

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner

IPR2026-00188
U.S. Patent No. 9,271,243

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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PETITIONER’S EXHIBIT LIST

Ex.1001	U.S. Patent No. 9,271,243.
Ex.1002	Prosecution History of U.S. Patent No. 9,271,243.
Ex.1003	Declaration of Dr. Christopher Hansen under 37 C.F.R. § 1.68.
Ex.1004	<i>Curriculum Vitae</i> of Dr. Hansen.
Ex.1005	U.S. Patent No. 7,313,113 to Hills et al. (“Hills”).
Ex.1006	CN101626615A Certified English Translation to Wang et al. (“Wang”).
Ex.1007	Original CN101626615A.
Ex.1008	Sorting Algorithms.
Ex.1009	Data Communications Basics - A Reference Guide.
Ex.1010	IEEE 802.11 Standard (2007).
Ex.1011	U.S. Patent No. 8,040,861 to Calhoun et al. (“Calhoun”).
Ex.1012	Cisco White Paper, Radio Resource Management under Unified Wireless Networks, Document ID 71113.

I. INTRODUCTION

U.S. Patent No. 9,271,243 (“the ’243 patent”) generally relates to techniques of adjusting the transmit power of wireless access points on the same channel. Ex.1001, 1:15-23, Abstract. The Notice of Allowance, without an office action on the merits, stated that the prior art of record fails to disclose “*an optimal output strength value calculator configured to compute a corrected output strength value based on the highest RSSI value of the extracted wireless access point, a predetermined threshold value of the RSSI between the grouped wireless access points, and a currently used output strength value,*” as recited in claim 1. Ex.1002, 49. The ’243 patent discloses the following mathematical expression, which corresponds to the claimed computation.

$$P_{tx\_modi} = P_{tx\_c} - (RSSI\_m - RSSI\_th)$$

Ex.1001, 7:37-44.

Notably, the combination of Hills and Wang discloses adjusting the transmit power of multiple wireless access points that operate on the same channel. Ex.1005, 1:19-23, 2:48-51; Ex.1006, 17. As shown in the side-by-side comparison, just like the ’243 patent, the prior art computes wireless access point transmit power (P-after) based on currently used power (P-before), the largest signal strength (RSSI-nth), and a preset threshold (RSSI-threshold).

'243 patent (Ex.1001, 7:51)	Wang (Ex.1006, 18)
$P_{tx\_modi} = P_{tx\_c} - (RSSI\_m - RSSI\_th)$	$P_{-after} = P_{-before} - (RSSI_{-nth} - RSSI_{-threshold})$

Because the prior art presented in this Petition discloses all of the claimed features, including the same computation identified as the reasons for allowance, *inter partes* review is appropriate.

Accordingly, pursuant to 35 U.S.C. §§ 311, 314(a), and 37 C.F.R. § 42.100, Cisco Systems, Inc. (“Petitioner”) respectfully requests that the Board review and cancel as unpatentable under (pre-AIA) 35 U.S.C. §103(a) claims 1, 2, 4, 5, and 11 (the “Challenged Claims”) of the ’243 patent.

II. GROUNDS FOR STANDING

Petitioner certifies that the ’243 patent is eligible for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the patent claims. 37 C.F.R. § 42.104(a).

III. NOTE

Petitioner cites to exhibits’ original page numbers. Emphasis in quoted material has been added.

IV. BACKGROUND

A. Wireless Networks

Well before the '243 patent, “wireless [local area networks] (WLAN) technology ha[d] exploded, as users from a wide range of backgrounds and vertical industries have brought this technology into their homes, offices, and increasingly into the public air space.” Ex.1005, 1:26-31; Ex.1012, 4 (recognizing “marked increase in the adoption of WLAN technologies.”). It was known that wireless networks comprise a plurality of wireless access points (also called APs or access elements), a plurality of client devices (also called access elements) and a central management device that controls the network. Ex.1001, 1:19-23, 3:23-60. At the time, such wireless networks utilized standardized protocols such as 802.11. Ex.1005, 3:49-51; Ex.1012, 4. The 802.11 protocol allowed for shared bandwidth; whereby multiple access points could utilize the same channel for communication with client devices. Ex.1005, 8:21-30; Ex.1012, 4. Depending on the transmission power, such implementations may result in coverage overlaps that induce co-channel interference. Ex.1005, 8:21-30; Ex.1012, 4. It was recognized in the art that “many WLANs do not perform at optimum speed due to overlapping coverage areas and channel interference.” Ex.1005, 2:36-38; Ex.1012, 17 (“...high co-channel interference, effectively reducing the client throughput levels...”). To reduce the interference, it was recognized in the art an access point’s transmit

power should be adjusted (i.e., reduced). Ex.1005, 11:60-66; Ex.1006, Abstract; Ex.1012, 18; Ex.1003, ¶24.

B. RSSI and Power Adjustment

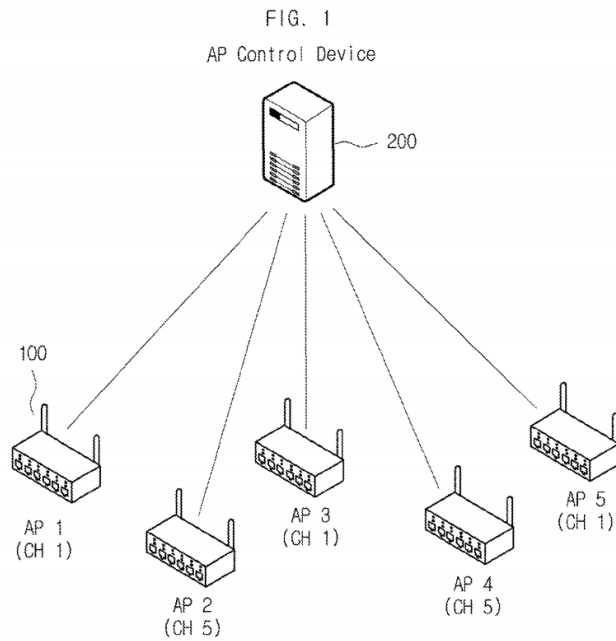
To determine the amount of channel overlap, in accordance with the 802.11 protocol, each access point was configured to perform a scanning procedure to measure the received signal strength (RSSI) between neighboring access points. Ex.1005, 2:64-5:3; Ex.1005, 4; Ex.1012, 4, 10. It was known in the art for each access point to report the measured RSSI values (in dBm) to a central management device. Ex.1005, 4:14-61; Ex.1012, 10. The central management device processes the RSSI (and other related information) via an algorithm to determine an adjusted transmit power of the access points that minimizes overlap and interference, thereby optimizing WLAN performance. Ex.1005, 2:32-33, 3:30-34, 12:19-21; Ex.1006, 12 (“...decreases the power of the APs to reduce interference...”). The transmit power algorithm, for example, used an equation based on current transmit power, a power threshold and the highest RSSI value. Ex.1006, 18 (“P-after = P-before - (RSSI-nth - RSSI-threshold)”); *see also* Ex.1012, 10 (adjusted transmit power = Tx_Max for a given AP + (TX power control thresh – RSSI of 3rd highest neighbor above the threshold); Ex.1003, ¶25.

V. OVERVIEW OF THE '243 PATENT

A. Summary of the '243 Patent

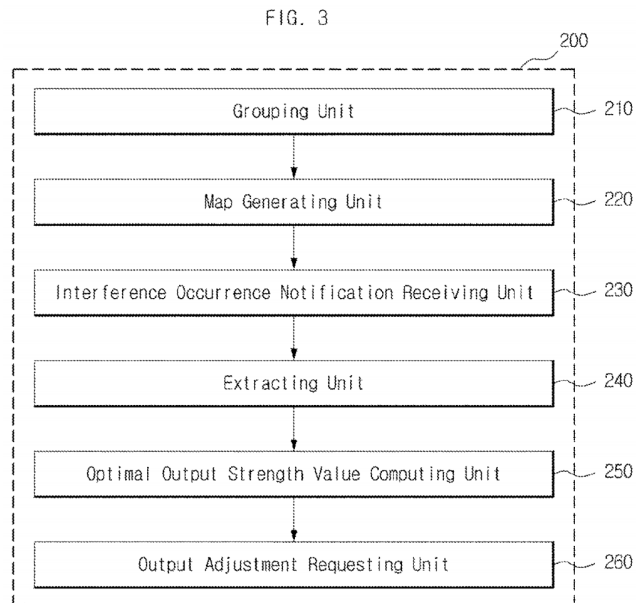
The '243 patent relates to “a method and a device for controlling the wireless access point, and more specifically to a method and a device for controlling a wireless access point to optimize its coverage and capacity under in [sic] an environment of interference.” Ex.1001, 1:15-23. The '243 patent states that utilizing multiple access points (“AP”) on the same channel may “caus[e] interference and deteriorating the performance of the wireless network.” Ex.1001, 1:36-41. According to the '243 patent, prior art approaches to solve this problem are not optimal “since each of a plurality of sub-APs using the same channel needs to adjust the transmission power individually.” Ex.1001, 1:11-55.

The purported improvement of the '243 patent, as shown below at Figure 1, is to use a central device (AP control device) that controls access point transmit power. Ex.1001, 1:59-4:7, 5:1-49.



Ex.1001, FIG. 1.

In the context of Figure 3, reproduced below, the '243 patent illustrates the operation of the AP control device 200.

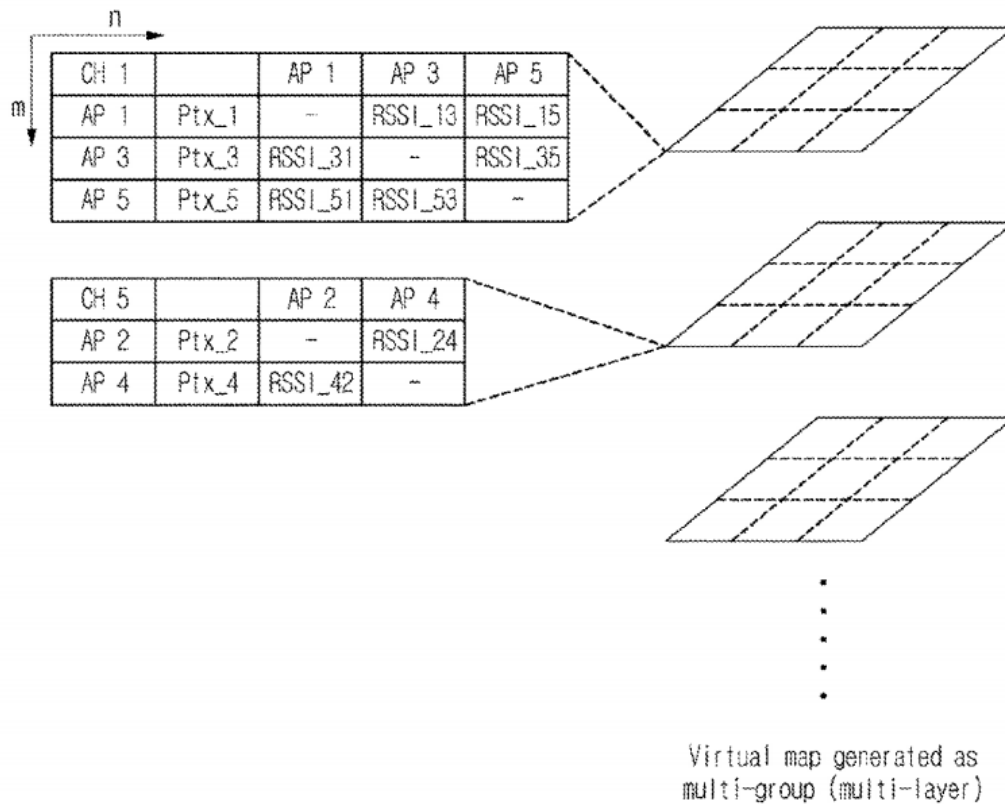


Ex.1001, FIG. 3.

As shown, the AP control device 200 includes a grouping unit 210, a map generator unit 220, an interference occurrence notification receiving unit 230, an extracting unit 240, an optimal output strength value computing unit 250, and an output adjustment requesting unit 260. Ex.1001, 6:61-7:4. According to the '243 patent, although the units may be implemented in “hardware configurations, such as FPGA (Field Programmable Gate Array) or ASIC (Application Specific Integrated Circuit)” they are “not...restricted to either software or hardware and it is possible that each of the elements is configured to be in an addressable storage medium and to run one or more processors.” Ex.1001, 7:55-8:2.

The “grouping unit 210 groups APs that use the same channel.” Ex.1001, 7:5-9. “The map generating unit 220... generates a virtual map that includes the RSSI value between the grouped APs and the output strength value of the grouped APs.” Ex.1001, 7:10-15. An example map is illustrated as a two-dimensional (m x n matrix) at Figure 6, reproduced below.

FIG. 6



Ex.1001, FIG. 6.

With further reference to Figure 3, the “interference occurrence notification receiving unit 230 receives a message indicating whether interference has occurred between the grouped APs.” Ex.1001, 7:16-25. If interference has occurred, “the extracting unit 240 refers to the virtual map generated by the map generating unit 220 to extract the AP that has the highest RSSI value among the grouped APs.” Ex.1001, 7:26-29. “The optimal output strength value computing unit 250 computes the corrected output strength value (Ptx_modi) for minimizing the

interference between the APs, based on an RSSI value (RSSI_m) of an AP extracted by the extracting unit 240, a predetermined threshold value (RSSI_{th}) of RSSI between the grouped APs and a currently used output strength value (Ptx_c) of the grouped A[P]s.” Ex.1001, 7:37-44. The mathematical expression is as follows.

$$Ptx\_modi = Ptx\_c - (RSSI\_m - RSSI\_th)$$

Lastly, the “output adjustment requesting unit 260 sends an output strength adjustment request to each of the grouped APs so as to adjust the current output strength value based on Ptx_{modi}.” Ex.1001, 7:49-54; Ex.1003, ¶¶29-36.

B. Prosecution History of the '243 Patent.

The '243 patent was filed as a PCT October 19, 2011, claims priority to Korean application KR1020110054124, filed June 3, 2011, and issued on February 23, 2016. Ex.1001, Face.

The '243 patent received allowance, without any substantive examination. With respect to claim 1, the Notice of Allowance indicated the following reason for allowance.

The following is an examiner's statement of reasons for allowance: The prior art of record Scherzer et al (US Publishing 2004/0037258 A1) discloses a device 21 (fig. 2) for controlling a group of wireless access points 25-30 using a same channel (fig. 1a page 3 paragraph 0041). However, the prior fails to teach or make obvious for **“an optimal output strength value calculator configured to compute a corrected output strength value based on the highest RSSI value of the extracted wireless access point, a predetermined threshold value of the RSSI between the grouped wireless access points, and a currently used output strength value”**, when such unit is considered within the specific structure of the device recited in claim 1. The prior

Ex.1002, 49.

As demonstrated below, there is nothing novel about claim 1 (or any of the other claims) of the '243 patent since the identified features, which appear to be the reason for allowance, were known in the art and it would have been obvious to combine the prior art as claimed. Ex.1003, ¶¶37-38.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) in the field of the '243 patent, as of the earliest claimed priority date of June 3, 2011, would have been someone knowledgeable and familiar with wireless communications including wireless networks and local area networks (WLAN) based on IEEE 802.11 standards. That person would have a bachelor's degree in electrical engineering, computer science, or equivalent training, and approximately two years of experience implementing IEEE 802.11. Lack of work experience can be remedied

by additional education, and vice versa. Ex.1003, ¶¶26-28.

VII. CLAIM CONSTRUCTION

Claim terms in IPR are construed according to their “ordinary and customary meaning” to those of skill in the art. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Petitioner submits that, for the purposes of this proceeding and the grounds presented herein, no claim term requires express construction. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Ex.1003, ¶¶39-41.

Although the '243 patent's claims do not use the word “means,” they do use “nonce” words, which indicate that the claims are drafted in “means-plus-function” format. The noted limitations are addressed below.

A. “grouping unit” “map generator” “extractor” “optimal output strength value calculator” and “output adjustment requester”

Claims 1 and 2 recite the following elements: “grouping unit”, “map generator”, “extractor”, “optimal output strength value calculator”, and “output adjustment requester” “configured to” perform various functions. The noted elements represent a nonstructural “nonce word,” that invokes 35 U.S.C. § 112(6).

Claimed “nonce word”	Claimed function	Function described in specification
<i>grouping unit</i>	<i>group wireless access points using a same channel based on channel use information received</i>	Ex.1001, 5:30-36, 6:63-7:9, FIG. 3.

	<i>from the wireless access points</i>	
<i>map generator</i>	<i>compute a received signal strength indicator (RSSI) between the grouped wireless access points and an output strength value for each of the grouped wireless access points</i>	Ex.1001, 6:63-7:4, 7:10-15, FIG. 3.
<i>extractor</i>	<i>extract a wireless access point having a highest RSSI value among the grouped wireless access points, if interference occurs between the grouped wireless access points</i>	Ex.1001, 6:63-7:4, 7:26-37, FIG. 3.
<i>optimal output strength value calculator</i>	<i>compute a corrected output strength value</i>	Ex.1001, 6:63-7:4, 7:38-50, FIG. 3.
<i>output adjustment requester</i>	<i>transmit an output strength adjustment request to each of the grouped wireless access points</i>	Ex.1001, 6:63-7:4, 7:49-55, FIG. 3.

The specification describes such functions being performed by hardware or software.

The elements illustrated in FIG. 2 and FIG. 3 in accordance with an exemplary embodiment refer to hardware configurations, such as FPGA (Field Programmable Gate Array) or ASIC (Application Specific Integrated Circuit), and perform certain functions.

Nevertheless, it shall not mean that the elements are restricted to either software or hardware, and it is possible that each of the elements is

configured to be in an addressable storage medium and to run one or more processors.

Ex.1001, 7:55-67.

Accordingly, in view of the '243 patent's disclosure, a POSITA would have understood that the corresponding structure of each of the terms "*grouping unit*", "*map generator*", "*extractor*", "*optimal output strength value calculator*", and "*output adjustment requester*" includes "hardware or executable software in a storage medium." Ex.1003, ¶¶42-44.

VIII. RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF

Petitioner asks that the Board institute a trial for *inter partes* review and cancel the Challenged Claims in view of the analysis below.

IX. DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE

This patent is involved in the following district court proceeding: *Golden Eye Technologies LLC v. Cisco Systems, Inc.*, 2-25-cv-00898 (EDTX). As will be addressed in further detail in any discretionary briefing—the relevant considerations favor institution.

To that end, Petitioner stipulates, consistent with the stipulation made by the Petitioner in *Sotera* that, if the PTAB institutes this IPR, Petitioner will not pursue in this litigation against the claims challenged in this IPR, (i) the specific grounds raised, or (ii) any other grounds that could have reasonably been raised before the

PTAB in that instituted proceeding (*i.e.*, any ground that could have reasonably been raised under §§ 102 or 103 on the basis of prior art patents or printed publications).

X. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Challenged Claims and Statutory Grounds for Challenge

Grounds	Claims	Basis
#1	1, 4, and 5	35 U.S.C. § 103 (pre-AIA) over Hills and Wang
#1	2 and 11	35 U.S.C. § 103 (pre-AIA) over Hills, Wang, and Calhoun

U.S. Patent No. 7,313,113 to Hills et al. (“Hills,” Ex.1005) was filed April 4, 2003, and issued December 25, 2007. Hills is thus prior art to the ’243 patent under (pre-AIA) 35 U.S.C. § 102(b).

Chinese publication CN 101626615A to Wang Lu (“Wang,” Ex.1006) was filed on August 20, 2009, and published on January 13, 2010. Wang is thus prior art to the ’243 patent under (pre-AIA) 35 U.S.C. § 102(b).

U.S. Patent No. 8,040,861 to Calhoun et al. (“Calhoun,” Ex.1011) was filed February 27, 2007, and issued October 18, 2011. Calhoun is thus prior art to the ’243 patent under (pre-AIA) 35 U.S.C. § 102(e).

Petitioner also cites below to additional prior art as evidence of the background knowledge of a POSITA and to provide contemporaneous context to

support Petitioner’s assertions regarding what a POSITA would have understood from the prior art in the grounds. *See Yeda Research v. Mylan Pharm. Inc.*, 906 F.3d 1031, 1041-1042 (Fed. Cir. 2018) (affirming the use of “supporting evidence relied upon to support the challenge”); 37 C.F.R. § 42.104(b); *see also K/S HIMPP v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365-66 (Fed. Cir. 2014); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016)).

B. Ground 1: Claims 1, 4, and 5 are rendered obvious by Hills and Wang.

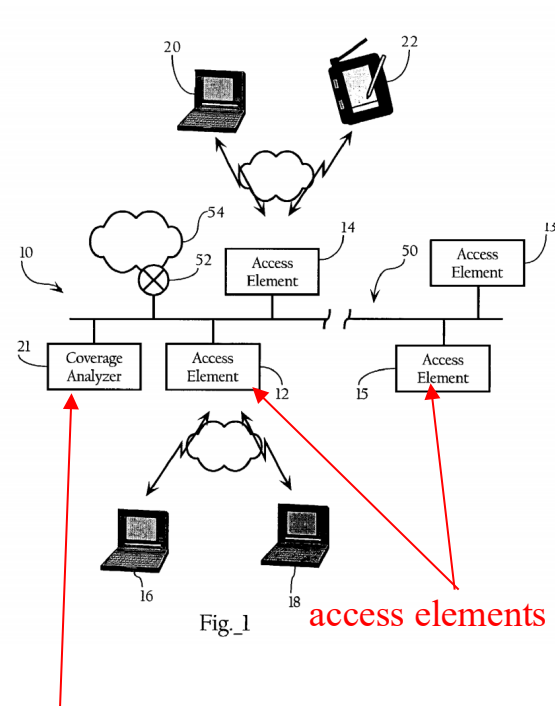
1. Summary of Hills

Hills, like the ’243 patent, “relates to wireless computer networks and, more particularly, to methods, apparatuses and systems facilitating configuration of transmit power in a wireless network environment comprising a plurality of wireless access points.” Ex.1005, 1:19-23; Ex.1003, ¶50.

Also, like the ’243 patent, Hills recognizes that “the presence of access points operating on the same or overlapping channels within the vicinity of each other can affect the performance of the enterprise’s wireless network.” Ex.1005, 2:19-22. For example, “many WLANs do not perform at optimum speed due to overlapping coverage areas and channel interference.” Ex.1005, 2:36-38. Hills seeks to address the noted problem by disclosing “methods, apparatuses and systems facilitating the configuration of transmit power and coverage areas

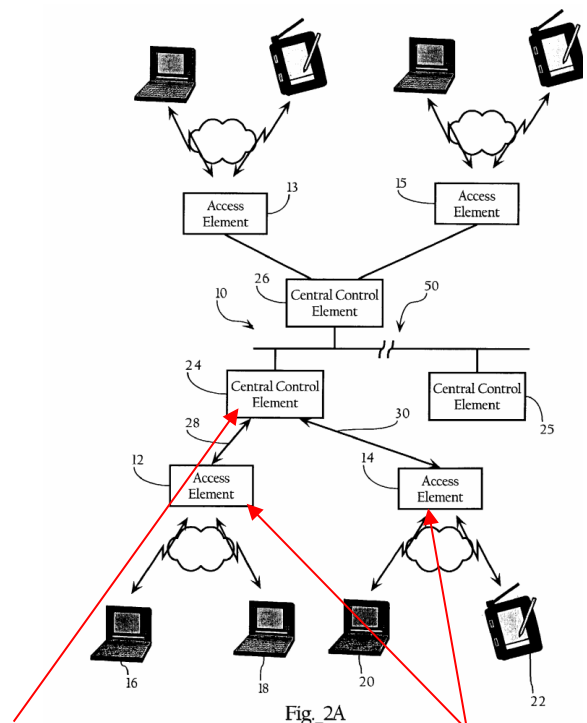
corresponding to access points in a wireless network environment.” Ex.1005, 2:48-51; Ex.1003, ¶51.

In more detail, Hills discloses “a central management device such as the coverage analyzer 21 (FIG. 1) or central control element 24” that computes optimal transmission power levels for access points (also referred to as access elements) that operate on the same channel. Ex.1005, 3:26-57, 12:19-21. Exemplary central management devices and access points (or access elements) are illustrated at Figures 1 and 2A below.



central management device

**Ex.1005, FIG. 1 (annotated);
Ex.1003, ¶52.**



central management device

access elements

**Ex.1005, FIG. 2A (annotated)
Ex.1003, ¶52.**

Hills’ access elements gather data (e.g., channel scan data and positional data) and transmit this data to the central management device, which maintains it in tables or a data structure. Ex.1005, 4:14-61, 5:26-35, 13:36-44. The central management device uses the data to group access elements that are on the same floor and use the same channel. Ex.1005, 12:19-29. For example, in the context of Figure 2A, the central management device groups access elements 12 and 14 that are on the same floor of the enterprise and use the same channel. Ex.1005, 5:65-7:44, 12:19-29; Ex.1003, ¶53.

Hills’ central management device generates a two-dimensional matrix that identifies the access elements on the same channel and a signal strength value (e.g., RSSI) as determined by each access element. Ex.1005, 5:3-5, 6:57-7:3, 9:12-14:15. The central management device compares the signal strength value against a coverage threshold and if the signal strength is greater than the threshold, the transmit power for the access element is reduced by 10dB. Ex.1005, 12:33-49. Although Hills’ example is a fixed 10dB reduction, Hills explains that “the amount by which the transmit powers are reduced, can be fully parameterized and configurable.” Ex.1005, 12:49-52. According to Hills, the process of reducing transmit power helps “ensure that the coverage areas of access elements do not overlap neighboring access elements assigned the same channel.” Ex.1005, 12:55-58; Ex.1003, ¶54.

Accordingly, Hills shows that it was known for a central management device to adjust transmission power of grouped access elements that use the same channel based on a signal strength value (e.g., RSSI) received from an access element and a threshold. Ex.1003, ¶55.

2. Summary of Wang

Wang generally pertains to adjusting the power of access points to reduce interference. Ex.1006, Abstract. Wang discloses an algorithm that computes the adjusted access point power (P-after) based on currently used power (P-before), the largest signal strength (RSSI-nth), and a preset threshold (RSSI-threshold). Ex.1006, 18, FIG. 7. As shown in the side-by-side comparison, Wang’s power adjustment calculation is just like that of the ’243 patent. Ex.1003, ¶¶56-58.

’243 patent (Ex.1001, 7:51)	Wang (Ex.1006, 18)
$P_{tx\_modi} = P_{tx\_c} - (RSSI\_m - RSSI\_th)$	$P\text{-after} = P\text{-before} - (RSSI\text{-nth} - RSSI\text{-threshold})$

Also, like the ’243 patent, Wang discloses that its algorithm “can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or

network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21; Ex.1003, ¶59.

3. Reasons to Combine Wang and Hills

As discussed below, a POSITA would have found it obvious for Hills to utilize Wang’s parameter-based algorithm for computing an adjusted transmit power, in order to reduce interference between access elements that operate on the same channel. Ex.1003, ¶60.

a. Hills and Wang are Analogous Art

Hills and Wang are both analogous art to the ’243 patent because they both pertain to the field of wireless access networks and address the problem of adjusting transmission power of access points that use the same channel to reduce interference. Ex.1001, 1:15-23, Abstract Ex.1005, 1:19-23, Abstract, FIGS. 1, 2A, 2B, 4, Claims 1, 10; Ex.1006, 16-19, Abstract, FIG. 7. Accordingly, a POSITA would have naturally considered Hills and Wang, which are analogous art. Ex.1003, ¶61.

b. Motivation to combine Wang with Hills

A POSITA would have combined the teachings of Wang with Hills to obtain predictable and beneficial results. Ex.1003, ¶62.

i. Applying Wang's algorithm teachings to Hills

Hills seeks to minimize interference by reducing transmit power where there is overlap between access points using the same channel. Ex.1005, 1:19-23, 2:19-51, 8:22-30, 12:19-54. Hills discloses reducing the transmit power of the access points by a fixed value, e.g., 10 dB. Ex.1005, 12:49-53. Hills also explains that “one skilled in the art will recognize...[that] the amount by which the transmit powers are reduced, can be fully parameterized.” Ex.1005, 12:49-53. A POSITA would have understood that utilizing a fully parameterized power adjustment technique means that rather than reducing power by a fixed value, the adjustment is performed in terms of variables (parameters). Ex.1003, ¶63.

Wang provides implementation details regarding parameterized power adjustment, as contemplated by Hills. Wang explains that its parameterized power adjustment technique allows for “select[ing] an optimal power that balances coverage and system capacity.” Ex.1006, 9. In more detail, Wang discloses an algorithm where the transmit power reduction is parameterized in accordance with the following equation: $P\text{-after} = P\text{-before} - (RSSI\text{-nth} - RSSI\text{-threshold})$, where $P\text{-after}$ is the adjusted transmission power, $RSSI\text{-nth}$ is the largest power reported by the n th access point, $RSSI\text{-threshold}$ is a preset threshold value, and $P\text{-before}$ is the access point power before adjustment. Ex.1006, 18, FIG. 7; Ex.1003, ¶64.

It would have been obvious to a POSITA to consider and apply the parameter-based power adjustment algorithm of Wang, when determining the amount of power to reduce in Hills, because Hills expressly contemplates utilizing parameter-based techniques for reducing access point transmit power. Ex.1005, 12:49-53 (“[T]he amount by which the transmit powers are reduced, can be fully parameterized.”). In view of Hills express suggestion, a POSITA would have been motivated to apply Wang’s parameterized technique to Hills. Ex.1003, ¶65.

Also, it would have been obvious to a POSITA to apply Wang’s parameter-based power adjustment technique to Hills because it would allow for a more proportional power adjustment. For example, in instances where the signal strength between access points that use the same channel is high, a reduction of only 10dB (per Hills’ example) may not be sufficient to address overlap. A POSITA would have understood that in such instances Hills’ central management device (which determines power reduction) would need to iterate and reduce power in 10dB increments multiple times. On the other hand, utilizing Wang’s parameter-based power adjustment algorithm would result in a variable power adjustment and potentially require fewer or no additional iterations. Such an implementation would potentially beneficially reduce power adjustment time and iterations. Ex.1003, ¶66.

As an additional benefit, it would have been obvious to apply Wang’s power adjustment technique to Hills because it would allow for adaptively adjusting

power when the network changes. Ex.1006, 19 (“To ensure that the AP power adjustment can adapt to the continuous changes in the wireless network, the power adjustment process is continuously cycled according to the adjustment cycle. That is, after step S709 is completed, the AC restarts step S701 in the next adjustment cycle.”). Such an implementation would ensure that regardless of network changes, the access elements’ use “an optimal power that balances coverage and system capacity.” Ex.1006, 9; Ex.1003, ¶67.

The proposed combination of Wang with Hills is nothing more than combining prior art elements (e.g., a parameter-based power adjustment algorithm, per Wang, with Hills’ central management device that performs power adjustment) according to known methods (Wang provides significant details regarding parameter-based power adjustment and Hills contemplates using parameter based power adjustment) to yield predictable results (e.g., using a parameter-based technique to reduce power of access points that use the same channel, thereby minimizing interference). Ex.1003, ¶68.

Lastly, a POSITA would have found it obvious to use Wang’s parameter-based power adjustment algorithm at least as a known, suitable option. *See Intel Corp. v. Pact XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (It is “not necessary to show that a combination is the best option, only that it be a suitable option”). As already noted, Hills explicitly identifies parameter-based techniques

as a suitable option. Ex.1005, 12:49-52; Ex.1003, ¶69.

ii. Applying Wang's hardware and software teachings to Hills

Hills discloses that its central management device “can be configured to execute the coverage analysis functionality at regular, configurable intervals.” Ex.1005, 5:55-57. Wang complements Hills by disclosing that power reduction execution “can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21. Wang's teachings represent details directly applicable to successfully implementing the combination of Wang and Hills, which executes a power adjustment algorithm. Ex.1003, ¶70.

In view of Wang, a POSITA would have found it obvious for Hills' central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to execute the power adjustment algorithm, per the combination with Wang discussed immediately above. Ex.1003, ¶71. The proposed combination is nothing more than

“the predictable use of prior art elements according to their established functions.”

See KSR Int’l v. Teleflex Inc., 550 U.S. 398, 417 (2007).

This reason is sufficient to explain why a POSITA would have sought and combined Wang’s disclosures with Hills. Nevertheless, additional reasons for combining the relevant teachings are provided in the claim analysis below.

Ex.1003, ¶71.

c. Reasonable expectation of success

The results would have been predictable and there would have been a reasonable expectation of success given the similarities of the two references. Additionally, a POSITA would have been able to apply Wang’s power adjustment algorithm teachings to Hills, given that Wang provides significant details regarding parameter-based power adjustment, including a power adjustment equation. A POSITA would have possessed the skills required to make the proposed combination, including being able to use well-known software and hardware techniques (e.g., a software product stored in non-volatile storage medium with computer executable instructions) to implement the proposed combination. Moreover, the reasonable expectation of success is evidenced by the fact that the ’243 patent itself relies on well-known software and hardware techniques. *See* Ex.1001, 7:60-8:2; Ex.1003, ¶72.

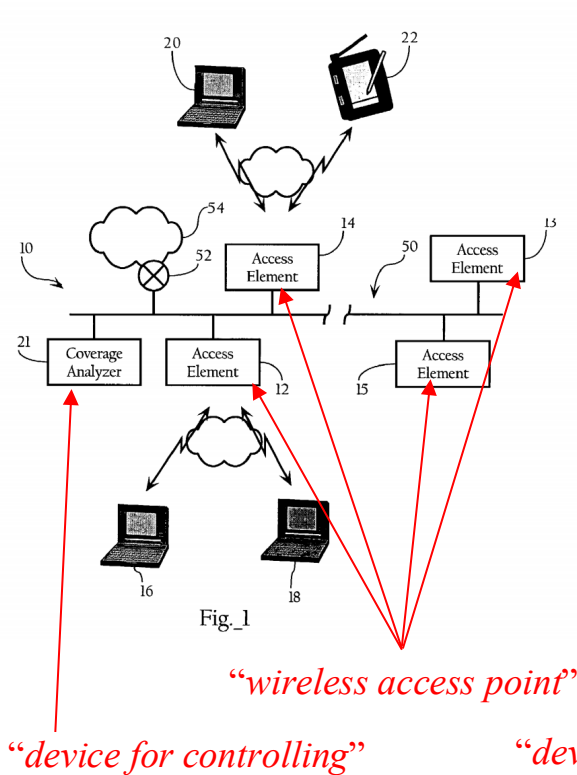
1. Claim 1

[1.0] A device for controlling a wireless access point comprising:

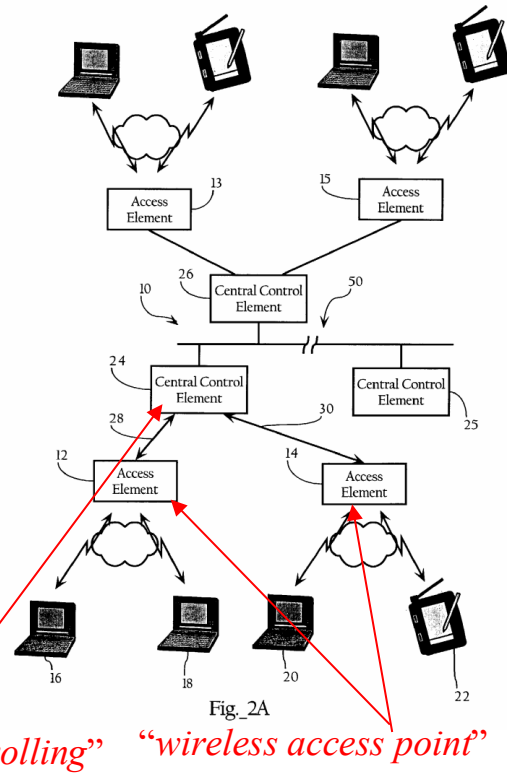
First, Hills discloses a “*device*” by teaching “**a central management device** such as the coverage analyzer 21 (FIG. 1) or central control element 24 (see description below and FIGS. 2A and 2B).” Ex.1005, 3:30-60. Hills explains that “the functionality of coverage analyzer may also be incorporated into one or more central control elements.” Ex.1005, 5:33-35. For ease of reference, going forward, the Petition will primarily refer to Hills’ “central management device,” with the understanding that it corresponds to a central control element 24 that includes a coverage analyzer 21. Accordingly, Hills’ central management device (comprising coverage analyzer 21 and central control element 24) corresponds to “*a device*,” as recited in the preamble. Ex.1003, ¶¶73-74.

Second, Hills’ central management device is “*for controlling a wireless access point*” because it controls “**transmit power levels,**” and “**perform[s] link layer management functions, such as authentication and association,**” “**load control, channel control, and handoff,**” etc., of wireless access points (also referred to by Hills as “APs” and “access elements”). Ex.1005, 5:26-35, 6:19-7:3, Abstract. As illustrated below at FIGS. 1 and 2A, Hills’ central management device (e.g., coverage analyzer 21 and central control element 24) controls access

elements 12, 14, and 15, which wirelessly communicate with client devices 16, 18, 20, 22. Ex.1003, ¶75.



Ex.1005, FIG. 1 (annotated);
Ex.1003, ¶75.



Ex.1005, FIG. 2A (annotated);
Ex.1003, ¶75.

Thus, because Hills describes a central management device for controlling a wireless access point, Hills teaches “[a] device for controlling a wireless access point,” as recited in the preamble. Ex.1003, ¶76.

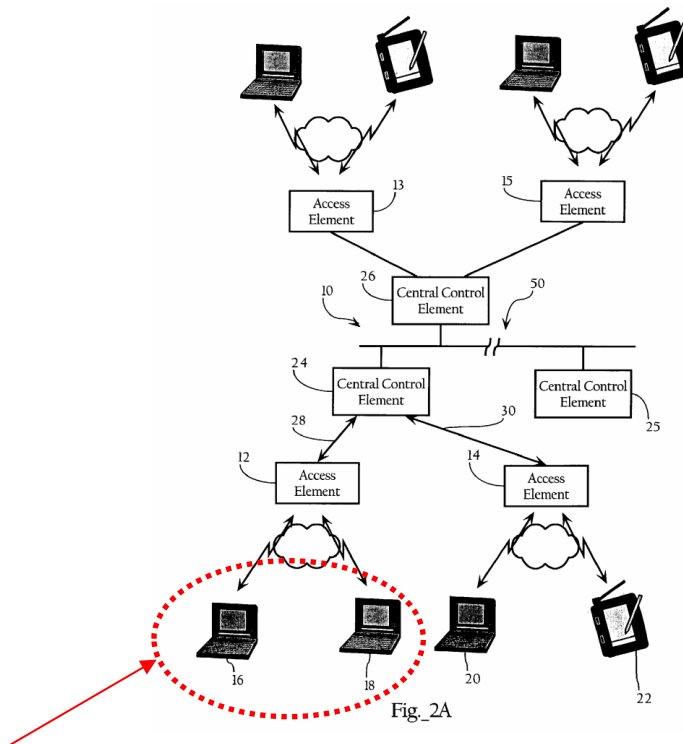
[1.1.1] a grouping unit configured to group wireless access points using a same channel

First, Hills discloses “a grouping unit configured to group wireless access points using a same channel” by disclosing that the central management device is

configured to group together in a two-dimensional matrix ($i \times j$ matrix) access elements. Ex.1005, 12:15-32; Ex.1003, ¶¶77-78. The “group may be...all access elements in a given physical location, such as a floor of a building” and include “access elements operating on the same channel.” Ex.1005, 12:19-32; Ex.1005, 12:19-32; Ex.1003, ¶78.

Hills also provides an example, in the context of Figure 2A, where access elements 12 and 14 are connected to central control element 24 and “installed on one floor of an enterprise facility.” *See* Ex.1005, 5:65-7:44. Hills explains that its $i \times j$ matrix corresponds to “the number of access elements in a given group” and that the “group may be ... **all access elements in a given physical location, such as a floor of a building.**” Ex.1005, 12:19-32. Hills further describes that access elements in the group may “**operate on the same channel**” and that the access elements’ transmit power is reduced if the detected signal strength is above a threshold. *See* Ex.1005, 12:19-47 (“FIG. 4 illustrates a method directed to minimizing the coverage overlaps of **access elements operating on the same channel**... [C]overage analyzer 21 determines whether the signal strength, S_{ij} , detected by AP_i , is greater than a coverage threshold of -85 dBm....[and if] **AP_i and AP_j operate on the same channel**... coverage analyzer 21 then reduces the transmit power, or generates an instruction to reduce the transmit power”). As such, a POSITA would have understood that within the scope of Hills’ Figure 2A

(reproduced below), access elements 12 and 14 may operate on the same floor, use the same channel, and be grouped together when generating a two-dimensional matrix ($i \times j$ matrix).



“group wireless access points using a same channel”

Ex.1005, FIG. 2A (annotated); Ex.1003, ¶79.

Accordingly, Hills discloses grouping access elements on the same floor using the same channel (e.g., access elements 16, 18), which renders obvious “group[ing] wireless access points using a same channel.” Ex.1003, ¶79.

As noted above in the Claim Construction section, the corresponding structure of the “grouping unit” is “hardware or executable software in a storage medium.” It would have been obvious to a POSITA for Hills’ central management

device to be implemented with executable software stored in memory, at least because Hills discloses that it “can be configured to execute the coverage analysis functionality at regular, configurable intervals.” Ex.1005, 5:55-57; Ex.1003, ¶80.

Second, to the extent argued that Hills’ disclosure is not sufficient to disclose the corresponding structure, Wang discloses that a power adjustment algorithm “can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21; Ex.1003, ¶81.

In view of Wang’s teachings, a POSITA would have found it obvious for Hills’ central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to perform the disclosed functionality. Such an implementation would facilitate receiving coverage scan data from the access elements, maintaining the coverage scan data in a table, and assembling a two-dimensional matrix to thereby “minimize[e] the coverage overlaps of access elements operating on the same channel.” Ex.1005, 12:19-21; *see also* analysis at X.A.3; Ex.1003, ¶82.

Thus, because Hills in combination with Wang discloses that the central management device includes software in storage medium that when executed groups access elements on the same floor using the same channel, the prior art renders obvious “*a grouping unit configured to group wireless access points using a same channel*” the received data, as claimed. Ex.1003, ¶83.

[1.1.2] based on channel use information received from the wireless access points;

First, Hills in two ways discloses “*channel use information.*” Ex.1003, ¶¶84-85.

As one example, Hills teaches that the access elements obtain “**coverage scan data**” that includes an “indicator of the strength of the detected signal,” “frequency channel,” and other data of the access element. Ex.1005, 5:50-60. Hills’ determined signal strength may be obtained in accordance with the 802.11 protocol as “the receive signal strength indicator (RSSI),” where the scanning access element measures “the energy observed at the antenna used to receive the current packet” from an access element transmitting on the same channel. Ex.1005, 5:3-5, 9:12-16. The coverage scan data corresponds to “*channel use information*” because it is information about a used frequency channel, including a determined signal strength (RSSI) on the frequency channel between the access elements. Ex.1003, ¶86.

As another example, Hills teaches obtaining access element “**positional**” data that “includes positional coordinates of each access element and further includes a z-axis dimension such as floor height or level, which can be...determined automatically through known components, such as a Global Positioning System (GPS) receiver.” Ex.1005, 13:23-44. It would have been obvious to a POSITA for each of the access elements to utilize a GPS receiver to obtain its positional data. Ex.1003, ¶87. The positional data identifies where the access element is located, and hence it identifies where the access elements are using the same channel, and for that reason, the position information is part of “*channel use information.*”

Also, Hills’ positional data corresponds to “*channel use information*” because the distance and floor information is used in pathloss calculations for a used frequency channel.

In one embodiment, a neighboring access element is an access element within a **threshold distance and on the same floor** as the current access element AP_i ...a pathloss model, where c =the speed of light, **f** **frequency**, and **d=distance**. Since the pathloss (PL) between a first access element and a second access element is the difference between the transmit power at the first access element and the receive signal strength at the second access element, the pathloss exponent, $ExpPL_{ij}$, can be derived from Equation (1).

$$PL = 10\log\left[\left(\frac{c}{4 * f * \pi * d}\right)^{ExpPl_{ij}}\right]$$

Ex.1005, 13:36-14:60; Ex.1003, ¶88.

Second, Hills discloses that the information is “*received from the wireless access points.*” Hills describes that “the access elements can be configured to automatically transmit the coverage scan data...in response to a request” and that the central management device “**receives coverage scan data from the access elements**” and stores it in access element tables or other data structure. Ex.1005, 4:14-61, 5:26-39, 6:57-7:3.

Also, Hills discloses that “the access point table **includes positional coordinates** of each access element and further includes a z-axis dimension such as floor height or level.” Ex.1005, 13:36-44. It would have been obvious to a POSITA for the central management device to receive positional data from the access elements (which obtain it with a GPS receiver) because Hills teaches that the positional data is included in the access point tables (which “stor[es] information relating to known access elements”) and used when determining transmit power. *See* Ex.1005, 5:26-39, 13:36-14:60; Ex.1003, ¶¶88-89.

Accordingly, because Hills’ coverage scan and positional data are received by the central management device from the access elements, Hills discloses the

channel use information is “*received from the wireless access points.*” Ex.1003, ¶91.

Third, Hills renders obvious that the grouping of access elements (see [1.1.1]) is “*based on*” the received “*channel use information.*” As explained above, Hills’ “**group...[includes] all access elements in a given physical location, such as a floor of a building,**” which also includes access elements that “**operate on the same channel.**” See Ex.1005, 12:19-47. FIGS. 2A, 4. The received positional data provides “coordinates of each access element and...floor...level” and the coverage scan data identifies each access elements’ “frequency channel.” Ex.1005, 4:14-61, 13:36-41. It would have been obvious to a POSITA to utilize the access elements’ coordinates and floor level to group access elements that are located on the same floor and include access elements that operate on the same channel because Hills’ “method... [seeks to] minimize[e] the coverage overlaps of access elements operating on the same channel.” Ex.1005, 12:19-21, FIG. 4; Ex.1003, ¶¶92-93.

Thus, because Hills’ group is based on positional and coverage scan data received from the wireless access elements, Hills discloses that the group is “*based on channel use information received from the wireless access points.*” Ex.1003, ¶94.

[1.2.1] a map generator configured to compute a received signal strength indicator (RSSI) between the grouped wireless access points

First, as discussed at [1.1.1], Hills’ access elements on the same floor using the same channel correspond to the “*grouped wireless access points.*” Ex.1003, ¶¶95-96.

Second, in numerous ways, Hills in combination with Wang renders obvious “*a map generator configured to compute a received signal strength indicator (RSSI) between the grouped wireless access points.*” Ex.1003, ¶97.

As discussed at [1.1.2], Hills discloses that the access elements obtain “coverage scan data,” which includes a signal strength indicator. Ex.1005, 4:14-61, 5:26-39, 6:57-7:3. The signal strength indicator may be obtained in accordance with the 802.11 protocol as “the receive signal strength indicator (RSSI),” where an access element measures “the energy observed at the antenna used to receive the current packet” from an access element transmitting on the same channel. Ex.1005, 4:65-5:25, 9:12-16; Ex.1003, ¶97.

i. *Hills performs computations to format coverage scan data*

Hills discloses that the central management device receives access elements’ coverage scan data (including the signal strength indicator (RSSI) that was

measured between the access elements) and stores this data in tables. Ex.1005, 4:14-61; Ex.1003, ¶97.

Hills' coverage scan data is transmitted by the access elements over an 802.11 wireless network to the central communications device. Ex.1005, 11:23-52. A POSITA would have understood that 802.11 wireless networks utilize packets for communication. Ex.1005, claim 6 (“...the access elements are each operative to...transmit the packet information and associated signal strengths to the coverage analyzer.”); Ex.1010, *generally*. A POSITA would have further understood that the coverage scan data (including the signal strength indicator RSSI) would be encapsulated in packets that are encoded in a binary format (0s and 1s) and transmitted as signals (e.g., electrical, electromagnetic, or radio frequency signals) representing these two states. Ex.1009, 5-6; Ex.1010, 604. On the receiving side, it would have been obvious to a POSITA for the central management device to perform computations to extract the coverage scan data (including the RSSI measured between the access elements operating on the same channel) from received packets and convert the data into a suitable format for storing it in tables. Ex.1003, ¶99.

Accordingly, Hills' computations to format received coverage scan data (including a received strength indicator (RSSI) that measured between the access elements operating on the same channel) for storage in access point tables, renders

obvious “*comput[ing] a received signal strength indicator (RSSI) between the grouped wireless access points.*” Ex.1003, ¶100.

ii. *Hills performs computations to sort tables based on RSSI and assemble two-dimensional matrix*

Hills discloses that the central management device is configured to “**sort[] each list or table by largest coverage overlap (i.e., signal strength value)**” and “**assemble[] a two-dimensional matrix including the detected signal strengths among the access elements**...operating on the same channel.” Ex.1005, 6:57-7:3, 12:7-48. Hills’ detected signal strength may be represented as a “receive signal strength indicator (RSSI).” Ex.1005, 5:3-5; *see also* Ex.1005, 9:12-16 (“...signal strength information (e.g., ...RSSI...)”); Ex.1003, ¶101.

It would have been obvious to a POSITA that sorting the tables based on RSSI (which was measured between access elements operating on the same channel), as Hills teaches, includes performing computations that compare the RSSI values relative to each other to determine the proper order. *See e.g.*, Ex.1008, *generally*. Additionally, it would have been obvious to a POSITA that assembling the two-dimensional matrix includes performing computations on each RSSI to determine the position in the matrix between the access elements (e.g., AP_i and AP_j) that operate on the same channel. Ex.1003, ¶102.

Accordingly, Hills’ disclosure of sorting tables based on detected RSSI between the access elements operating on the same channel and assembling a two-dimensional matrix with RSSI values between the grouped access elements, renders obvious “*compute a received signal strength indicator (RSSI) between the grouped wireless access points.*” Ex.1003, ¶103.

Additionally, Wang discloses that the central device (AC) “**sorts the RSSI generated by the signals of the AP sent by each neighboring AP in the neighboring APs.**” Ex.1006, 4; *see also* Ex.1006, 18 (“The AC sorts the RSSI reported by all neighboring APs in descending order based on the RSSI value.”), FIG. 4. As already explained, it would have been obvious to a POSITA that sorting RSSI in a given order, as Wang teaches, includes performing computations that compare the RSSI values relative to each other to determine the proper order. *See e.g.*, Ex.1008, *generally*. Accordingly, Wang’s disclosure of sorting RSSI renders obvious “*compute a received signal strength indicator (RSSI) between the grouped wireless access points.*” Ex.1003, ¶104.

iii. *Hills performs computations to compute average RSSI values*

Moreover, Hills discloses that “the signal strength values in the coverage matrix can be the **average signal strength values.**” Ex.1005, 12:13-18; *see also* Ex.1005, 10:56-60 (“... coverage analysis module 80, at a configurable averaging

interval or window (e.g., 1 minute, etc.) (412), **computes the average signal strength** from the values collected...”). As already noted, Hills’ signal strength may be represented as a “receive signal strength indicator (RSSI)” measured between access elements. Ex.1005, 4:65-5:25, 9:12-16. Accordingly, Hills’ disclosure of computing average signal values (RSSI) measured between the access elements also renders obvious “*compute a received signal strength indicator (RSSI) between the grouped wireless access points.*” Ex.1003, ¶105.

As noted above in the Claim Construction section, the corresponding structure of the “*map generator*” is “hardware or executable software in a storage medium.” It would have been obvious to a POSITA for Hills’ central management device to be implemented with executable software stored in memory, at least because Hills discloses that it “can be configured to execute the coverage analysis functionality at regular, configurable intervals.” Ex.1005, 5:55-57; Ex.1003, ¶106.

Third, to the extent argued that Hills’ disclosure is not sufficient to disclose the corresponding structure, Wang discloses that a power adjustment algorithm “can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or

network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21; Ex.1003, ¶107.

In view of Wang’s teachings, a POSITA would have found it obvious for Hills’ central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to perform the disclosed functionality. Such an implementation would facilitate sorting access point tables based on RSSI and assembling a two-dimensional matrix to facilitate “minimizing the coverage overlaps of access elements operating on the same channel.” Ex.1005, 12:19-21; *see also* analysis at X.A.3; Ex.1003, ¶108.

Accordingly, the central management device including software in storage medium that when executed is configured to compute RSSI (as discussed above in the multiple examples), per the combination of Hills and Wang, renders obvious “*a map generator configured to compute a received signal strength indicator (RSSI).*” Ex.1003, ¶109.

[1.2.2] [a map generator configured to compute]... an output strength value for each of the grouped wireless access points;

First, as discussed at [1.1.1], Hills’ access elements on the same floor using the same channel correspond to the “*grouped wireless access points.*” Further, as discussed at [1.2.1], Hills in combination with Wang discloses the central

management device including software in storage medium that when executed is configured to compute, which renders obvious a “*map generator configured to compute.*” Ex.1003, ¶¶110-111.

Second, in numerous ways, Hills discloses “[*computing*]...*an output strength value for each of the grouped wireless access points.*” Ex.1003, ¶112.

iv. *Hills performs computations to format current transmit power*

Hills’ network corresponds to a “802.11 wireless network,” where access element data may be received by the central management device in “beacon frames, probe response frames, and association request frames.” Ex.1005, 5:26-45. Hills further discloses that the central management device stores information, including access elements’ “**current transmit power.**” Ex.1005, 5:26-39; *see also* Ex.1005, 4:17-61, 5:50-60; Ex.1003, ¶113.

It would have been obvious to a POSITA for Hills’ access elements, in response to a request from the central management device, to transmit their “current transmit power” in beacon frames or probe response frames. A POSITA would have had a reasonable expectation of success since Hills system operates with the 802.11 standard, which already provided messages for communicating information about transmit power. Ex.1005, 3:49-52 (“The access elements can operate in connection with any suitable wireless communications protocol,

including 802.11a and 802.11b.”); Ex.1010, 113 (“The TPC Report element contains transmit power ... A TPC Report element is included in a Beacon frame or Probe Response frame”); Ex.1003, ¶114

Consistent with the analysis at [1.2.1], a POSITA would have understood that the access elements’ “current transmit power” would be encoded in a binary format (0s and 1s) and transmitted to the central management device as signals (e.g., electrical, electromagnetic, or radio frequency signals) representing these two states. Ex.1009, 5-6; Ex.1010, 604. On the receiving side, it would have been obvious to a POSITA for the central management device to perform computations to convert the “current transmit power” from a transmission format to a format suitable for storage in “an access point table.” Ex.1005, 5:26-39; Ex.1003, ¶115.

Accordingly, performing computations to format the access elements’ “current transmit power” for storage in access point tables, in accordance with Hills, renders obvious “[computing] ... an output strength value for each of the grouped wireless access points.” Ex.1003, ¶116.

v. Hills performs computations to determine current transmit power

Hills discloses that the central management device computes transmit power of access elements on the same channel, which is used to “adjust[] the transmit power...for all desired access elements.” Ex.1005, 14:36-44, FIG. 6. A POSITA

would have understood that Hills’ computed power adjustment value is used to set each access element’s transmit power in an iterative manner such that the previously computed transmit power is the currently used transmit power. Ex.1003, ¶117.

Furthermore, consistent with the analysis at [1.4.1]-[1.4.2] below, Wang discloses an algorithm for adjusting access element transmit power. Wang’s **“power adjustment process is continuously cycled according to the adjustment cycle”** to **“adapt to the continuous changes in the wireless network.”** Ex.1006, 19. Because adaptive power adjustment is performed on an ongoing basis (to “adapt to continuous changes”), each time a power adjustment cycle is performed, an access element’s **“current transmit power”** corresponds to the computed power adjustment of the previous power adjustment cycle. Ex.1003, ¶118.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. Ex.1003, ¶119.

Accordingly, the central management device computing a power adjustment value that is used to set each access elements’ transmit power (in a first power adjustment cycle) corresponds to the current transmit power (in a second power adjustment cycle), in accordance with the combination of Hills and Wang, renders

obvious “[computing]... an output strength value for each of the grouped wireless access points.” Ex.1003, ¶120.

[1.3.1] an extractor configured to extract a wireless access point having a highest RSSI value among the grouped wireless access points,

First, as discussed at [1.1.1], Hills’ access elements on the same floor using the same channel correspond to the “grouped wireless access points.” Ex.1003, ¶¶121-122.

Second, the combination of Hills and Wang discloses “an extractor configured to extract a wireless access point having a highest RSSI value among the grouped wireless access points.” Ex.1003, ¶123.

Hills discloses that the “coverage analyzer 21 sorts each list or table by **largest coverage overlap (i.e., signal strength value)**.” Ex.1005, 12:11-13. In the context of Hills, the detected signal strength is a “receive signal strength indicator (RSSI).” Ex.1005, 5:3-5; *see also* Ex.1005, 9:12-16 (“...signal strength information (e.g., ...RSSI...)”). A POSITA would have understood that the largest signal strength value corresponds to an RSSI that has the highest value between the access elements on the same channel. *See* Analysis at limitation [1.1]; Ex.1005, 12:19-21 (disclosing “a method directed to minimizing the coverage overlaps of access elements operating on the same channel.”). Although Hills sorts by the largest RSSI, it does not expressly teach that the corresponding wireless access

element is extracted and that the largest RSSI value is used for calculations (see limitation [1.4], *infra*). Ex.1003, ¶123.

Furthermore, Wang teaches “sort[ing] the RSSIs reported by each of the neighboring APs corresponding to the AP in descending order” and “**mark[ing]**” the AP reporting the “Nth largest RSSI value” in Step S705 as “NAP-nth” and using the “Nth largest RSSI value” for calculating access point power at Steps S706-S707. Ex.1006, 18. Ex.1003, ¶124.

In Wang, N is a “preset threshold number of neighboring APs.” Ex.1006, 5, 10, 17, FIG. 7 (Step S703 “the preset threshold N for the number of neighboring APs”). Wang contemplates that there may be “**two APs connected to the same AC**,” in which case each AP has one neighboring AP (a similar network configuration as Hills example discussed at limitation [1.1.1]). Ex.1006, 19. If there are two APs connected to the same AC (at Step S702) and the preset threshold of neighboring APs is set to N=1 (for Step S703), then the number of neighboring APs (two APs) exceeds the preset threshold N=1. Ex.1006, FIG. 7. A POSITA would have understood that in such an instance, the “Nth largest RSSI value” would be the highest RSSI of the two APs in the sorted list, because the list is sorted in descending order. Accordingly, in the instance where the number N of neighboring APs set in the current wireless network is 1 and two access points are present, the RSSI-nth is the highest and marking the NAP-nth discloses

“extract[ing] a wireless access point having a highest RSSI value among the grouped wireless access points.” Ex.1003, ¶125.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. Ex.1003, ¶126.

As noted above in the Claim Construction section, the corresponding structure of the *“extractor”* is *“hardware or executable software in a storage medium.”* It would have been obvious to a POSITA for Hills’ central management device to be implemented with executable software stored in memory, at least because Hills discloses that it *“can be configured to execute the coverage analysis functionality at regular, configurable intervals.”* Ex.1005, 5:55-57; Ex.1003, ¶127.

To the extent argued that Hills’ disclosure is not sufficient to disclose the corresponding structure, Wang discloses that a power adjustment algorithm *“can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.”* Ex.1006, 21. Wang, for example, provides *“a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or network device, etc.) to execute the methods described in the various embodiments of the present invention.”* Ex.1006, 21; Ex.1003, ¶128.

In view of Wang’s teachings, a POSITA would have found it obvious for Hills’ central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to perform the disclosed functionality. Such an implementation would facilitate extracting the access element with the highest RSSI and performing calculations to determine the optimal output strength value. Ex.1006, 9 (“[S]elect an optimal power that balances coverage and system capacity.”); *see also* analysis at X.A.3; Ex.1003, ¶129.

Thus, because Hills in combination with Wang discloses that the central management device includes software in storage medium that marks the access element reporting the Nth largest RSSI value among the access elements that use the same channel, the prior art renders obvious “*an extractor configured to extract a wireless access point having a highest RSSI value among the grouped wireless access points.*” Ex.1003, ¶130.

[1.3.2] if interference occurs between the grouped wireless access points; and

As explained below, the prior art combination determines “*if interference occurs between the grouped wireless access points*” before marking the access element reporting the Nth largest RSSI value. Ex.1003, ¶¶131-132.

Hills recognizes that network problems arise when there is “overlapping coverage areas and channel interference.” Ex.1005, 2:36-38. To address this

problem, Hills discloses that “**the central control element 24 may for example process information collected at the access elements 12, 14...[including] interference.**” Ex.1005, 6:59-62. Because Hills’ access elements operate in accordance with 802.11 protocol, it would have been obvious to a POSITA for the collected interference information to indicate the level of interference present on a channel. Ex.1005, 3:49-52 (“The access elements can operate in connection with any suitable wireless communications protocol, including 802.11a and 802.11b.”); Ex.1010, 122 (“The RPI histogram report provides an additional mechanism for a [access point] to **gather information on the state of a channel... to assess the general level of interference present on a channel.**”); Ex.1003, ¶133.

Wang similarly recognizes that “**interference occurs between the APs**” and that “such interference will affect the network performance.” Ex.1006, 13; Ex.1003, ¶134. Wang utilizes a “preset threshold N for the number of neighboring APs” which corresponds to “the minimum number of APs required to **cause network interference between APs.**” Ex.1006, 14, 16. Wang’s algorithm at earlier Step S703 checks to see if the conditions for interference have been satisfied, and if satisfied (i.e., “[i]f the number of neighboring APs of an AP exceeds the preset threshold N”) then “execute[s] step S705” where the NAP-nth is marked and the power adjustment computations are performed at Steps S706-S707. Ex.1006, 17. Accordingly, Wang marks the access point having a highest RSSI at

Step S705, if the number of neighboring APs exceeds the preset threshold N (which is indicative of interference) at Step S703, thereby rendering obvious extracting the access point having a highest RSSI “*if interference occurs between the grouped wireless access points.*” Ex.1003, ¶135.

Additionally, it would have been obvious to a POSITA, when implementing the combination of Hills with Wang, to utilize Hills’ interference information obtained from the access elements (Ex.1005, 6:59-62) in connection with the threshold, as Wang’s algorithm does (Ex.1006, 17). Utilizing interference information gathered by access elements (which indicates a level of interference present on a channel) obviates the need to perform power adjustments if very low interference is present (even though Wang’s inference threshold is satisfied), thereby allowing the signal strength to remain high and provide better coverage in the area. Indeed, the ’243 patent readily admits that it was known in the art to adjust power if interference occurs (e.g., high frame error rate). Ex.1001, 1:34-51; Ex.1003, ¶136.

Thus, because Hills in combination with Wang discloses marking the access element reporting the Nth largest RSSI value when a number of neighboring access elements exceeds the preset threshold N and there is interference between access elements that operate on the same channel, the prior art renders obvious extracting

the access point having a highest RSSI “*if interference occurs between the grouped wireless access points.*” Ex.1003, ¶137.

[1.4.1] an optimal output strength value calculator configured to compute a corrected output strength value

The combination of Hills and Wang discloses “*an optimal output strength value calculator configured to compute a corrected output strength value.*”

Ex.1003, ¶¶138-139.

Hills recognizes that current wireless networks “do not perform at optimum speed due to overlapping coverage areas and channel interference.” Ex.1005, 2:36-38. To address this problem, Hills seeks to “**compute transmit power levels for the access elements to optimize the performance** of the wireless network environment.” Ex.1005, 3:29-34. That is, Hills’ “network device...processes the coverage scan data... to compute an optimal set of transmit power levels for the access elements.” Ex.1005, 5:26-39. The optimal transmit power levels represent an “adjust[ment] of the transmit power where there is overlap.” Ex.1005, 14:17-21. A POSITA would have understood that computed transmit power after adjustment is a “*corrected output strength value.*” Ex.1003, ¶139.

Wang also seeks to “**select an optimal power** that balances coverage and system capacity.” Ex.1006, 9. Wang’s optimal power “P-after” represents a computed transmit power “adjustment.” Ex.1006, 18.

Step S707: The AC decreases AP power. Assume the power of the AP before adjustment is P-before, and **the power of the AP after adjustment is P-after. The algorithm for reducing AP power by AC is as follows:**

P-after = P-before- (RSSI-nth-RSSI-threshold).

Ex.1006, 18. The computed optimal transmit power “P-after” is a “*corrected output strength value*” that “reduc[es] interference and improv[es] the overall system throughput.” Ex.1006, 9; Ex.1003, ¶140.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. Ex.1003, ¶141.

As noted above in the Claim Construction section, the corresponding structure of the “*optimal output strength value calculator*” is “hardware or executable software in a storage medium.” It would have been obvious to a POSITA for Hills’ central management device to be implemented with executable software stored in memory for computing optimal transmit power, at least because Hills discloses that it “can be configured to execute the coverage analysis functionality at regular, configurable intervals.” Ex.1005, 5:55-57; Ex.1003, ¶142.

To the extent argued that Hills’ disclosure is not sufficient to disclose the corresponding structure, Wang discloses that a power adjustment algorithm “can be implemented in hardware or by means of software plus necessary general-

purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal computer, server, or network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21; Ex.1003, ¶143.

In view of Wang’s teachings, a POSITA would have found it obvious for Hills’ central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to perform the disclosed functionality. Such an implementation would facilitate extracting the access element with the highest RSSI and performing calculations to determine the optimal output strength value. Ex.1006, 8 (“[S]elect an optimal power that balances coverage and system capacity.”); *see also* analysis at X.A.3; Ex.1003, ¶144.

Thus, because Hills in combination with Wang discloses that the central management device includes software in storage medium that when executed is configured to compute an optimal transmit power (e.g., P-after), the prior art renders obvious “*an optimal output strength value calculator configured to compute a corrected output strength value.*” Ex.1003, ¶145.

[1.4.2] based on the highest RSSI value of the extracted wireless access point, a predetermined threshold value of the RSSI between the grouped wireless access points, and a currently used output strength value.

First, Hills in combination with Wang discloses that the computed optimal transmit power P-after is “*based on the highest RSSI value of the extracted wireless access point.*” Ex.1003, ¶¶146-147. As discussed at limitation [1.3.1], Hills in combination with Wang discloses marking the access element (NAP-nth) reporting the Nth largest RSSI value (RSSI-nth). Wang explains that the RSSI-nth is “determined as the standard RSSI and used as the basis for subsequent adjustments.” Ex.1006, 17. Wang’s calculation for optimal transmit power P-after, at Step S707, is based on the RSSI-nth reported by the NAP-nth: $P\text{-after} = P\text{-before} - (\text{RSSI-nth} - \text{RSSI-threshold})$. Ex.1006, 18; Ex.1003, ¶¶148-149.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. Accordingly, because the combination of Hills and Wang discloses that the optimal transmit power P-after is based on RSSI-nth (which is the highest RSSI when N=1, as discussed at [1.3.1]), the prior art renders obvious that the corrected output strength value is “*based on the highest RSSI value of the extracted wireless access point.*” Ex.1003, ¶149.

Second, Hills in combination with Wang discloses that the computed optimal transmit power P-after is “*based on... a predetermined threshold value of the RSSI between the grouped wireless access points.*” Wang’s calculation for optimal transmit power P-after, at Step S707, is based on a “**preset RSSI-threshold**” power between the access points: $P\text{-after} = P\text{-before} - (\text{RSSI-nth-}\textbf{\underline{RSSI-threshold}})$. Ex.1006, 18; Ex.1003, ¶¶150-151.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. In the combination of Hills and Wang, consistent with the analysis at limitation [1.1.1], the preset RSSI threshold would correspond to a preset threshold RSSI power between the grouped access elements on the same floor that use the same channel. Accordingly, the combination of Hills and Wang renders obvious that the computed optimal transmit power P-after is “*based on... a predetermined threshold value of the RSSI between the grouped wireless access points.*” Ex.1003, ¶152.

Third, Hills in combination with Wang discloses that computed optimal transmit power P-after is “*based on...a currently used output strength value.*” Ex.1003, ¶153. Wang’s algorithm for calculating the optimal transmit power P-after, at Step S707, is based on “P-before,” which is the currently used power since it is the AP power before adjustment: $P\text{-after} = \textbf{\underline{P-before}} - (\text{RSSI-nth-RSSI-}$

threshold). Ex.1006, 18. Because “P-before” is the power before adjustment, it corresponds to the “*currently used output strength value*” of the access point. Ex.1003, ¶154.

For the reasons explained above at X.A.3, a POSITA would have found it obvious for Hills’ central management device to implement Wang’s algorithm to calculate an optimal transmit power for the access elements. Accordingly, the combination of Hills and Wang renders obvious that an optimal transmit power P-after is “*based on... a currently used output strength value.*” Ex.1003, ¶155.

2. Claim 4

[4.0] The device of claim 1, wherein the map generator is configured to generate a virtual map including RSSI values between the grouped wireless access points and the output strength value of each of the grouped wireless access points.

As analyzed at [1.2.1]-[1.2.2], Hills in combination with Wang discloses “*the map generator.*” Further, as analyzed above, the prior art discloses maintaining for each access element a table with determined RSSI values and current transmit power. The prior art also discloses assembling a two-dimensional matrix ($i \times j$ matrix) with RSSI values between access elements that are on the same floor level and that use the same channel. Collectively, the access element tables (which are sorted based on RSSI) and the two-dimensional matrix ($i \times j$ matrix) with RSSI values between access elements correspond to “*a virtual map including RSSI*

values between the grouped wireless access points and the output strength value of each of the grouped wireless access points.” Ex.1003, ¶156.

3. Claim 5

[5.0] The device of claim 1, wherein the optimal output strength value calculator is configured to compute the corrected output strength value by subtracting a difference between the RSSI value of the extracted wireless access point and a predetermined threshold value of an RSSI value between the grouped wireless access points, from the currently used output strength value.

As analyzed at [1.4.1], Hills in combination with Wang discloses that “*the optimal output strength value calculator is configured to compute the corrected output strength value.*” Further, consistent with the analysis at [1.4.2], as shown below, the prior art combination discloses computing the adjusted output strength value P-after in the same manner as the ’243 patent. Ex.1003, ¶157.

’243 patent (Ex.1001, 7:51)	Wang (Ex.1006, 18)
$P_{tx\_modi} = P_{tx\_c} - (RSSI\_m - RSSI\_th)$	$P\text{-after} = P\text{-before} - (RSSI\text{-nth} - RSSI\text{-threshold})$

As shown above, like the ’243 patent, Wang subtracts a difference between the RSSI-nth of the NAP-nth and a preset RSSI-threshold between the access points that use the same channel (i.e., $RSSI\text{-nth} - RSSI\text{-threshold}$) from the power used before adjustment (i.e., P-before), which renders obvious “*subtracting a difference between the RSSI value of the extracted wireless access point and a*

predetermined threshold value of an RSSI value between the grouped wireless access points, from the currently used output strength value.” Ex.1003, ¶158.

B. Ground 2: Claims 2 and 11 are obvious over Hills in view of Wang and Calhoun

1. Summary of Calhoun

U.S. Patent No. 8,040,861 to Calhoun et al. (“Calhoun,” Ex.1011) “relates to wireless communication protocols, and more particularly to management of communications.” Ex.1011, 1:28-33. Calhoun “is a continuation-in-part of U.S. application Ser. No. 10/155,938,” which is cited to by Hills and incorporated in its entirety. Ex.1005, 1:8-15. Calhoun discloses that a central management device transmits information to an access element to control transmit power. Ex.1011, 3:37-4:11; Ex.1003, ¶159.

2. Reasons to Combine Calhoun with Hills

d. Calhoun is Analogous Art

Like Hills, Calhoun is analogous art to the ’243 patent because it pertains to the field of wireless access networks and addresses the problem of adjusting transmission power of access points. Ex.1001, 1:15-23, Abstract; Ex.1005, 1:19-23, Abstract, FIGS. 1, 2A, 2B, 4, Claims 1, 10; Ex.1011, 1:28-33, 3:37-4:11, Abstract, FIGS. 1, 4. Additionally, Hills cites to and incorporates by reference, U.S. application Ser. No. 10/155,938, which is also a parent application to Calhoun. Ex.1005, 1:8-15. Accordingly, a POSITA would have naturally

considered Calhoun when reviewing Hills, because Calhoun is analogous art and shares the same parent application as Hills. Ex.1003, ¶160.

e. **Motivation to combine Calhoun with Hills**

A POSITA would have combined the teachings of Wang with Hills to obtain predictable and beneficial results. Ex.1003, ¶161.

Hills discloses that the central management device generates an “instruction to reduce the transmit power” of access elements. Ex.1005, 12:19-49, FIG. 4. It would have been obvious to a POSITA for the instruction to be received by the access elements, so that the transmit power is reduced to optimize network performance, per Hills’ objective. Ex.1005, 2:29-44, 5:25-30. Notably, Calhoun discloses that the access elements “receive[] information...[that]...control[s]...the transmit power,” including information for “setting transmit power levels at the access elements.” Ex.1011, 3:37-4:11. In view of Calhoun, it would have been obvious for Hills’ access elements to receive the instruction from the central management device so that the access elements power level is set to an optimal transmit power that minimizes overlap and interference, thereby achieving Hills’ goal of improving network performance. Ex.1005, 2:36-38 (“...many WLANs do not perform at optimum speed due to overlapping coverage areas and channel interference.”), 5:25-30 (“...an optimal set of transmit power levels for the access elements.”), 12:19-49 (“FIG. 4 illustrates a method directed to minimizing the

coverage overlaps of access elements operating on the same channel. ... coverage analyzer...generates an instruction to reduce the transmit power, for AP_i, and AP_j..."); Ex.1006, 9 ("The present invention provides a power adjustment method and device for an access point (AP), which automatically adjusts the power in real time in a wireless environment to reduce network interference and improve system throughput."); *see also* analysis at [2.0], *infra*; Ex.1003, ¶162.

The proposed combination is merely applying a known technique (e.g., access elements' receiving power control information, per Calhoun) to Hills' similar devices (methods, or products) in the same way (e.g., set the access elements transmit power to minimize overlap and interference, thereby improving network performance). Ex.1003, ¶163.

f. Reasonable expectation of success

The results would have been predictable and there would have been a reasonable expectation of success given the similarities of the two references and that Hills cites to and incorporates by reference, U.S. application Ser. No. 10/155,938, which is also a parent application to Calhoun. Ex.1005, 1:8-15; Ex.1003, ¶164.

3. Claim 2

[2.0] The device of claim 1, further comprising an output adjustment requester configured to transmit an output strength adjustment request to each of the grouped wireless access points, the output strength adjustment request being related to adjusting a current output strength value based on the corrected output strength value.

First, Hills in combination with Wang and Calhoun renders obvious “an output adjustment requester configured to transmit an output strength adjustment request to each of the grouped wireless access points.” Ex.1003, ¶¶165-166.

Hills discloses that the central management device “can communicate with access elements 12, 14 over local area network segment 10.” Ex.1005, 7:46-56. Hills further discloses that the central management device generates an “**instruction to reduce the transmit power**” of access elements “AP_i, and AP_j,” which are included in the two-dimensional matrix. Ex.1005, 12:19-47, FIG. 4. It would have been obvious to a POSITA for the instruction to be received by the access elements, so that the transmit power is reduced to optimize network performance, per Hills’ objective. Ex.1005, 2:29-44, 5:25-30; Ex.1003, ¶¶167-168.

Nevertheless, to the extent argued that Hills’ is insufficient, Calhoun (which is in the same patent family as Hills) discloses that the access element “**receives information...to control its operation,**” including “**control of the transmit power**” from the central management device. Ex.1011, 3:37-51. In view of Calhoun, it would have been obvious to have Hills’ central management device

(which is configured to communicate with the access elements) to transmit instructions to each of the access elements that are on the same floor and operate on the same channel, so that the power is reduced, thereby achieving Hills’ goal of minimizing interference. Ex.1005, 8:26-29, 12:19-21; Ex.1003, ¶169.

As noted above in the Claim Construction section, the corresponding structure of the “*an output adjustment requester*” is “hardware or executable software in a storage medium.” It would have been obvious to a POSITA for Hills’ central management device to be implemented with executable software stored in memory for transmitting an instruction to adjust output power to each of the access elements, at least because Hills discloses that it “can be configured to execute the coverage analysis functionality at regular, configurable intervals.” Ex.1005, 5:55-57; Ex.1003, ¶170.

To the extent argued that Hills’ disclosure is not sufficient to disclose the corresponding structure, Wang discloses that the device that calculates the power adjustment “can be implemented in hardware or by means of software plus necessary general-purpose hardware platforms.” Ex.1006, 21. Wang, for example, provides “a software product, which can be stored in a non-volatile storage medium (such as a CD-ROM, USB flash drive, external hard drive, etc.) and comprises several instructions to cause a computer device (such as a personal

computer, server, or network device, etc.) to execute the methods described in the various embodiments of the present invention.” Ex.1006, 21; Ex.1003, ¶171.

In view of Wang’s teachings, a POSITA would have found it obvious for Hills’ central management device to be implemented with executable software stored in non-volatile storage medium to enable the central management device to perform the disclosed functionality. Such an implementation would facilitate transmitting an instruction to adjust output power to each of the access elements thereby “minimizing the coverage overlaps of access elements operating on the same channel.” Ex.1005, 12:19-21; *see also* analysis at X.A.3; Ex.1003, ¶172.

Accordingly, because Hills in combination with Wang discloses that the central management device includes software in storage medium that when executed is configured to transmit instructions to reduce transmit power to each of the access elements that are located on the same floor and use the same channel, the prior art renders obvious “*an output adjustment requester configured to transmit an output strength adjustment request to each of the grouped wireless access points.*” Ex.1003, ¶173.

Second, the prior art combination renders obvious that “*the output strength adjustment request [is] related to adjusting a current output strength value based on the corrected output strength value.*” Ex.1003, ¶174.

As discussed at [1.4.2], in the combination of Hills and Wang, the central management device seeks to decrease access elements' power in accordance with a computed optimal transmit power (e.g., P-after) (“*the corrected output strength value*”). Ex.1006, 18; Ex.1003, ¶175.

In the proposed combination with Calhoun discussed at [2.0], the transmitted instruction to reduce the transmit power (“*the output strength adjustment request*”) is related to setting transmit power levels at the access elements based on the computed optimal transmit power (e.g., P-after) (“*the corrected output strength value*”). Ex.1005, 12:19-29, (“...**generates an instruction to reduce the transmit power, for AP_i and AP_j...**”); Ex.1011, 3:61-4:11 (“**The central control element... perform calculations...[for] setting transmit power levels at the access elements.**”); Ex.1003, ¶176.

Accordingly, because in the combination of Hills, Wang, and Calhoun the instructions to reduce transmit power are related to setting transmit power levels at the access elements based on the optimal transmit power (e.g., P-after), the prior art renders obvious “*the output strength adjustment request being related to adjusting a current output strength value based on the corrected output strength value.*” Ex.1003, ¶177.

4. Claim 11

[11.0] A method for controlling an output strength value of a wireless access point by a device for controlling the wireless access point, the method comprising:

To the extent limiting, Hills discloses “[a] method for controlling an output strength value of a wireless access point,” by teaching a “**method... facilitating configuration of transmit power...of wireless access points.**” Ex.1005, 1:19-24; *see also* Ex.1005, 2:39-44, 12:4-14:60, FIGS. 3, 4, 5, 6A, 6B; Ex.1003, ¶178.

Further, consistent with the analysis at [1.0], Hills discloses that its method is performed “*by a device for controlling the wireless access point*” because Hills’ “**central management device**” (e.g., coverage analyzer 21 and central control element 24) performs the method to control transmit power level, as well as authentication, load, channel, handoff, etc., of the wireless access points (also referred to by Hills as “access elements” or “APs”). Ex.1005, 5:26-35, 6:26-7:3, Claims 1, 10, 11, Abstract, FIGS. 1, 2A, 2B; Ex.1003, ¶179.

[11.1.1] (a) setting a channel for communication, searching for neighboring wireless access points, and

First, Hills discloses “*setting a channel for communication*” by teaching that the access elements, when operating in scan mode, “**monitors wireless traffic on a given channel and then switches to another frequency channel.**” Ex.1005, 3:61-4:8. A POSITA would have understood that for the access element to “monitor[] wireless traffic on a given channel,” that channel has been set for

wireless communication and when the access element “switches to another frequency channel,” that other channel has been set for wireless communication. Ex.1003, ¶¶180-181.

Second, Hills discloses “*searching for neighboring wireless access points*” by teaching that, in “**scanning mode**,” the access elements “**monitor their respective coverage areas for wireless traffic associated with neighboring access elements**.” Ex.1005, 2:52-60; Ex.1003, ¶182.

Accordingly, setting a frequency channel for wireless communication and scanning for neighboring wireless access elements, as Hills describes, renders obvious “*setting a channel for communication, searching for neighboring wireless access points*.” Ex.1003, ¶183.

[11.1.2] transmitting information on the wireless access point and the searched neighboring wireless access points to the device for controlling the wireless access point,

First, as discussed at [11.0], Hills’ central management device that controls the wireless access element corresponds to “*the device for controlling the wireless access point*.” Ex.1003, ¶184.

Second, consistent with the analysis at [1.1.2], Hills discloses that in response to a request, the access elements transmit “coverage scan data” to the central management device, which “receives coverage scan data from the access elements” and stores it in access element tables or other data structure. Ex.1005,

4:14-61, 5:26-39, 6:57-7:3. Furthermore, consistent with the analysis at [1.1.2], it would have been obvious to a POSITA for the access elements to transmit “positional” data (which is obtained with a GPS receiver) to the central management device, because Hills teaches that the positional data is included in the access point tables and used when determining transmit power. Ex.1005, 13:36-14:60; Ex.1003, ¶185.

The coverage scan data and positional data, collectively, correspond to “*information on the wireless access point and the searched neighboring wireless access points*” because the data includes information on both the wireless element and on the neighboring wireless element. Ex.1003, ¶186. For example, the scan data includes “the MAC addresses of the source and destination stations... SSID, frequency channel and any other information available from 802.11 frame headers, as well as an indicator of the strength of the detected signal associated with the packet.” Ex.1005, 4:4-5:25. Additionally, the positional data “includes positional coordinates of each access element and further includes a z-axis dimension such as floor height or level... positional parameters associated with the access elements.” Ex.1005, 13:23-44; Ex.1003, ¶186.

Because Hills’ transmits coverage scan data and positional data, that includes information on both the wireless access element (performing the scan) and information on the neighboring access elements (being scanned), to the central

management device, Hills renders obvious “*transmitting information on the wireless access point and the searched neighboring wireless access points to the device for controlling the wireless access point.*” Ex.1003, ¶187.

[11.1.3] wherein the setting, searching and transmitting is performed by the wireless access point;

Consistent with the analysis at [11.1.1]-[11.1.2], Hills’ access element sets the frequency channel, scans for neighboring access elements, and transmits coverage scan and positional data, which renders obvious that “*the setting, searching and transmitting is performed by the wireless access point.*” Ex.1003, ¶188.

[11.2.1] (b) grouping wireless access points using a same channel,

Consistent with the analysis at [1.1.1], Hills’ central management device groups access elements located on the same floor that operate on the same channel, which renders obvious “*grouping wireless access points using a same channel.*” Ex.1003, ¶189.

[11.2.2] based on the information on the wireless access point and the neighboring wireless access points received from the wireless access point,

Consistent with the analysis at [1.1.2], Hills’ grouping is based on coverage scan and positional data received from the wireless access elements, which renders obvious that the grouping is “*based on the information on the wireless access point*

and the neighboring wireless access points received from the wireless access point.” Ex.1003, ¶190.

[11.2.3] the grouping being performed by the device for controlling the wireless access point;

Consistent with the analysis at [1.1.1] and [11.2.1], Hills’ central management device performs the grouping, which renders obvious “*the grouping being performed by the device for controlling the wireless access point.*” Ex.1003, ¶191.

[11.3.1] (c) determining whether interference has occurred between the grouped wireless access points and transmitting the determination to the device for controlling a wireless access point,

First, as analyzed at [11.0], Hills’ central management device corresponds to “*the device for controlling a wireless access point.*” Further, as analyzed at [11.2.1], Hills discloses grouping access elements located on the same floor that operate on the same channel, which correspond to “*the grouped wireless access points.*” Ex.1003, ¶192.

Second, consistent with the analysis at [1.3.2], Hills discloses that its access elements operate in accordance with 802.11 protocol and collect interference information that is transmitted to the central management device for processing. Ex.1005, 3:49-52, 6:59-62. Because Hills’ access elements operate in accordance with 802.11 protocol, it would have been obvious to a POSITA for the collected

interference information to indicate the level of interference present on a channel.

Ex.1010, 122 (“The RPI histogram report provides an additional mechanism for a

[access point] to **gather information on the state of a channel... to assess the**

general level of interference present on a channel.”). Accordingly, because the

combination of Hills and Wang discloses assessing the general level of interference

on a channel between access elements on the same floor that operate on the same

channel and that the interference information is transmitted to the central

management device, the prior art renders obvious “*determining whether*

interference has occurred between the grouped wireless access points and

transmitting the determination to the device for controlling a wireless access

point.” Ex.1003, ¶193.

[11.3.2] the determining and the transmitting the determination being performed by the grouped wireless access points;

Consistent with the analysis at [11.3.1], the assessing and the transmitting

are performed by the access elements on the same floor that operate on the same

channel, which renders obvious “*the determining and the transmitting the*

determination being performed by the grouped wireless access points.” Ex.1003,

¶194.

[11.4.1] (d) computing a corrected output strength value for reducing the interference and

Consistent with the analysis at [1.4.1], Hills in combination with Wang discloses that the central management computes an optimal transmit power (e.g., P-after) for reducing the interference, which renders obvious “*computing a corrected output strength value for reducing the interference.*” Ex.1003, ¶195.

[11.4.2] transmitting the corrected output strength value to the grouped wireless access points,

Consistent with the analysis at [2.0], Hills in combination with Wang, and Calhoun discloses transmitting to the access elements that are on the same floor and operate on the same channel instructions to reduce transmit power based on the optimal transmit power (e.g., P-after), which renders obvious “*transmitting the corrected output strength value to the grouped wireless access points.*” Ex.1003, ¶196.

[11.4.3] the computing and the transmitting the corrected output strength being performed by the device for controlling the wireless access point; and

Consistent with the analysis at [1.4.1] and [11.4.2], Hills in combination with Wang, and Calhoun discloses the central management performs the computing and the transmitting of the instructions to reduce transmit power based on the optimal transmit power (e.g., P-after), which renders obvious “*the computing and the transmitting the corrected output strength being performed by the device for controlling the wireless access point.*” Ex.1003, ¶197.

[11.5.1] (e) adjusting a current output strength value based on the corrected output strength value,

As discussed at [1.4.2] and [11.4.3], Hills in combination with Wang discloses computing an optimal transmit power (e.g., P-after), which corresponds to “*the corrected output strength value.*” Further, as discussed at [2.0] and [11.4.3], Hills in combination with Wang and Calhoun discloses transmitting to the access elements instructions to reduce transmit power based on the optimal transmit power (e.g., P-after). Ex.1003, ¶198.

It would have been obvious to a POSITA, when implementing the combination of Hills, Wang, and Calhoun, for each access element to reduce transmit power based on the computed optimal transmit power (e.g., P-after), in accordance with the instruction, to thereby minimize interference and improve network performance. Ex.1005, 2:36-38 (“...many WLANs do not perform at optimum speed due to overlapping coverage areas and channel interference.”), 12:44-45 (“FIG. 4 illustrates a method directed to minimizing the coverage overlaps of access elements operating on the same channel. ... coverage analyzer...generates an instruction to **reduce the transmit power, for AP_i, and AP_j**...”); Ex.1006, 9 (“The present invention provides a power adjustment method and device for an access point (AP), which automatically **adjusts the power in**

real time in a wireless environment to reduce network interference and improve system throughput.”; Ex.1003, ¶199.

Accordingly, because in the combination of Hills, Wang, and Calhoun, it would have been obvious for access elements on the same floor that operate on the same channel, in response to a central management device’s instructions, to reduce a current transmit power based on the optimal transmit power (e.g., P-after), the prior art renders obvious “*adjusting a current output strength value based on the corrected output strength value.*” Ex.1003, ¶200.

[11.5.2] the adjusting being performed by the grouped wireless access points.

Consistent with the analysis at [11.2.1] and [11.5.1], access elements on the same floor that operate on the same channel adjust the transmit power in response to received instructions, which renders obvious that “*the adjusting being performed by the grouped wireless access points.*” Ex.1003, ¶201.

XI. CONCLUSION

Accordingly, Petitioner has established a reasonable likelihood that the Challenged Claims are unpatentable.

Respectfully submitted,

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XII. MANDATORY NOTICES

A. Real Party-in-Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that the real party-in-interest is Cisco Systems, Inc.

B. Related Matters

Pursuant to 37 C.F.R. § 42.8(b)(2), to the best knowledge of the Petitioner, the '243 patent is involved in the following cases:

Case Heading	Number	Court	Date
<i>Golden Eye Technologies LLC v. Cisco Systems, Inc.</i>	2-25-cv-00898	EDTX	August 27, 2025

C. Lead and Back-up Counsel and Service Information

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Please address all correspondence to lead and back-up counsel. Petitioner
consents to service in this proceeding by email at the addresses above.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and in reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,713.

Pursuant to 37 C.F.R. § 42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: January 7, 2026

/Theodore M. Foster/

Theodore M. Foster
Lead Counsel for Petitioner
Registration No. 57,456

CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner as detailed below.

Date of service January 7, 2026

Manner of service Federal Express

Documents served Petition for *Inter Partes* Review Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104 of U.S. 9,271,243; Petitioner's Exhibit List; All Exhibits; Petitioner's Power of Attorney.

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