises a probe response message.</p> <p>Choudhary at 9:60–10:3.</p> <p>Referring now to FIG. 11 another particular embodiment of a method 150 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and associated mobile units. Method 150 begins with processing block 152 which discloses receiving at the AP at least one message from an associated mobile unit (MU). As further shown in processing block 154 the receiving at the AP at least one message from an MU comprises receiving a predetermined number of consecutive frames from the AP.</p> <p>Choudhary at 10:22–31.</p> <p>Processing block 156 states determining whether a Received Signal Strength indicator (RSSI) associated with the at least one message from the associated MU is greater than a predetermined threshold. As shown in processing block 158, in one embodiment the determining whether an RSSI value associated with the at least one message from an associated MU is greater than a predetermined threshold comprises determining an average RSSI value of RSSI values associated with the predetermined number of consecutive frames from the AP and determining whether the average RSSI value is greater than the predetermined threshold. As shown in processing block 160, in certain deployments such as a pico-cell deployment the threshold is dependent upon a density of APs within an area. As shown in processing block 162, in certain embodiments the threshold is automatically tuned based on at least one criteria.</p> <p>Choudhary at 10:32–47.</p>

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	<p>1. A computer-implemented method in which an Access Point (AP) performs operations comprising: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_{hi} threshold, wherein said RSSI_{hi} threshold is dependent upon a density of APs within an area and wherein said RSSI_{hi} threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said predetermined RSSI_{hi} threshold.</p> <p>Choudhary at Claim 1. <i>See also</i> Claim 10.</p> <p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco’s Invalidity Contentions and the associated Exhibits, incorporated by reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.</p>
<p>9[b] transmitting, to the station, a probe response frame in response to the probe request frame based on the information on the signal strength,</p>	<p>Choudhary discloses, either expressly or inherently, transmitting, to the station, a probe response frame in response to the probe request frame based on the information on the signal strength.</p> <p><i>See, e.g.,</i></p> <p>The received power of an AP signal (RSSI-AP) at an MU falls as it moves away from the AP. Data rates on the downlink depend on RSSI-AP values with higher downlink data rates possible at higher RSSI-AP values. The received power of an MU signal (RSSI-MU) at an AP falls as MU moves away from the AP. Data rates on the uplink depend on the RSSI-MU values with higher uplink data rates possible at higher RSSI-MU values. Data rates on the downlink depend on RSSI-AP values and higher downlink data rates are possible with higher RSSI-AP values.</p> <p>Choudhary at 5:61–6:3.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>Referring to FIG. 2A, a symmetric link is shown. In this scenario, both the uplink from the MU to the AP and the downlink from the AP to the MU occur at the same data rate. Here, the MU is in the highest data rate of the AP cell, while the AP is in the highest data rate of the MU cell.</p> <p>Choudhary at 6:4–8.</p> <p>Referring to FIG. 2B, an asymmetric link is shown. AP radiated power is reduced to achieve a smaller cell while client still transmits at its maximum power. In this case uplink transmission can occur at higher data rates compared to downlink transmission.</p> <p>Choudhary at 6:9–13.</p> <p>Referring now to FIG. 3, an aggressive MU environment is shown. The MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all the APs (AP-2, AP-3 and AP-4) in the neighboring cells. The APs send probe responses at lowest supported data rate consuming wireless medium bandwidth in their cell. Probe responses for 802.11n are very big and can take much longer time to transmit on the air. Each aggressive MU wastes bandwidth in multiple neighboring cells. Multiple MUs can compound this effect.</p> <p>Choudhary at 6:14–23.</p> <p>Referring to FIG. 4, a sticky MU environment is shown. Here the MU is associated with AP-1 even though there is a much better option available (AP-2). The MU sends all communication with AP-1 at the lowest data rate wasting airtime in the AP-1's cell. Other MUs associated with the AP-1 (MU-2 and MU-3) suffer because of the non-aggressive MU. Eliminating lowest supported data rates can solve some of the problems associated with aggressive probing and lazy roaming. Eliminating lowest data rate reduces the effective AP cell size by eliminating outer zones that support lower data rate. Eliminating lowest data rates can completely prevent some clients from associating with the AP(s). Reducing AP radiated power reduces the effective AP cell size, however it also reduces the effective area per cell over which high data rate communication can occur. Reducing AP power makes the AP-MU link asymmetric since clients do not reduce the power (see FIG. 2B).</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>Choudhary at 6:24–40.</p> <p>The presently disclosed invention utilizes RSSI filtering for selectively accepting or responding to an 802.11 frame based on RSSI or some metric derived from RSSI. An AP will respond to probes only when the probe request is received with sufficient RSSI, will accept authentication only when the RSSI is sufficiently high, and will acknowledge received frames based on some criterion derived from RSSI. RSSI filtering may also be used to dissociate clients based on some RSSI derived criterion. RSSI filtering provides additional control for the administrator besides those provided by eligible data rate set, AP power and directional antenna.</p> <p>Choudhary at 7:4–14.</p> <p>An AP radio is configured with an RSSI threshold for sending probe response. Probe responses are not sent if the received probe requests do not meet the required RSSI threshold. Effectively this is a way of testing if the client is close enough to the AP to benefit from associating with the AP. If the client is not close enough then there is no point indicating anything to the client since it won't associate with the AP anyway. Because of restrained probe responses, a client does not detect presence of an AP until it is close enough.</p> <p>Choudhary at 7:15–23.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<div data-bbox="461 621 792 961" data-label="Diagram"> </div> <p align="center"><i>FIGURE 5</i></p> <p>Choudhary at Fig. 5.</p> <p>The presently disclosed invention utilizes RSSI filtering for selectively accepting or responding to an 802.11 frame based on RSSI or some metric derived from RSSI. An AP will respond to probes only when the probe request is received with sufficient RSSI, will accept authentication only when the RSSI is sufficiently high, and will acknowledge received frames based on some criterion derived from RSSI. RSSI filtering may also be used to dissociate clients based on some RSSI derived criterion. RSSI filtering provides additional control for the administrator besides those provided by eligible data rate set, AP power and directional antenna.</p> <p>Choudhary at 7:4–14.</p> <p>Referring now to FIG. 5, the MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all APs (AP-2, AP-3, and AP-4) in the neighboring cells. The APs send probe responses only if the received probe request is above a configured RSSI threshold. Since probe responses consume more air-time than probe request, selectively pruning out</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>probe responses reduces airtime consumed by aggressive clients for probes. The AP radio is configured with an RSSI threshold for sending probe response. Additionally, it is possible to drop authentication requests that do not meet the required RSSI threshold at AP.</p> <p>Choudhary at 7:24–35.</p> <p>When a client sends active probes it will receive responses from closest AP(s) only as defined by configured RSSI threshold. If client determines the AP(s) based on passive scanning, then the authentication attempt to a far-away AP would fail. When a client roams away from an AP its RSSI level at the AP would drop. An AP can accumulate an average of some consecutive samples of the RSSI for the received frames from the client. When this average drops below a threshold then the AP radio can dissociate a client or a more advanced radio can deliberately stop 802.11 ACK for uplink frames from the client. A client in this case would either immediately start looking for another AP in its neighborhood (increased retries due to ACK failures) or will be dissociated for bad behavior and discover another AP nearby.</p> <p>Choudhary at 7:36–49.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<div data-bbox="462 619 917 955" data-label="Diagram"> </div> <p align="center">FIGURE 6</p> <p>Choudhary at Fig. 6.</p> <p>FIG. 6 shows where an MU scans all channels using active broadcast probing. AP-1 does not respond to probe request since the received RSSI is below the configured threshold for probes. AP-2 responds to the probe request. The MU discovers only AP-2 by active probing. MU-1 authenticates and associates with AP-2 which is the desired AP for MU-1 in this case.</p> <p>Choudhary at 7:50–56.</p> <p>FIG. 7 shows where an MU (MU-1) scans channels passively and hears an AP-1 beacon. The MU attempts to connect to AP-1 right away but fails because it does not meet the RSSI threshold required by AP-1. The MU now moves on to another frequency and discovers AP-2(s) beacon. The MU authenticates and associates with AP-2 which is the ideal AP for MU in this case.</p> <p>Choudhary at 7:57–63.</p>

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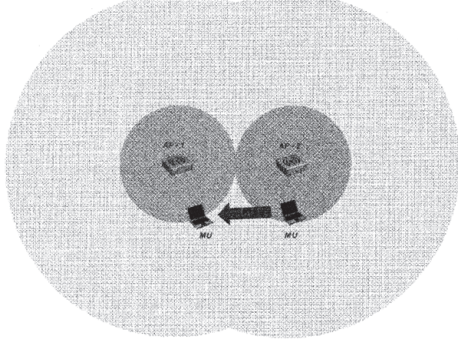
Claim Element	Disclosure of Claim Element in Choudhary
	 <p data-bbox="651 1052 748 1073">FIGURE 8</p> <p data-bbox="461 1108 667 1136">Choudhary at Fig. 8.</p> <p data-bbox="461 1167 1468 1335">In FIG. 8, the MU is associated to AP-2 and starts roaming away from AP-2 towards AP-1. The RSSI received from MU at AP-2 decreases. The average RSSI over few consecutive samples also decreases. When the average RSSI drops below a threshold value, AP-2 stops sending ACK(s) for uplink 802.11 frames from the MU. It is also possible to penalize the MU for not roaming and simply send a dissociate to the MU. The MU detects an increase in retries on the uplink and probes other channels to find a nearby AP-1. The MU then associates with AP-1 and dissociates with AP-2.</p> <p data-bbox="461 1367 699 1394">Choudhary at 7:64–8:6.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>150</p> <p align="center">FIGURE 11</p> <p>Choudhary at Fig. 11.</p> <p>Referring now to FIG. 11 another particular embodiment of a method 150 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and associated mobile units. Method 150 begins with processing block 152 which discloses receiving at the AP at least one message from an associated mobile unit (MU). As</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>further shown in processing block 154 the receiving at the AP at least one message from an MU comprises receiving a predetermined number of consecutive frames from the AP.</p> <p>Choudhary at 10:22–31.</p> <p>Processing block 156 states determining whether a Received Signal Strength indicator (RSSI) associated with the at least one message from the associated MU is greater than a predetermined threshold. As shown in processing block 158, in one embodiment the determining whether an RSSI value associated with the at least one message from an associated MU is greater than a predetermined threshold comprises determining an average RSSI value of RSSI values associated with the predetermined number of consecutive frames from the AP and determining whether the average RSSI value is greater than the predetermined threshold. As shown in processing block 160, in certain deployments such as a pico-cell deployment the threshold is dependent upon a density of APs within an area. As shown in processing block 162, in certain embodiments the threshold is automatically tuned based on at least one criteria.</p> <p>Choudhary at 10:32–47.</p> <p>1. A computer-implemented method in which an Access Point (AP) performs operations comprising: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_{hi} threshold, wherein said RSSI_{hi} threshold is dependent upon a density of APs within an area and wherein said RSSI_{hi} threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said predetermined RSSI_{hi} threshold.</p> <p>Choudhary at Claim 1. <i>See also</i> Claim 10.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco’s Invalidation Contentions and the associated Exhibits, incorporated by reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.</p>
<p>9[c] wherein an access of the station to the access point is based on the probe response frame and a maximum probe response time.</p>	<p>Choudhary discloses, either expressly or inherently, an access of the station to the access point is based on the probe response frame and a maximum probe response time.</p> <p><i>See, e.g.,</i></p> <p>The received power of an AP signal (RSSI-AP) at an MU falls as it moves away from the AP. Data rates on the downlink depend on RSSI-AP values with higher downlink data rates possible at higher RSSI-AP values. The received power of an MU signal (RSSI-MU) at an AP falls as MU moves away from the AP. Data rates on the uplink depend on the RSSI-MU values with higher uplink data rates possible at higher RSSI-MU values. Data rates on the downlink depend on RSSI-AP values and higher downlink data rates are possible with higher RSSI-AP values.</p> <p>Choudhary at 5:61–6:3.</p> <p>Referring to FIG. 2A, a symmetric link is shown. In this scenario, both the uplink from the MU to the AP and the downlink from the AP to the MU occur at the same data rate. Here, the MU is in the highest data rate of the AP cell, while the AP is in the highest data rate of the MU cell.</p> <p>Choudhary at 6:4–8.</p> <p>Referring now to FIG. 3, an aggressive MU environment is shown. The MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all the APs (AP-2, AP-3 and AP-4) in the neighboring cells. The APs send probe responses at lowest supported data rate consuming wireless medium bandwidth in their cell. Probe responses for 802.11n are very big and can take much longer time to transmit on the air. Each aggressive MU wastes bandwidth in multiple neighboring cells. Multiple MUs can compound this effect.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>Choudhary at 6:14–23.</p> <p>Referring to FIG. 4, a sticky MU environment is shown. Here the MU is associated with AP-1 even though there is a much better option available (AP-2). The MU sends all communication with AP-1 at the lowest data rate wasting airtime in the AP-1's cell. Other MUs associated with the AP-1 (MU-2 and MU-3) suffer because of the non-aggressive MU. Eliminating lowest supported data rates can solve some of the problems associated with aggressive probing and lazy roaming. Eliminating lowest data rate reduces the effective AP cell size by eliminating outer zones that support lower data rate. Eliminating lowest data rates can completely prevent some clients from associating with the AP(s). Reducing AP radiated power reduces the effective AP cell size, however it also reduces the effective area per cell over which high data rate communication can occur. Reducing AP power makes the AP-MU link asymmetric since clients do not reduce the power (see FIG. 2B).</p> <p>Choudhary at 6:24–40.</p> <p>The presently disclosed invention utilizes RSSI filtering for selectively accepting or responding to an 802.11 frame based on RSSI or some metric derived from RSSI. An AP will respond to probes only when the probe request is received with sufficient RSSI, will accept authentication only when the RSSI is sufficiently high, and will acknowledge received frames based on some criterion derived from RSSI. RSSI filtering may also be used to dissociate clients based on some RSSI derived criterion. RSSI filtering provides additional control for the administrator besides those provided by eligible data rate set, AP power and directional antenna.</p> <p>Choudhary at 7:4–14.</p> <p>An AP radio is configured with an RSSI threshold for sending probe response. Probe responses are not sent if the received probe requests do not meet the required RSSI threshold. Effectively this is a way of testing if the client is close enough to the AP to benefit from associating with the AP. If the client is not close enough then there is no point indicating anything to the client since it won't associate with the AP anyway. Because of restrained probe responses, a client does not detect presence of an AP until it is close enough.</p>

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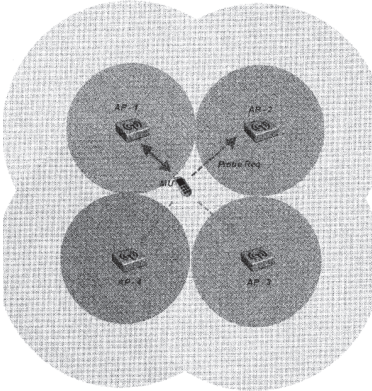
Claim Element	Disclosure of Claim Element in Choudhary
	<p data-bbox="462 617 690 642">Choudhary at 7:15–23.</p> <div data-bbox="462 674 831 1062" style="text-align: center;"></div> <p data-bbox="605 1108 675 1129" style="text-align: center;">FIGURE 5</p> <p data-bbox="462 1163 669 1188">Choudhary at Fig. 5.</p> <p data-bbox="462 1222 1466 1415">Referring now to FIG. 5, the MU is associated with AP-1 but aggressively probes other channels. The MU keeps sending broadcast/unicast probes to all APs (AP-2, AP-3, and AP-4) in the neighboring cells. The APs send probe responses only if the received probe request is above a configured RSSI threshold. Since probe responses consume more air-time than probe request, selectively pruning out probe responses reduces airtime consumed by aggressive clients for probes. The AP radio is configured with an RSSI threshold for sending probe response. Additionally, it is possible to drop authentication requests that do not meet the required RSSI threshold at AP.</p> <p data-bbox="462 1446 690 1472">Choudhary at 7:24–35.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>When a client sends active probes it will receive responses from closest AP(s) only as defined by configured RSSI threshold. If client determines the AP(s) based on passive scanning, then the authentication attempt to a far-away AP would fail. When a client roams away from an AP its RSSI level at the AP would drop. An AP can accumulate an average of some consecutive samples of the RSSI for the received frames from the client. When this average drops below a threshold then the AP radio can dissociate a client or a more advanced radio can deliberately stop 802.11 ACK for uplink frames from the client. A client in this case would either immediately start looking for another AP in its neighborhood (increased retries due to ACK failures) or will be dissociated for bad behavior and discover another AP nearby.</p> <p>Choudhary at 7:36–49.</p> <div data-bbox="462 955 917 1302" data-label="Diagram"><p>The diagram illustrates two overlapping circles representing Access Points (AP-1 and AP-2). MU-1 is located in the intersection of the two circles. MU-2 is located within the circle for AP-1, and MU-3 is located within the circle for AP-2. Arrows indicate MU-1 sending probe requests to both AP-1 and AP-2. AP-1 is labeled 'Probe Fail / No response', and AP-2 is labeled 'Probe Time Resp'.</p></div> <p style="text-align: center;">FIGURE 6</p> <p>Choudhary at Fig. 6.</p> <p>FIG. 6 shows where an MU scans all channels using active broadcast probing. AP-1 does not respond to probe request since the received RSSI is below the configured threshold for probes. AP-2 responds</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>to the probe request. The MU discovers only AP-2 by active probing. MU-1 authenticates and associates with AP-2 which is the desired AP for MU-1 in this case.</p> <p>Choudhary at 7:50–56.</p> <p>FIG. 7 shows where an MU (MU-1) scans channels passively and hears an AP-1 beacon. The MU attempts to connect to AP-1 right away but fails because it does not meet the RSSI threshold required by AP-1. The MU now moves on to another frequency and discovers AP-2(s) beacon. The MU authenticates and associates with AP-2 which is the ideal AP for MU in this case.</p> <p>Choudhary at 7:57–63.</p> <div data-bbox="467 951 922 1293" data-label="Diagram">A diagram showing two overlapping circles representing Access Points (AP-1 and AP-2) within a larger shaded area. Two Mobile Units (MU) are positioned at the bottom, each with an arrow pointing towards the center of the overlapping area between the two APs.</div> <p style="text-align: center;">FIGURE 8</p> <p>Choudhary at Fig. 8.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>In FIG. 8, the MU is associated to AP-2 and starts roaming away from AP-2 towards AP-1. The RSSI received from MU at AP-2 decreases. The average RSSI over few consecutive samples also decreases. When the average RSSI drops below a threshold value, AP-2 stops sending ACK(s) for uplink 802.11 frames from the MU. It is also possible to penalize the MU for not roaming and simply send a dissociate to the MU. The MU detects an increase in retries on the uplink and probes other channels to find a nearby AP-1. The MU then associates with AP-1 and dissociates with AP-2.</p> <p>Choudhary at 7:64–8:6.</p> <p>Referring to FIG. 10, a particular embodiment of a method 100 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and unassociated mobile units. Method 100 begins with processing block 102 which discloses receiving at the AP at least one message from an unassociated mobile unit (MU) from which RSSI can be determined. As shown in processing block 104, in this embodiment the message comprises a probe request message and wherein the response comprises a probe response message.</p> <p>Choudhary at 9:60–10:3.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p align="center">FIGURE 11</p> <p>Choudhary at Fig. 11.</p> <p>Referring now to FIG. 11 another particular embodiment of a method 150 for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks is shown. This method relates to APs and associated mobile units. Method 150 begins with processing block 152 which discloses receiving at the AP at least one message from an associated mobile unit (MU). As</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>further shown in processing block 154 the receiving at the AP at least one message from an MU comprises receiving a predetermined number of consecutive frames from the AP.</p> <p>Choudhary at 10:22–31.</p> <p>Processing block 156 states determining whether a Received Signal Strength indicator (RSSI) associated with the at least one message from the associated MU is greater than a predetermined threshold. As shown in processing block 158, in one embodiment the determining whether an RSSI value associated with the at least one message from an associated MU is greater than a predetermined threshold comprises determining an average RSSI value of RSSI values associated with the predetermined number of consecutive frames from the AP and determining whether the average RSSI value is greater than the predetermined threshold. As shown in processing block 160, in certain deployments such as a pico-cell deployment the threshold is dependent upon a density of APs within an area. As shown in processing block 162, in certain embodiments the threshold is automatically tuned based on at least one criteria.</p> <p>Choudhary at 10:32–47.</p> <p>1. A computer-implemented method in which an Access Point (AP) performs operations comprising: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_{hi} threshold, wherein said RSSI_{hi} threshold is dependent upon a density of APs within an area and wherein said RSSI_{hi} threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said predetermined RSSI_{hi} threshold.</p> <p>Choudhary at Claim 1. <i>See also</i> Claim 10.</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco’s Invalidation Contentions and the associated Exhibits, incorporated by reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.</p>
<p>11[pre] An access point configured to perform an active scanning, the access point comprising:</p>	<p><i>See</i> 9[pre] above.</p>
<p>11[a] a transceiver; and</p>	<p>Choudhary discloses, either expressly or inherently, an access point comprising a transceiver.</p> <p><i>See, e.g.,</i></p> <p>Still other embodiments include a computerized device (e.g. an Access Point), configured to process all the method operations disclosed herein as embodiments of the invention. In such embodiments, the computerized device includes a memory system, a processor, communications interface in an interconnection mechanism connecting these components. The memory system is encoded with a process that provides air-time optimization in wireless networks using Received Signal Strength Indicator (RSSI) filtering as explained herein that when performed (e.g. when executing), operates as explained herein to perform all of the method embodiments and operations explained herein as embodiments of the invention. Thus any computerized device that performs or is programmed to perform the processing explained herein is an embodiment of the invention.</p> <p>Choudhary at 3:21–35.</p> <p>An AP cell is a neighborhood around the AP over which a client can demodulate the received signal from the AP cleanly. Referring to FIG. 1A, an AP 10 is shown with its corresponding cell. A first part of the cell 12 supports a higher data rate, while the cell portion further away 14 supports a lower data rate. The size of the AP cell is determined by the radiated power, the transmit antenna, the MU receive antenna, the MU receiver sensitivity and the modulation scheme. Larger radiated power can be received much further away at a given RSSI. Directional antenna's focus the radiated power in a smaller region of space and therefore it can be received further away at a given RSSI in the direction</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>of the antenna. A receiver's antenna can also determine the amount of radiated power that is captured and hence the RSSI at a given distance. Higher data rate modulation schemes are more sensitive to noise and therefore require higher RSSI for clean reception. Thus at higher data rates the effective cell size is smaller.</p> <p>Choudhary at 5:19–36.</p> <p>10. An Access Point (AP) comprising: a memory; a processor; a communications interface; an interconnection mechanism coupling the memory, the processor and the communications interface; and wherein the memory is encoded with an application for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks, that when performed on the processor, provides a process for processing information, the process causing the AP to perform the operations of: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_hi threshold, wherein said RSSI_hi threshold is dependent upon a density of APs within an area and wherein said RSSI_hi threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said RSSI_hi threshold.</p> <p>Choudhary at Claim 10.</p> <p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco's Invalidity Contentions and the associated Exhibits, incorporated by</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.
11[b] a processor, a	<p>Choudhary discloses, either expressly or inherently, an access point comprising a processor.</p> <p><i>See, e.g.,</i></p> <p>Still other embodiments include a computerized device (e.g. an Access Point), configured to process all the method operations disclosed herein as embodiments of the invention. In such embodiments, the computerized device includes a memory system, a processor, communications interface in an interconnection mechanism connecting these components. The memory system is encoded with a process that provides air-time optimization in wireless networks using Received Signal Strength Indicator (RSSI) filtering as explained herein that when performed (e.g. when executing), operates as explained herein to perform all of the method embodiments and operations explained herein as embodiments of the invention. Thus any computerized device that performs or is programmed to perform the processing explained herein is an embodiment of the invention.</p> <p>Choudhary at 3:21–35.</p> <p>Other arrangements of embodiments of the invention that are disclosed herein include software programs to perform the method embodiment steps and operations summarized above and disclosed in detail below. More particularly, a computer program product is one embodiment that has a computer-readable medium including computer program logic encoded thereon that when performed in an AP provides associated operations providing air-time optimization in wireless networks using Received Signal Strength Indicator (RSSI) filtering as explained herein. The computer program logic, when executed on at least one processor with a computing system, causes the processor to perform the operations (e.g., the methods) indicated herein as embodiments of the invention. Such arrangements of the invention are typically provided as software, code and/or other data structures arranged or encoded on a computer readable medium such as an optical medium (e.g., CD-ROM), floppy or hard disk or other a medium such as firmware or microcode in one or more ROM or RAM or PROM chips or as an Application Specific Integrated Circuit (ASIC) or as downloadable software images in one or more modules, shared libraries, etc. The software or firmware or other such configurations can be installed onto a computerized device to cause one or more processors in the</p>

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Claim Element	Disclosure of Claim Element in Choudhary
	<p>computerized device to perform the techniques explained herein as embodiments of the invention. Software processes that operate in a collection of computerized devices, such as in a group of data communications devices or other entities can also provide the system of the invention. The system of the invention can be distributed between many software processes on several data communications devices, or all processes could run on a small set of dedicated computers, or on one computer alone.</p> <p>Choudhary at 3:36–67.</p> <p>An AP cell is a neighborhood around the AP over which a client can demodulate the received signal from the AP cleanly. Referring to FIG. 1A, an AP 10 is shown with its corresponding cell. A first part of the cell 12 supports a higher data rate, while the cell portion further away 14 supports a lower data rate. The size of the AP cell is determined by the radiated power, the transmit antenna, the MU receive antenna, the MU receiver sensitivity and the modulation scheme. Larger radiated power can be received much further away at a given RSSI. Directional antenna's focus the radiated power in a smaller region of space and therefore it can be received further away at a given RSSI in the direction of the antenna. A receiver's antenna can also determine the amount of radiated power that is captured and hence the RSSI at a given distance. Higher data rate modulation schemes are more sensitive to noise and therefore require higher RSSI for clean reception. Thus at higher data rates the effective cell size is smaller.</p> <p>Choudhary at 5:19–36.</p> <p>References to “a microprocessor” and “a processor”, or “the microprocessor” and “the processor,” may be understood to include one or more microprocessors that may communicate in a stand-alone and/or a distributed environment(s), and may thus be configured to communicate via wired or wireless communications with other processors, where such one or more processor may be configured to operate on one or more processor-controlled devices that may be similar or different devices. Use of such “microprocessor” or “processor” terminology may thus also be understood to include a central processing unit, an arithmetic logic unit, an application-specific integrated circuit (IC), and/or a task engine, with such examples provided for illustration and not limitation.</p> <p>Choudhary at 10:59–11:4.</p>

EXHIBIT A-4 – CHOUDHARY

Claim Element	Disclosure of Claim Element in Choudhary
	<p>10. An Access Point (AP) comprising: a memory; a processor; a communications interface; an interconnection mechanism coupling the memory, the processor and the communications interface; and wherein the memory is encoded with an application for using Received Signal Strength Indicator (RSSI) filtering to provide air-time optimization in wireless networks, that when performed on the processor, provides a process for processing information, the process causing the AP to perform the operations of: receiving at said AP at least one probe request from an unassociated mobile unit (MU) from which a Received Signal Strength Indicator (RSSI) can be determined; determining whether the RSSI associated with said at least one probe request from the unassociated MU is greater than a RSSI_hi threshold, wherein said RSSI_hi threshold is dependent upon a density of APs within an area and wherein said RSSI_hi threshold is tuned for a pico-cell deployment to provide desired spacing of APs within said pico-cell; and responding to said at least one probe request from the unassociated MU when said RSSI value associated with said at least one probe request from the unassociated MU is greater than said RSSI_hi threshold.</p> <p>Choudhary at Claim 10.</p> <p>To the extent Golden Eye argues that Choudhary does not disclose this limitation, it would have been obvious in view of the knowledge of a person of ordinary skill in the art and in view of the reference(s) identified in Cisco’s Invalidity Contentions and the associated Exhibits, incorporated by reference herein. A person of ordinary skill would have been motivated to combine Choudhary with the identified reference(s) for the reasons discussed in the cover pleadings and associated Exhibits.</p>
11[c] wherein the processor is configured to:	See 11[b] above.
11[d] cause the transceiver to receive, from a station, a	See 9[a], 11[a] above.

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Claim Element	Disclosure of Claim Element in Choudhary
probe request frame including information on a signal strength; and	
11[e] cause the transceiver to transmit, to the station, a probe response frame in response to the probe request frame based on the information on the signal strength,	<i>See 9[b], 11[a] above.</i>
11[f] wherein an access of the station to the access point is based on the probe response frame and a maximum probe response time.	<i>See 9[c] above.</i>