IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 11,342,777	§	Atty. Docket No.: 08Z8-432195
	§	
Issue Date: May 24, 2022	§	Customer No.: 213679
	§	
Filing Date: November 26, 2018	§	
	§	
For: POWERING AND/OR CHARGING WITH MORE THAN ONE PROTOCOL	§	

REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 11,342,777

Mail Stop "*Ex Parte* Reexam"
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Pursuant to 35 U.S.C. § 302 and 37 C.F.R. § 1.510 et seq., the undersigned, on behalf of Samsung Electronics Co., Ltd. (the "Requester"), hereby requests *ex parte* reexamination of claim 15 ("Challenged Claim") of U.S. Patent No. 11,342,777 ("'777 Patent," Ex. 1001).

The '777 Patent is currently assigned to Mojo Mobility, Inc. ("Mojo," "Patent Owner," or "PO"). The assignment to Mojo is not recorded in the U.S. Patent and Trademark Office ("USPTO").

Related Proceedings Involving the '777 Patent

The Challenged Claim of the '777 Patent is the subject of an ongoing district court litigation, *Mojo Mobility, Inc. v. Samsung Elecs. Co., Ltd. et al.*, No. 2:22-cv-00398 (E.D. Tex. Oct. 7, 2022) ("Litigation"); a prior *inter partes* review proceeding, *Samsung Elecs. Co., Ltd. et al. v. Mojo Mobility, Inc.*, IPR2023-01102 (P.T.A.B. June 29, 2023); and an *ex parte* reexamination, U.S. Reexamination Control No. 90/019,558 (June 28, 2024) ("'558 Reexam"). In the '558 Reexam, the Examiners found that the Challenged Claim was entitled to only a later effective filing date. This Request raises a substantial new question of patentability in light of that later effective filing

date and presents prior art that has not previously been considered by the Patent Office during original prosecution or any subsequent challenge.

***Ex Parte* Patent Reexamination Filing Requirements**

Pursuant to 37 C.F.R. § 1.510(b)(1), statements pointing out at least one substantial new question of patentability based on new, material, non-cumulative technological teachings in prior art patents and printed publications—which were not previously considered or discussed on the record during prosecution of, or subsequent challenge to, the Challenged Claim of the '777 Patent—are provided in Section II of this Request. Requester therefore requests that an order for reexamination and an Office Action rejecting the Challenged Claim be issued.

Pursuant to 37 C.F.R. § 1.510(b)(2), reexamination of the Challenged Claim of the '777 Patent is requested, and a detailed explanation of the pertinence and manner of applying the cited references to the Challenged Claim is provided in Section III of this Request.

Pursuant to 37 C.F.R. § 1.510(b)(3), copies of every patent or printed publication relied upon or referred to in the statement pointing out each substantial new question of patentability or in the detailed explanation of the pertinence and manner of applying the cited references are provided as Exhibits 1001–1031 of this Request.

Pursuant to 37 C.F.R. § 1.510(b)(4), a copy of the '777 Patent is provided as Exhibit 1001 of this Request, along with a copy of any disclaimer, certificate of correction, and reexamination certificate issued corresponding to the patent.

Pursuant to 37 C.F.R. § 1.510(b)(5), the attached Certificate of Service indicates that a copy of this Request in its entirety has been served on Patent Owner at the following address of record for Patent Owner on March 6, 2026, in accordance with 37 C.F.R. § 1.33(c):

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A courtesy copy of this Request, in its entirety, has also been served on Patent Owner at the following address for counsel representing Patent Owner in the *Mojo Mobility, Inc. v. Samsung*

Elecs. Co., Ltd. et al., No. 2:22-cv-00398 (E.D. Tex. Oct. 7, 2022):

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Also submitted herewith is the fee set forth in 37 C.F.R. § 1.20(c).

Pursuant to 37 C.F.R. § 1.510(b)(6), Requester hereby certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(1) do not prohibit Requester from filing this *ex parte* patent reexamination request.

Dated: March 6, 2026

Respectfully submitted,
/*James L. Davis, Jr.*/
James L. Davis, Jr.
Reg. No. 57,325

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1022	Wireless Power Consortium – Get the Specs on Qi (Archived, Apr. 28, 2018), https://web.archive.org/web/20180428194533/https://www.wirelesspowerconsortium.com/developers/specification.html
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CHALLENGED CLAIM LANGUAGE

[15.pre] An electronic device capable of receiving power inductively, the electronic device comprising:

[15.a] an inductive charging receiver coil;

[15.b] a communication transmitter circuit electrically coupled to the inductive charging receiver coil for communicating through the coil;

[15.c] a communication receiver circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; and

[15.d] a microcontroller, wherein the microcontroller is configured for:

[15.d.i] operating in a first mode of operation using a first protocol, wherein the first protocol is an inductive charging communication-and-control protocol that comprises uni-directional messaging, wherein the first mode of operation comprises:

[15.d.i.1] sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol; and

[15.d.i.2] receiving power using the inductive charging receiver coil;

[15.d.ii] operating in a second mode of operation using a second protocol, wherein the second protocol is an inductive charging communication-and-control protocol that defines bi-directional messaging, wherein the second mode of operation comprises:

[15.d.ii.1] sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol;

[15.d.ii.2] receiving power using the inductive charging receiver coil; and

[15.d.ii.3] receiving, using the receiver circuit, a frequency-modulated third communication from the inductive charger based on the second protocol; and

[15.e] wherein first mode of operation is associated with a first power level and the second mode of operation is associated with a second power level, and

[15.f] wherein the first power level and the second power level are different.

I. BACKGROUND OF THE REQUEST

Claim 15 (the "Challenged Claim") of U.S. Patent No. 11,342,777 (the "'777 Patent") (Ex. 1001) is invalid as anticipated under 35 U.S.C. § 102 by the Qi Wireless Power Transfer System Power Class 0 Specification, Parts 1 and 2: Interface Definitions, v.1.2.3 (Feb. 2017) ("**Qi**"),[1] and at least rendered obvious under 35 U.S.C. § 103 by Qi alone or optionally in view of U.S. Patent App. Pub. No. 2016/0336785 ("**Gao**").

The Challenged Claim is generally directed to the well-known and wholly unremarkable concept of wireless charging via inductive charging protocols. Ex. 1004 ("Baker") ¶¶ 37–39.[2]

More specifically, **Challenged Independent Claim 15** is generally directed to **(1)** an electronic device capable of receiving power inductively, comprising **(2)** an inductive charging receiver coil; **(3)** communication transmitter and receiver circuits coupled to the inductive charging receiver coil; and **(4)** a microcontroller configured to operate in two modes of operation using two different protocols: **(5)** one mode for using a communication protocol involving uni-directional messaging and lower power transfer, and **(6)** a second mode for using a communication protocol involving bi-directional messaging and higher power transfer. Both modes involve **(7)** sending a communication that identifies the protocol, and the second mode further involves **(8)** receiving a frequency-modulated third communication. Baker ¶ 38.

But these concepts were already known in the art. Indeed, the Wireless Power Consortium published various specifications in 2017 directed to inductive power transfer systems, known as the Qi Standard. Qi, 2, 8. Patent Owner subsequently relied on the Qi Standard in arguing that Samsung infringed the Challenged Claim in *Mojo Mobility, Inc. v. Samsung Elecs. Co., Ltd. et al.*, No. 2:22-cv-00398 (E.D. Tex. Oct. 7, 2022). Ex. 1008 ("Complaint") ¶¶ 302–304, 306–307, 311–312, 316. On November 17, 2025, in U.S. Reexamination Control No. 90/019,558 ("'558

[1] The Wireless Power Consortium ("WPC") is "a worldwide organization that aims to develop and promote global standards for wireless power transfer," including "Qi." Qi, 8. Thus, the terms "Qi," "the Qi Standard," and "the Wireless Power Consortium ('WPC') Standard" are used interchangeably.

[2] This Request is supported by expert testimony from R. Jacob Baker, Ph.D., P.E. concerning the disclosures of the references, including disclosures that were not previously considered or substantively discussed by the USPTO. Baker ¶¶ 1–186; MPEP § 2258.

Reexam") involving the Challenged Claim, the Examiners found that the Challenged Claim was *not* entitled to the claimed January 18, 2011 priority date because the "First Mode" ([15.d.i]–[15.d.i.2]) and "Protocol Identifier" ([15.d.i.1], [15.d.ii.1]) claim limitations were "first introduced long after the filing of the ['777 Patent] and thus are only entitled to priority to the filing of the 904 Application [November 26, 2018] or thereafter [as late as October 27, 2021]." Ex. 1003 at 1853. **Qi**, **Gao,** and **Lee** predate both dates and are thus prior art. **Qi**, **Gao,** and **Lee** have not been considered by the Patent Office during original prosecution or any subsequent challenge of the Challenged Claim. As further confirmed by Patent Owner's infringement allegations in its Complaint, **Qi**, which is part of the Qi Standard, discloses or renders obvious all the limitations of the Challenged Claim. Baker ¶ 39.

Qi discloses a wireless charging system—including **(1)** a "Mobile Device" that includes a "Power Receiver [PRx]" and a Base Station that includes a "Power Transmitter [PTx]"—for inductively transferring power from the Power Transmitter to the Power Receiver. Qi, 9, 11–13, 30. The Power Receiver includes a **(2)** coil (i.e., a "Secondary Coil") to "acquire[] near field inductive power" from the Power Transmitter that is "convert[ed] . . . to electromotive force" through induction to, e.g., "[c]harg[e] a connected battery." Qi, 11–13, 14, 30. The Power Receiver includes **(4)** a Communication and Control Unit that "executes . . . power control algorithms and protocols" to perform the power transfer and charge the battery. Qi, 9, 24–25, 30. To control the inductive power transfer process, the Power Receiver communicates with the Power Transmitter via the Power Receiver's **(3)** "[c]ommunications modulator" using backscatter amplitude modulation and "[c]ommunications demodulator" using frequency-shift keying. Qi, 25–26, 29, 86. The Communication and Control Unit is configured to operate in two modes of operation: **(5)** a mode of operation for using a Baseline Power Profile communication protocol for transferring up to 5W of power, whereby communications are sent only from the Power Receiver to the Power Transmitter such that there is uni-directional messaging, and **(6)** a mode of operation for using an Extended Power Profile communication protocol for transferring up to 15W of power, whereby communications are sent between the Power Receiver and Power Transmitter such that there is bi-directional messaging. Qi, 9, 11, 14, 25–26, 44. The Power Receiver **(7)** transmits "an Identification Packet" and a "Configuration Packet" to identify which protocol (Baseline or Extended) is being used. Qi, 73, 74. For the Extended Power Profile mode of operation, the Power Receiver also **(8)** receives "Frequency Shift Key[ed]" packets "containing the information that is

requested by the Power Receiver" and "ACK Response[s]." Qi, 26, 29, 60, 76, 79, 106. Baker ¶ 40.

To the extent any additional disclosure is required of *a microcontroller*[3] in limitation [15.d], **Gao** further discloses this concept. A person of ordinary skill in the art ("POSITA") would have been motivated to apply **Gao**'s straightforward and complementary teachings in implementing **Qi**. Baker ¶ 41.

To the extent any additional disclosure is required to show the use of the same inductive charger in the first and second modes of operation—e.g., for claim limitations [15.d.i.1] (*sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol*) and [15.d.ii.1] (*sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol*)—**Lee** renders obvious these concepts when applied to **Qi** (optionally in view of **Gao**). A POSITA would have been motivated to apply **Lee**'s straightforward and complementary teachings in implementing **Qi** (optionally in view of **Gao**). Baker ¶ 42.

Therefore, because the Challenged Claim is anticipated by and/or obvious over the prior art described in this Request, the Challenged Claim is unpatentable and should be rejected and canceled. Baker ¶¶ 183–84.

II. SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

Reexamination is respectfully requested for the Challenged Claim of the '777 Patent under 35 U.S.C. § 302 and 37 C.F.R. § 1.510.

A. Listing of Prior Art Patents and Printed Publications

Pursuant to 37 C.F.R. § 1.510(b)(3), a copy of every patent or printed publication relied upon or referred to herein is provided. Reexamination of the Challenged Claim is requested in view of the references below.

None of the references relied upon as disclosing and/or rendering obvious the Challenged Claim were previously used in any rejection by the Examiner during prosecution of, or subsequent challenge to, the '777 Patent.

- **Exhibit 1005:** The Qi Wireless Power Transfer System Power Class 0

[3] Challenged Claim language is *underlined and italicized* throughout.

Specification, Parts 1 and 2: Interface Definitions, v.1.2.3 (2017) ("**Qi**") was publicly accessible in 2017, i.e., one year before the Challenged Claim's effective filing date, which is November 26, 2018 at the earliest.[4] **Qi** is prior art under at least 35 U.S.C. § 102(a)(1).[5]

- **Exhibit 1006:** U.S. Patent App. Pub. No. 2016/0336785 ("**Gao**") was filed on November 16, 2015 and published on November 17, 2016, i.e., over two years before the Challenged Claim's effective filing date, which is November 26, 2018 at the earliest. **Gao** is prior art at least under 35 U.S.C. §§ 102(a)(1)–(2).
- **Exhibit 1028:** U.S. Patent App. Pub. No. 2016/0268833 ("Lee") was filed on March 10, 2016 and published on September 15, 2016, i.e., over two years before the Challenged Claim's effective filing date, which is November 26, 2018 at the earliest. **Lee** is prior art at least under 35 U.S.C. §§ 102(a)(1)–(2).

Qi was publicly accessible to POSITAs and the general public before the effective filing date of the Challenged Claim (November 26, 2018 at the earliest; Section II.D.4). **Qi** is a technical specification of the Qi Standard maintained by the Wireless Power Consortium and describes "the interface between a Power Transmitter and a Power Receiver, i.e. Power Class 0 Base Stations and Mobile Devices." Qi, 8. For example, the evidence below shows that **Qi** was publicly accessible in 2017, Baker ¶ 12 (further discussing public accessibility of **Qi**):

- On its front cover, **Qi** is dated "February 2017" (Qi, 1), and its release history indicates that version 1.2.3 has a "Release Date" of "February 2017" (Qi, 2).
- According to the Internet Archive's Wayback Machine,[6] on August 18, 2017, the

[4] As discussed in Section II.D.4, the Challenged Claim is not entitled to the benefit of earlier filed applications to which it claims priority, as the Examiners found in the '558 Reexam.

[5] Because the Challenged Claim is not entitled to the benefit of earlier filed applications to which it claims priority, the AIA applies. MPEP § 2159 ("If a patent application (1) contains or contained at any time a claim to a claimed invention having an effective filing date as defined in 35 U.S.C. 100(i) that is on or after March 16, 2013 . . . then AIA 35 U.S.C. 102 and 103 apply to the application, (i.e., the application is an AIA application).").

[6] The Internet Archive's Wayback Machine collects and makes available "29+ years of web history," including over "1 trillion web pages" throughout the years. Ex. 1010.

Wireless Power Consortium website indicated that, "The current version of the Qi specification has version number ***1.2.3***. The Qi specification that is available for public download has version 1.2.2. ***Version 1.2.3 is available only to members of the Wireless Power Consortium.***" Ex. 1011. The Wireless Power Consortium had 213 members comprising large corporations around the world by February 2017—demonstrating that releasing the **Qi** to the consortium made it publicly accessible. Ex. 1015 (Wayback Machine Feb. 15, 2017 capture showing 213 members, including "Generalplus Technology, Inc."). *See* MPEP § 2182 II.E (discussing the "Wayback Machine").

- One of the members of the consortium, Generalplus Technology Inc. (see Ex. 1015) published a datasheet dated September 9, 2017 for a Qi-compliant power transmitter that "integrates the WPC Qi standard of Version ***V1.2.3***"—demonstrating that members had access to **Qi** by September 9, 2017. Ex. 1014.
- The Wireless Power Consortium made **Qi** available to the public later in 2017, as confirmed by the Internet Archive's Wayback Machine. Ex. 1011 (Aug. 18, 2017: "The current version of the Qi specification has version number ***1.2.3*** . . . ***Version 1.2.3 is available only to members of the Wireless Power Consortium. It will be made available for public download later in 2017***."); *see* MPEP 2182 II.E.
- For example, a company that was not a member of the consortium at the time, Renesas Electronics Corporation (see Ex. 1015), published a datasheet dated October 10, 2017 for a Qi-compliant power receiver that was "WPC-***1.2.3*** compliant." Ex. 1021 at 1.
- The Wayback Machine also confirms that **Qi** could be downloaded by the general public, including at some point between March 16, 2017 and September 27, 2018. Ex. 1011; Ex. 1012 (March 16, 2017: "The current download is version 1.2.2."); Ex. 1013 (Sept. 27, 2018: "The current download is version 1.2.3."); Ex. 1022 (Apr. 28, 2018: "The Qi specification that is available for public download has version 1.2.3."); *see* MPEP § 2182 II.E.
- U.S. Patent App. Pub. No. 2019/0305826, filed on September 13, 2017 and published on October 3, 2019, also confirms that **Qi** was publicly accessible at least by September 2017. Ex. 1018 at [0005] ("The description of the embodiments

proposed herein can be cooperated with the ***WPC Qi wireless power transmission system power class 0 specification Version 1.2.3*** and Version 1.3.").

- European Patent No. 3,582,466 further confirms that "The Qi Wireless Power Transfer System - Power Class 0 Specification - Parts 1 and 2: Interface Definitions - Version 1.2.3" was "published on 01-02-2017 by the Wireless Power Consortium." Ex. 1019 at [0002].

B. Statement Setting Forth Each Substantial New Question of Patentability

This Request presents substantial new questions of patentability that were not considered during prosecution of, or subsequent challenge to, the '777 Patent.[7]

Reexamination proceedings are permissible based on "intervening patents or printed publications where the patent claims under reexamination are entitled only to the filing date of the patent and are not supported by an earlier foreign or United States patent application whose filing date is claimed." MPEP § 2258(I)(c) ("Intervening patents or printed publications are available as prior art."). "A prior art patent or printed publication raises a substantial question of patentability where there is a substantial likelihood that a reasonable examiner would consider the prior art patent or printed publication important in deciding whether or not the claim is patentable." MPEP § 2242. **Qi**, **Gao**, and **Lee** are intervening prior art that raise substantial new questions of patentability.

Qi, alone and in view of **Gao** and/or **Lee**, raises a substantial new question of patentability for the Challenged Claim. Neither **Qi**, **Gao**, nor **Lee** were identified or considered by the USPTO during original prosecution or any subsequent challenge, including the '558 Reexam or IPR2023-01102. Baker ¶ 39.

Qi, **Gao**, and **Lee** would be important to a reasonable examiner considering the patentability of the Challenged Claim of the '777 Patent.

For example, **Qi** discloses a wireless charging system—including **(1)** a "Mobile Device" that includes a "Power Receiver [PRx]" and a Base Station that includes a "Power Transmitter

[7] IPR2023-01102 challenging the '777 Patent assumed a priority date of January 18, 2011. Ex. 1009 at 3; *see also* Ex. 1003 at 428 ("Even assuming *arguendo* that claims 1 and 15 of the '777 Patent are entitled to the January 18, 2011 date Mojo contends as the effective filing date, *Partovi* and *Sogabe* are prior art.").

[PTx]"—for inductively transferring power from the Power Transmitter to the Power Receiver. Qi, 9, 11–13, 30. The Power Receiver includes a **(2)** coil (i.e., a "Secondary Coil") to "acquire[] near field inductive power" from the Power Transmitter that is "convert[ed] . . . to electromotive force" through induction to, e.g., "[c]harg[e] a connected battery." Qi, 11–13, 14, 30. The Power Receiver includes **(4)** a Communication and Control Unit that "executes . . . power control algorithms and protocols" to perform the power transfer and charge the battery. Qi, 9, 24–25, 30. To control the inductive power transfer process, the Power Receiver communicates with the Power Transmitter via the Power Receiver's **(3)** "[c]ommunications modulator" using backscatter amplitude modulation and "[c]ommunications demodulator" using frequency-shift keying. Qi, 25–26, 29, 86. The Communication and Control Unit is configured to operate in two modes of operation: **(5)** a mode of operation for using a Baseline Power Profile communication protocol for transferring up to 5W of power, whereby communications are sent only from the Power Receiver to the Power Transmitter such that there is uni-directional messaging, and **(6)** a mode of operation for using an Extended Power Profile communication protocol for transferring up to 15W of power, whereby communications are sent between the Power Receiver and Power Transmitter such that there is bi-directional messaging. Qi, 9, 11, 14, 25–26, 44. The Power Transmitter—in both the Baseline and Extended Power Profiles—"identif[ies] the Power Receiver and collect[s] configuration information," such as the "maximum amount of power that the Power Receiver intends to provide at its output." Qi, 46, 53. The Power Receiver **(7)** transmits "an Identification Packet" and a "Configuration Packet" to identify which protocol (Baseline or Extended) is being used. Qi, 73, 74. For the Extended Power Profile mode of operation, the Power Receiver also **(8)** receives "Frequency Shift Key[ed]" packets "containing the information that is requested by the Power Receiver" and "ACK Response[s]." Qi, 26, 29, 60, 76, 79, 106. Baker ¶ 40.

These features present technical teachings absent from the '777 Patent examination record. As discussed in Section II.D.1, the Examiner appears to have allowed the Challenged Claim because the prior art purportedly did not disclose "an inductive charging receiver coil; a communication transmitter circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; a communication receiver circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; and a microcontroller, wherein the microcontroller is configured for: . . . operating in a second mode of operation . . . wherein the second mode of operation comprises: sending, using the communication transmitter

circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol; . . . and receiving, using the receiver circuit, a frequency-modulated third communication from the inductive charger based on the second protocol." Ex. 1002 at 343–344. As discussed in Section II.D.1, this statement was in relation to claim 1 of the '777 Patent, which is directed to the base unit, while the Challenged Claim is directed to the electronic device that receives power. As discussed in this section above and Sections III.D–F, **Qi** alone and in view of **Gao** and/or **Lee** discloses or renders obvious these concepts that appear in the Challenged Claim.

Further, in denying institution of IPR2023-01102 involving the Challenged Claim, the Board disagreed with Petitioner's argument that U.S. Patent No. 8,369,905 ("Sogabe") in view of U.S. Patent No. 8,090,550 ("Azancot") rendered obvious the Challenged Claim. Specifically, the Board found that Sogabe failed to disclose the recited "first mode of operation using a first protocol . . . that comprises uni-directional messaging" under the court's construction that uni-directional messaging and bi-directional messaging are "mutually exclusive types of messaging, i.e., that unidirectional messaging is not just merely one side of bidirectional messaging." Ex. 1009 at 14–15. The Board also disagreed with Petitioner's motivation to combine Sogabe and Azancot to apply Azancot's teaching of a unidirectional charging phase communication. Ex. 1009 at 21. In contrast, **Qi** teaches a Baseline Power Profile mode of operation using a communication protocol that uses backscatter amplitude modulation such that communications are sent only from the Power Receiver to the Power Transmitter. Qi, 86. **Qi** teaches a different Extended Power Profile mode of operation using a communication protocol that uses backscatter amplitude modulation for communications from the Power Receiver to Power Transmitter and frequency-modulation for communications from the Power Transmitter to Power Receiver, such that the Extended Power Profile uses bi-directional messaging. Qi, 44, 48–49, 86. Baker ¶ 40.

In the '558 Reexam, as discussed in Section II.D.3, the Examiners found the Challenged Claim requires using a "charging protocol" and that "charging must occur during this first mode of operation having uni-directional communication" ([15.d.i], "Added First Mode Limitation") and that the applications to which the '777 Patent claims priority failed to provide written description support for the limitation. Ex. 1003 at 1855. The Examiners also found these applications failed to provide written description support for the limitations "the first communication identifies the first protocol" and "the second communication identifies the second

protocol" ([15.d.i.1], [15.d.ii.1], "Added Protocol Identifier Limitations"). Ex. 1003 at 1857. The Examiners found that U.S. Patent App. Pub. No. 2009/0096413 ("'6413 Partovi") did not disclose the Added First Mode Limitation because it did not disclose "during its ping process (first mode of operation using unidirectional messaging), the system is charging the battery during the first mode of operation having uni-directional messaging." Ex. 1003 at 1859. The Examiners also considered U.S. Patent App. Pub. No. 2016/0056664 ("'6664 Partovi")—to which the '777 Patent is a continuation-in-part—but found that because the '777 Patent and '6664 Partovi have the same pertinent disclosures such that '6664 Partovi also failed to teach the Added First Mode Limitation and the Added Protocol Identifier Limitations. Ex. 1003 at 1856–1858, 1860. Lastly, the Examiners found that although U.S. Patent App. Pub. No. 2002/0045454 ("Iwata") discloses the Added Protocol Identifier Limitations, Iwata does not teach the Added First Mode Limitation. Ex. 1003 at 1860. Unlike '6413 Partovi, '6664 Partovi, and Iwata, **Qi** teaches a Baseline Power Profile mode of operation that uses a communication protocol that comprises uni-directional messaging from the Power Receiver to the Power Transmitter. Qi, 9, 11, 14, 25–26, 44. **Qi** further discloses "Identification Packet[s]" and "Configuration Packet[s]" that identify which protocol (Baseline or Extended) is being used. Qi, 73. Baker ¶ 40.

Thus, **Qi's** teachings present new, non-cumulative technical teachings that demonstrate the unpatentability of the Challenged Claim.

This Request also combines **Qi** with **Gao** to provide additional express disclosure of the recited *microcontroller*. Specifically, **Gao** discloses "a wireless charging system including a power transmitter and a power receiver" where the power receiver includes a "control circuit" implemented by "micro-controller unit." Gao, [0017], [0089]. Baker ¶ 41.

Accordingly, **Qi**, either alone or in combination with **Gao**, present new, non-cumulative technical teachings that demonstrate the unpatentability of the Challenged Claim of the '777 Patent. Baker ¶ 41.

This Request also combines **Qi**, alone or in view of **Gao**, with **Lee** to provide additional express disclosure of the same inductive charger being used in the first and second modes of operation—e.g., claim limitations [15.d.i.1] (*sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol*) and [15.d.ii.1] (*sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second*

protocol). Specifically, **Lee** discloses a wireless charging system in which a power supply device switches to a lower charging power after receiving a request from a power receiver device when, e.g., the device's battery temperature exceeds a predetermined threshold. Lee, [0295]–[0297], [0302]. Baker ¶ 42.

Accordingly, **Qi** alone or in view of **Gao** and/or **Lee** present new, non-cumulative technical teachings that demonstrate the unpatentability of the Challenged Claim of the '777 Patent. Baker ¶ 42.

As described in more detail in Section III below, each of the references cited in this Request provides new technological teachings and was not cited by the Applicant or Examiner, or otherwise considered during prosecution of, or subsequent challenge to, the '777 Patent. As outlined below and explained in detail in this Request, **Qi** alone or in combination with **Gao** and/or **Lee** present substantial new questions of patentability and anticipate and at least render obvious the Challenged Claim. Baker ¶¶ 70–175. Specifically, the Challenged Claim is unpatentable in view of at least the following references and combinations of references, Baker ¶¶ 66–69:

- **Proposed Rejection 1:** Claim 15 is anticipated by and/or rendered obvious over **Qi**.
- **Proposed Rejection 2:** Claim 15 is obvious over **Qi** in view of **Gao**.
- **Proposed Rejections 3–4:** Claim 15 is obvious over Proposed Rejections 1–2 in further view of **Lee**.

C. Overview of the '777 Patent

The '777 Patent is directed to a wireless charging system comprising a base unit and an electronic device, which is capable of receiving power via induction. '777 Patent, 7:4–16. The electronic device includes an inductive charging receiver coil to receive power. '777 Patent, Fig. 1, 7:4–16.

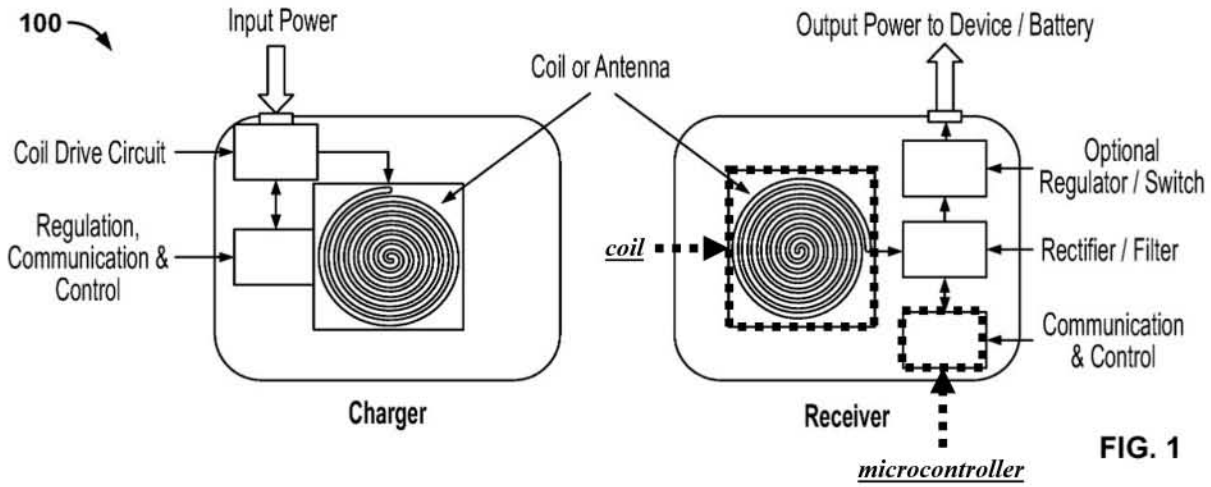


FIG. 1

'777 Patent, Fig. 1. Baker ¶ 43.

The receiver also includes a "receiver MCU" that "communicates back to the charger by modulating the receiver load by rapidly closing and opening a switch in series with a modulation load at a pre-determined speed and coding pattern." '777 Patent, 14:9–13. This MCU also "monitor[s] communication from the charger (in case of bi-directional communication)." '777 Patent, 17:23–27. To communicate during power transfer, "multiple inductive charging protocols are used," including a "uni-directional messaging" protocol "from the receiver to the charger" and a "bi-directional messaging" protocol. '777 Patent, Abstract, 14:52–58, 28:38–42. These communications may "validate the receivers, [or] provide info about the power requirement, output voltage, power, temperature, state of charge, foreign object detection (metal in between charger and receiver) or other fault conditions [in the system]." '777 Patent, 67:20–33. Baker ¶ 44.

D. Prosecution History

1. '777 Patent Prosecution History

The '777 Patent issued from U.S. Pat. App. 16/199,904 ("the '904-App"), filed on November 26, 2018. Claim 15 was rejected several times under §§ 102 and 103 grounds. *See, e.g.*, Ex. 1002 at 169–173, 195–202, 224–230, 248–256. The Examiner also issued a double patenting rejection over U.S. Patent No. 10,141,770. Ex. 1002 at 285–288. To overcome a rejection, the Applicant filed a terminal disclaimer and substantially amended claim 15 to recite several new limitations. Ex. 1002 at 316–318. The Examiner allowed claim 15 because the prior art of record did not teach "an inductive charging coil, a coil drive circuit electrically coupled to the inductive charging coil, wherein the coil drive circuit provides power to the inductive charging coil by switching a voltage input to the inductive charging coil at an operating frequency . . . wherein the

second mode of operation comprises: receiving, using the current detection circuit, a second communication from the inductive charging receiver of the electronic device, wherein the second communication is based on the second protocol, transmitting, by modulating the operating frequency with the coil drive circuit, a frequency-modulated third communication to the inductive charging receiver of the electronic devices wherein the frequency-modulated third communication is based on the second protocol, and regulating power delivered to the battery of the electronic device in response to the received second communication."[8] Ex. 1002 at 343–344. Baker ¶¶ 45–46.

2. '777 Patent *Inter Partes* Review Proceedings

In IPR2023-01102 involving the Challenged Claim, the Board denied institution because the prior art asserted there failed to disclose the recited "first mode of operation using a first protocol . . . that comprises uni-directional messaging." In its institution decision, the Board construed the terms "uni-directional" and "bi-directional" as "mutually exclusive types of messaging, i.e., that unidirectional messaging is not just merely one side of bidirectional messaging" and found that the disclosure of the primary reference, U.S. Patent No. 8,369,905 ("Sogabe"), did not satisfy the construction because Petitioner pointed to one side of bi-directional communication as the recited uni-directional messaging. Ex. 1009 at 14–15, 19–21. Further, the Board rejected Petitioner's argument attempting to modify Sogabe with the uni-directional

[8] These limitations appear in claim 1 of the '777 Patent, which is directed to a "base system for inductive charging of an electronic device," not an "electronic device capable of receiving power inductively" as recited in the Challenged Claim. The relevant limitations of the Challenged Claim appear to be as follows: "an inductive charging receiver coil; a communication transmitter circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; a communication receiver circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; and a microcontroller, wherein the microcontroller is configured for: . . . operating in a second mode of operation . . . wherein the second mode of operation comprises: sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol; . . . and receiving, using the receiver circuit, a frequency-modulated third communication from the inductive charger based on the second protocol."

messaging teachings disclosed by U.S. Patent No. 8,090,550 ("Azancot") because "Petitioner has not articulated a reason with rational underpinning to modify the Sogabe charging system's bidirectional setup phase communications with the unidirectional charging phase communications of Azancot." Ex. 1009 at 21. Baker ¶¶ 47–49.

3. '777 Patent *Ex Parte* Reexamination Proceedings

In an EPR involving the Challenged Claim, the Examiners found the Challenged Claim requires using a "charging protocol" and that "charging must occur during this first mode of operation having uni-directional communication" ([15.d.i], "Added First Mode Limitation") and that the applications to which the '777 Patent claims priority failed to provide written description support for the limitation. Ex. 1003 at 1855. The Examiners also found these applications failed to provide written description support for the limitations "the first communication identifies the first protocol" and "the second communication identifies the second protocol" ([15.d.i.1], [15.d.ii.1], "Added Protocol Identifier Limitations"). Ex. 1003 at 1857. Thus, the Examiners found that the Challenged Claim was *not* entitled to the claimed January 18, 2011 priority date because the "Added First Mode Limitation" ([15.d.i]–[15.d.i.2]) and "Added Protocol Identifier Limitations" ([15.d.i.1], [15.d.ii.1]) were "first introduced long after the filing of the 904 Application and thus are only entitled to priority to the filing of the 904 Application [November 26, 2018] or thereafter [as late as October 27, 2021]." Ex. 1003 at 1853. Baker ¶¶ 50–51.

However, the Examiners confirmed the Challenged Claim, finding that U.S. Patent App. Pub. No. 2009/0096413 ("'6413 Partovi") did not disclose the Added First Mode Limitation because it did not disclose "during its ping process (first mode of operation using unidirectional messaging), the system is charging the battery during the first mode of operation having uni-directional messaging." Ex. 1003 at 1858. The Examiners also considered U.S. Patent App. Pub. No. 2016/0056664 ("'6664 Partovi")—to which the '777 Patent is a continuation-in-part—but found that the '777 Patent and '6664 Partovi have the same pertinent disclosures, such that '6664 Partovi also failed to teach the Added First Mode Limitation and the Added Protocol Identifier Limitations as a result of their finding that the '777 Patent lacked written description to support a priority claim. Ex. 1003 at 1856–1858, 1860. The Examiners also found that although U.S. Patent App. Pub. No. 2002/0045454 ("Iwata") discloses the Added Protocol Identifier Limitations, Iwata does not teach the Added First Mode Limitation. Ex. 1003 at 1860. Baker ¶¶ 52–53.

4. Priority Date of the '777 Patent

As discussed in Section II.D.3, the Examiners in the '558 Reexam determined that the Challenged Claim is at best entitled to an effective filing date of no earlier than November 26, 2018—the filing date of the '904-App. Ex. 1003 at 1854, 1857. Baker ¶ 54.

Regarding the "Added First Mode Limitation," the Examiners found that the phrase "inductive charging communication-and-control protocol" has no support in the '777 Patent specification and no specific meaning in the prior art. Ex. 1003 at 1854. The claim's further requirement that "charging must occur during this first mode of operation having uni-directional communication" also has no specification support. Ex. 1003 at 1855. Indeed, the Examiners found that "the only mode of operation using uni-directional communication is a ping process used by the base station/charger to find receivers." Ex. 1003 at 1855. The Examiners were "unable to find support for the Added First Mode Limitation . . . specifically the requirement of using a 'charging protocol' and charging the battery during [a] uni-directional communication first mode of operation." Ex. 1003 at 1856. Baker ¶ 55.

Regarding the "Added Protocol Identifier Limitations," the Examiners found that the specification does not "define[], disclose[] or even discuss[] the use of any identifiers in communications for respective protocols." Ex. 1003 at 1857. The Examiners further recognized that the Added Protocol Identifier Limitations does not have a "clear definition or use" in the prior art to support its use in the context of the '777 Patent. Baker ¶ 56.

Therefore, consistent with the Examiners' findings, the Challenged Claim "ha[s] priority extending only to the presentation of the Added First Mode [and Added Protocol Identifier] Limitations . . . during prosecution of the 904 Application on October 27, 2021 or at most, the filing of the 904 Application, on November 26, 2018." Ex. 1003 at 1857–1858. Requester agrees with the Examiners' analysis, but takes no position on whether the effective filing date should be the November 26, 2018 filing date of the '777 Patent or when the limitations were added in October 27, 2021 because **Qi**, **Gao**, and **Lee** qualify as prior art under both dates as discussed in Section II.A. Baker ¶¶ 57–58.

E. The Director Should Not Exercise Discretion to Deny this *Ex Parte* Reexamination Request

Under 35 U.S.C. § 304, if "the Director finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question." While § 325 does apply to *ex parte*

reexamination proceedings, it has generally been applied to deny reexamination requests only where the requester has engaged in "abusive filing practices." *See In re Vivint, Inc.*, 14 F.4th 1342, 1354 (Fed. Cir. 2021) ("Our ruling today is limited. . . . Notably, . . . the basis for the discretion at issue in this case . . . applies only to a 'petition or request,' which the Director may 'reject' because of serial filings of a challenger."); *In re Sound View Innovations, LLC*, No. 2022-161, 2022 WL 17099155, at *2 (Fed. Cir. Nov. 22, 2022) (distinguishing *Vivint*, explaining that in *Vivint*, the Director "granted the requester's nearly identical request for *ex parte* reexamination based on the same arguments raised in its previous IPR petition that was denied based on the requester's abusive filing practices").

No abusive conduct exists here. While Requester previously filed an IPR and EPR against the Challenged Claim, the prior art presented in those proceedings was based on an earlier-claimed effective filing date of the Challenged Claim that has since been adjusted in the '558 Reexam. *See, e.g.*, Section II.D.4. This adjustment subjects the Challenged Claim to further invalidity challenges, as more patents and printed publications qualify as prior art. Indeed, the Qi Standard was being concurrently developed as the '777 Patent and its priority applications were being prosecuted, and the finding of a later effective filing date subjects the '777 Patent to prior art published specifications of the Qi standard, like **Qi**, that invalidate the Challenged Claim. Indeed, as shown in Section III.D, the Patent Owner alleged that the Requester's Qi-standard compliant devices infringe the Challenged Claim, and **Qi** is a prior art version of the Qi specification that Patent Owner used in support of these allegations.[9] Thus, unlike in *Vivint*, Requester is not using "prior Board decisions as a roadmap to correct past deficiencies" and is instead showing that **Qi** raises a substantial new question of patentability based on its disclosures, including based on statements Patent Owner made in the district court litigation between Patent Owner and Requester. *Cf. Vivint*, 14 F.4th at 1353.

The rejections proposed by this Request are not the same or substantially the same as the art and arguments raised during prosecution or any subsequent proceeding. The art and

[9] Patent Owner alleged infringement based on v1.3, whereas **Qi** is v1.2.3. As discussed in Section III.D, materially similar disclosures are present in **Qi** as those Patent Owner alleged were covered by v1.3. Requester does not concede that it practices all these portions of the Qi standard, or that it infringes or has infringed the Challenged Claim.

arguments considered previously by the Board and Examiners were based on an earlier effective filing date that has since been adjusted later in the '558 Reexam. The Office has not reviewed or considered **Qi**, **Gao**, or **Lee**, or the arguments accompanying this new prior art. Moreover, **Qi**, **Gao**, and **Lee** are different than the art previously considered, as discussed in Section II.B. Thus, the prior art and arguments presented in this Request are not the same or substantially the same as the art and arguments addressed previously by the Office.

Even if the same or substantially the same art or arguments were considered, it was material error to not reject the Challenged Claim for the reasons discussed in §§ III.D–F. Because the Examiner "did not expressly consider" **Qi**, **Gao**, or **Lee** as prior art, "[i]t is . . . difficult, if not impossible, to discern exactly why the Examiner allowed the claims of the ['777] patent, or how the Examiner might have considered the arguments presented in the [Request], had they been presented to the Examiner." *Bowtech, Inc. v. MCP IP, LLP*, IPR2019-00379, Pap. 14, *19–20 (declining to exercise § 325(d) discretion where Petitioner did not "even attempt[] to explain how the Examiner erred in any way"). Indeed, **Qi** (version 1.2.3) did not exist as of the earlier effective filing date used during original prosecution, the '558 Reexamination, and IPR2023-01102. The earliest non-provisional patent application (U.S. Patent Application No. 13/352,096 ("'096 Application")) to which the '777 Patent claims priority discusses the Wireless Power Consortium ("WPC") standard (i.e., the Qi standard) at least seven times, but there is no evidence on the record that the Examiner ever considered it as material to patentability. To the extent the Examiner did consider the Qi Standard during prosecution of the '096 Application or any other application to which the '777 Patent claims priority, it would have been of a version of the specification older than **Qi** (version 1.2.3). There is also no evidence that the Examiner considered the issue of the proper effective filing date for the Challenged Claim during prosecution. To the extent there is overlap in disclosures between older versions of the Qi Standard and **Qi**, the Examiner materially erred in a manner material to the patentability of the Challenged Claim for the reasons discussed in Sections III.D–F.

III. DETAILED EXPLANATION OF THE PERTINENCE AND MANNER OF APPLYING THE PRIOR ART REFERENCES TO THE CHALLENGED CLAIM FOR WHICH REEXAMINATION IS REQUESTED

In accordance with 37 C.F.R. § 1.510(b)(2), Requester provides the following detailed explanation of the pertinence and manner of applying the prior art to the Challenged Claim of the '777 Patent.

A. Level of Ordinary Skill in the Art

On or before the November 26, 2018 priority date of the Challenged Claim, a POSITA would have had at least a master's degree in electrical engineering, or a similar discipline, and at least two years of experience in the relevant field, e.g., wireless power transfer. More education can supplement practical experience and vice versa. Baker ¶¶ 59–61.

B. Claim Construction

The '777 Patent has not expired. As a result, claim construction for the patent should apply the broadest reasonable interpretation and not the *Phillips* standard:

> During reexamination ordered under 35 U.S.C. 304, and also during reexamination ordered under 35 U.S.C. 257, ***claims are given the broadest reasonable interpretation consistent with the specification and limitations in the specification are not read into the claims*** (*In re Yamamoto*, 740 F.2d 1569, 222 USPQ 934 (Fed. Cir. 1984)). In a reexamination proceeding involving claims of an expired patent, claim construction pursuant to the principle set forth by the court in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005) (words of a claim "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention) should be applied since the expired claim are not subject to amendment. *See Ex parte Papst-Motoren*, 1 USPQ2d 1655 (Bd. Pat. App. & Inter. 1986). The statutory presumption of validity, 35 U.S.C. 282, has no application in reexamination (*In re Etter*, 756 F.2d 852, 225 USPQ 1 (Fed. Cir. 1985)).

MPEP § 2258(I)(G).

In IPR2023-01102, the Board construed the following terms of the Challenged Claim:

Construed Term	PTAB's Construction
"uni-directional"	"mutually exclusive types of messaging, i.e., that unidirectional messaging is not just merely one side of bidirectional messaging"
"bi-directional"	

Ex. 1009 at 14–15.

In the '558 Reexam, the Examiners provided the following constructions:

Construed Terms	Examiners' Constructions	Patent Owner's Proposed Constructions
"microcontroller"	"special-purpose, single-chip computer designed and built to handle a particular, narrowly defined task. In addition to the central processing unit (CPU), a microcontroller usually contains its own memory, input/output channels (ports), and timers." Ex. 1003 at 1687.	*No proposed construction*
"first mode of operation/first protocol" "second mode of operation/second protocol"	"[A] set of rules or procedures to allow devices to charge and communicate using induction." Ex. 1003 at 1691. "[T]he first and second protocols can be the same" Ex. 1003 at 1691.	"The recited first and second 'inductive charging communication-and-control protocol[s]' cannot be the same." Ex. 1003 at 1764.
"inductive charging communication-and-control protocol"	"Examiners do not find this phrase has a clear definition or use in the related art. Thus, Examiners will interpret this phrase in view of its plain language in view of the *protocol* definition above, i.e., that this *inductive charging communication-and-control protocol* is a set of rules or procedures to allow devices to charge and communicate using induction." Ex. 1003 at 1690–1691.	"A complete set of communication and control rules and procedures to provide persistent inductive charging, including a setup phase and an output power delivery phase to charge a device." Ex. 1003 at 1758.
"wherein the first communication identifies the first protocol . . . " "wherein the second communication identifies the second protocol . . . "	"Examiners do not find this phrase has a clear definition or use or written description support in the context of the 777 Patent. Thus, Examiners will interpret this phrase in view of its plain language as some form or data header that identifies the particular protocol being used in the communication." Ex. 1003 at 1691–1692.	*No proposed construction*

Requester is not advocating that any particular construction should be adopted for purposes of this Request. As shown below and in Sections III.D–F, the terms need not be construed because the prior art anticipates and renders obvious the undisputed scope of the Challenged Claim under the Board's, Examiners', and Patent Owner's proposed constructions, as well as under any reasonable construction. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'"). Baker ¶¶ 62–65.

C. Summary of Proposed Rejections

As explained in greater detail in Sections III.D–F, the Challenged Claim of the '777 Patent is unpatentable over the prior art as summarized in the Proposed Rejections below. Baker ¶¶ 66–69.

Proposed Rejection	Claim	Statutory Basis	Reference(s)
1	15	§§ 102, 103	**Qi**
2		§ 103	**Qi** in view of **Gao**
3–4			**Proposed Rejections 1–2** in view of **Lee**

1. Proposed Rejection 1: '777 Patent Claim 15 is Anticipated and/or Rendered Obvious by Qi

Qi anticipates and/or renders obvious Challenged Claim 15 of the '777 Patent. Baker ¶ 71.

Challenged Independent Claim 15 is generally directed to **(1)** an electronic device capable of receiving power inductively, comprising **(2)** an inductive charging receiver coil for receiving power; **(3)** communication transmitter and receiver circuits coupled to the inductive charging receiver coil; and **(4)** a microcontroller configured to operate in two modes of operation using two different protocols: **(5)** one mode for using a communication protocol involving uni-directional messaging and lower power transfer, and **(6)** a second mode for using a communication protocol involving bi-directional messaging and higher power transfer. Both modes involve **(7)** sending a communication that identifies the protocol, and the second mode further involves **(8)** receiving a frequency-modulated third communication. Baker ¶ 38.

Qi discloses a wireless charging system—including **(1)** a "Mobile Device" that includes a "Power Receiver [PRx]" and a Base Station that includes a "Power Transmitter [PTx]"—for

inductively transferring power from the Power Transmitter to the Power Receiver. Qi, 9, 11–13, 30. The Power Receiver includes a **(2)** coil (i.e., a "Secondary Coil") to "acquire[] near field inductive power" from the Power Transmitter that is "convert[ed] . . . to electromotive force" through induction to, e.g., "[c]harg[e] a connected battery." Qi, 11–13, 14, 30. The Power Receiver includes **(4)** a Communication and Control Unit that "executes . . . power control algorithms and protocols" to perform the power transfer and charge the battery. Qi, 9, 24–25, 30. To control the inductive power transfer process, the Power Receiver communicates with the Power Transmitter via the Power Receiver's **(3)** "[c]ommunications modulator" using backscatter amplitude modulation and "[c]ommunications demodulator" using frequency-shift keying. Qi, 25–26, 29, 86. The Communication and Control Unit is configured to operate in two modes of operation: **(5)** a mode of operation for using a Baseline Power Profile communication protocol for transferring up to 5W of power, whereby communications are sent only from the Power Receiver to the Power Transmitter such that there is uni-directional messaging, and **(6)** a mode of operation for using an Extended Power Profile communication protocol for transferring up to 15W of power, whereby communications are sent between the Power Receiver and Power Transmitter such that there is bi-directional messaging. Qi, 9, 11, 14, 25–26, 44. The Power Receiver **(7)** transmits "an Identification Packet" and a "Configuration Packet" to identify which protocol (Baseline or Extended) is being used. Qi, 73, 74. For the Extended Power Profile mode of operation, the Power Receiver also **(8)** receives "Frequency Shift Key[ed]" packets "containing the information that is requested by the Power Receiver" and "ACK Response[s]." Qi, 26, 29, 60, 76, 79, 106. Baker ¶ 40.

See **Section III.D** for a detailed analysis.

2. Proposed Rejection 2: '777 Patent Claim 15 is Rendered Obvious by Qi in view of Gao

Qi in view of **Gao** renders obvious Challenged Claim 15 of the '777 Patent.

As explained above with respect to Proposed Rejection 1, **Qi** anticipates and/or renders obvious Challenged Claim 15 of the '777 Patent. To the extent any additional disclosure is required for *a microcontroller*, **Gao** discloses this concept. For example, **Gao** discloses "a wireless charging system including a power transmitter and a power receiver" where the power receiver includes a "control circuit" implemented by "micro-controller unit." Gao, [0017], [0089]. A POSITA would have been motivated to modify **Qi** with **Gao's** straightforward and complementary teachings. Baker ¶¶ 41, 165, 168.

See **Section III.E** for a detailed analysis.

3. Proposed Rejections 3–4: '777 Patent Claim 15 is Rendered Obvious by Proposed Rejections 1–2 in further view of Lee

Qi (alone and optionally in view of **Gao**) in further view of **Lee** renders obvious Challenged Claim 15 of the '777 Patent.

As explained above with respect to Proposed Rejection 1, **Qi** anticipates and/or renders obvious Challenged Claim 15 of the '777 Patent. As further explained above with respect to Proposed Rejection 2, **Qi** in view of **Gao** renders obvious Challenged Claim 15 of the '777 Patent. To the extent any additional disclosure is required to show the use of the same inductive charger in the first and second modes of operation—e.g., claim limitations [15.d.i.1] (*sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol*) and [15.d.ii.1] (*sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol*)—**Lee** discloses this concept. For example, **Lee** discloses a wireless charging system in which a power supply device switches to a lower charging power after receiving a request from a power receiver device when, e.g., the device's battery temperature exceeds a predetermined threshold. Lee, [0295]–[0297], [0302]. A POSITA would have been motivated to apply **Lee's** straightforward and complementary teachings in implementing **Qi's** teachings (alone and optionally modified by **Gao**). Baker ¶¶ 42, 172, 174.

See **Section III.F** for a detailed analysis.

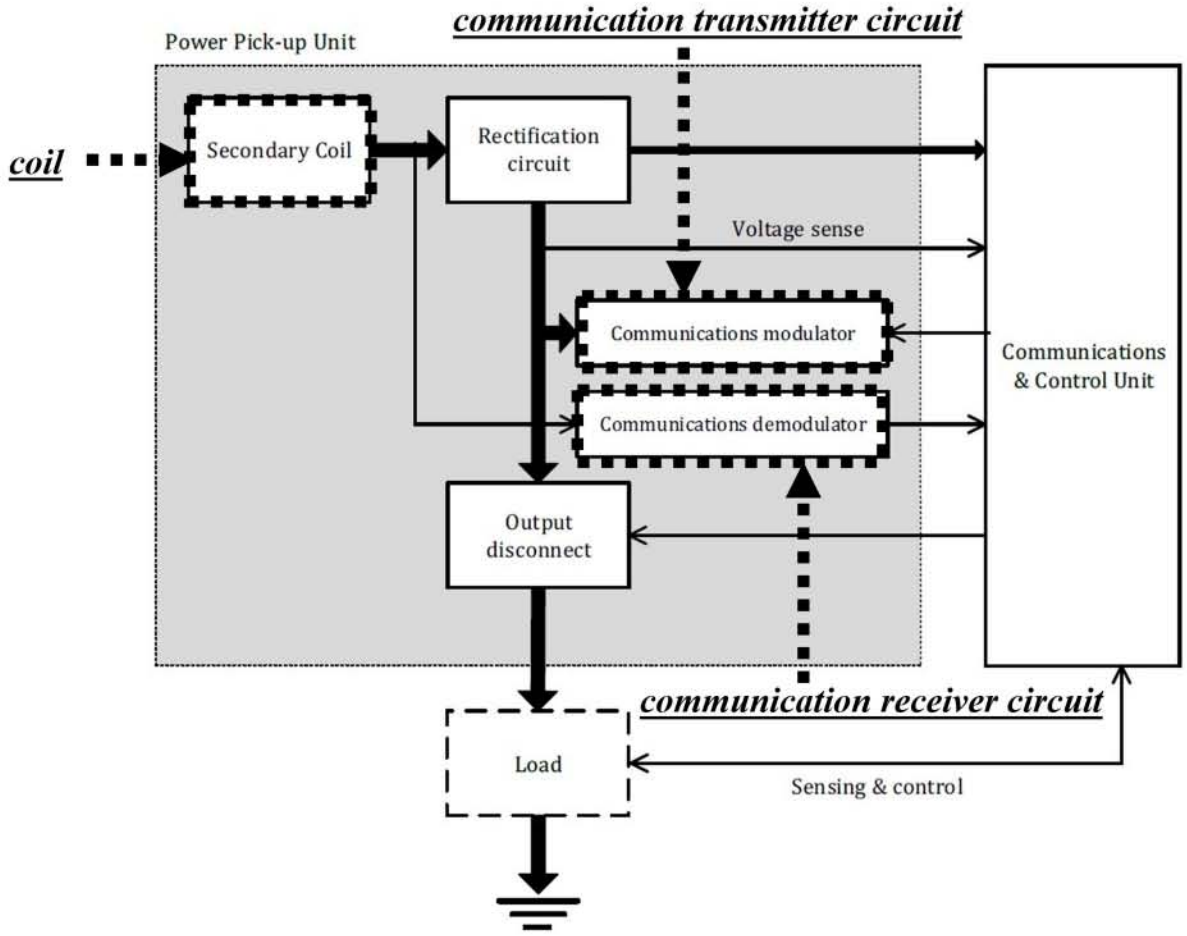
D. Proposed Rejection 1: '777 Patent Claim 15 is Anticipated and/or Rendered Obvious by Qi

Qi anticipates and/or renders obvious Challenged Claim 15 of the '777 Patent. Baker ¶ 71.

1. Overview of Qi

Qi discloses a wireless charging system—including a "Mobile Device" that includes a "Power Receiver [PRx]" and a Base Station that includes a "Power Transmitter [PTx]"—for inductively transferring power from the Power Transmitter to the Power Receiver. Qi, 9, 11–13, 30. The Power Transmitter "generates near field inductive power" that the Power Receiver "acquires" using a coil (i.e., a "**Secondary Coil**") and "converts . . . to electromotive force" through induction to, e.g., "[c]harg[e] a connected battery." Qi, 11–13, 14, 30. The Power Receiver includes a "**Communication and Control Unit**" that "executes . . . power control algorithms and protocols" to perform the power transfer and charge the battery. Qi, 9, 24–25, 30. To control the

inductive power transfer process, the Power Receiver communicates with the Power Transmitter via the Power Receiver's "**[c]ommunications modulator**" using backscatter amplitude modulation and "**[c]ommunications demodulator**" using frequency-shift keying. Qi, 25–26, 29, 86.

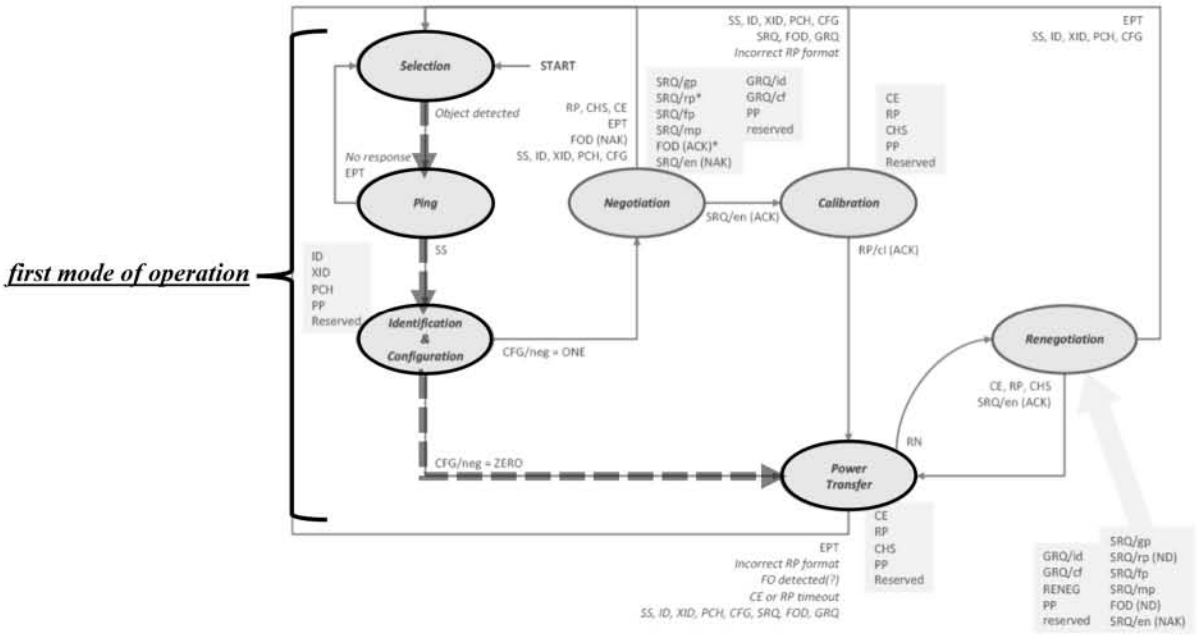


Qi, 25. Baker ¶ 72.

The Communication and Control Unit is configured to operate in two different modes, in which each mode employs a unique communication protocol: (1) Baseline Power Profile and (2) Extended Power Profile. Qi, 9, 44. The Baseline Power Profile communication protocol supports power transfers "up to about 5W," while the Extended Power Profile can support power transfers "up to about 15W." Qi, 9. Baker ¶ 73.

In the Baseline Power Profile, the communication protocol uses uni-directional messaging, whereby communications are sent only from the Power Receiver to the Power Transmitter through the Secondary Coil by "modulating the amount of power that [the Power Receiver] draws" from the Power Transmitter. Qi, 86. The Baseline Power Profile comprises four phases, namely

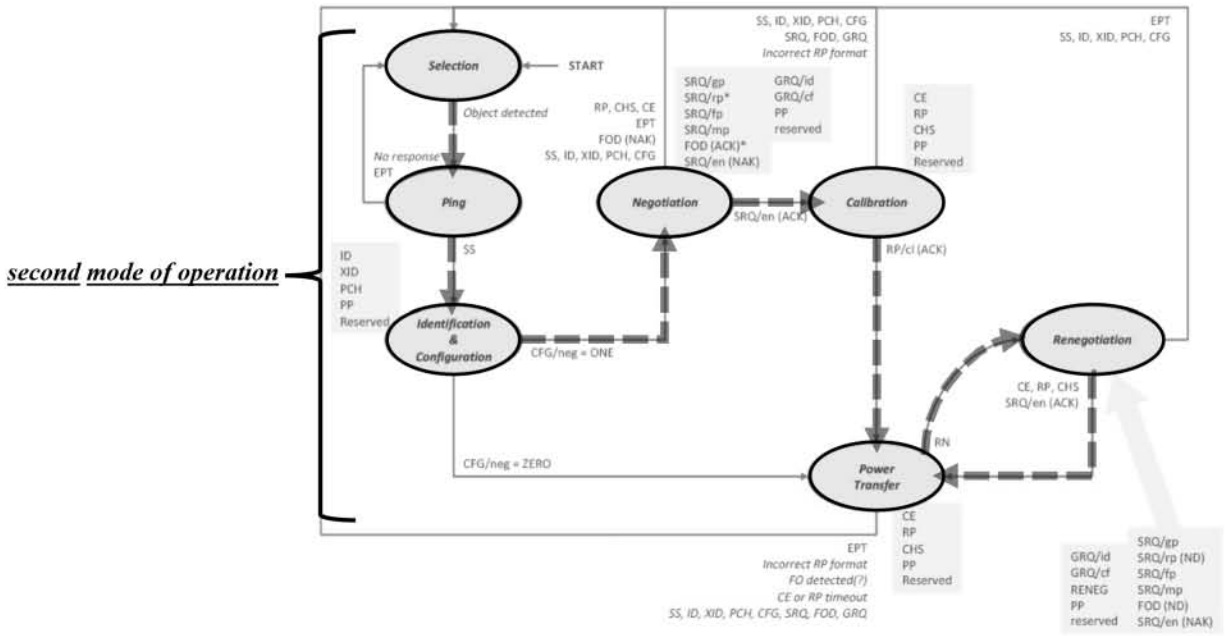
selection, ping, identification & configuration, and *power transfer*. Qi, 44–45. In the *selection* phase, "the Power Transmitter . . . monitors the Interface Surface for the placement and removal of objects" and "proceed[s] to the *ping* phase after detecting the placement of an object." Qi, 45, 50. In the *ping* phase, the Power Transmitter "appl[ies] a Power Signal" and attempts to "detect the start of a Packet" communicated from the Power Receiver within a specified time period. Qi, 51. The Power Receiver transmits a "Signal Strength Packet" to the Power Transmitter and will proceed to the *identification & configuration* phase, assuming the Power Transmitter "correctly receives" the "Signal Strength Packet." Qi, 51 73. In the "identification & configuration" phase, the Power Receiver transmits packets, including, *inter alia*, "an Identification Packet" and a "Configuration Packet" that both indicate which communication protocol is being used. Qi, 73. After transmitting a configuration packet, the Power Receiver "proceed[s] to the *power transfer* phase." Qi, 74. In the "power transfer" phase, the Power Receiver "acquires near field inductive power" of "up to about 5W" via the Secondary Coil from the Power Transmitter. Qi, 9, 11, 13–14, 46.



Qi, 85. Baker ¶ 74.

In the Extended Power Profile, the communication protocol uses bi-directional messaging to send messages between the Power Receiver and Power Transmitter using FSK modulation. Qi, 26, 29, 44, 106. The Extended Power Profile comprises the same four phases of the Baseline Power

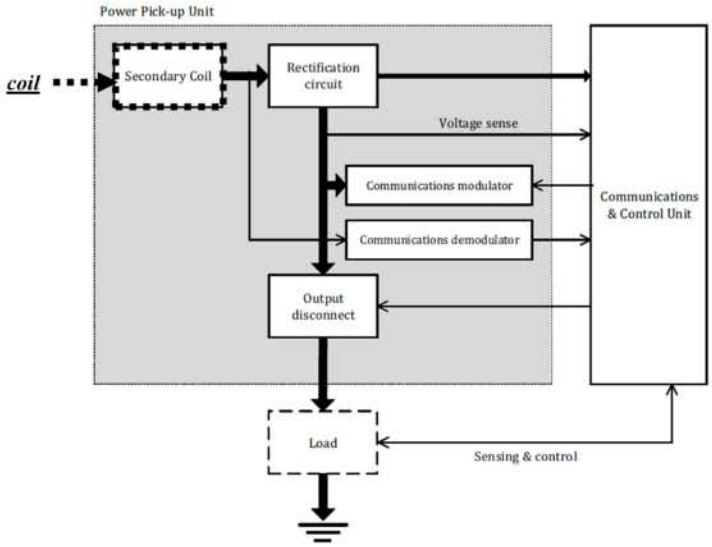
Profile, whereby communications are sent only from the Power Receiver to the Power Transmitter, as well as three additional phases that provide for communications sent from the Power Transmitter to the Power Receiver: *negotiation*, *calibration*, and *renegotiation*. Qi, 44–49, 85. In the *negotiation* phase, the Power Receiver "send[s] a series of Packets" to the Power Transmitter "that contain requests to update the Power Transfer Contract." Qi, 76. The Power Transmitter then "send[s]" either "a Response, which indicates whether the Power Transmitter grants the request, denies the request, or does not recognize the request" or "a data packet, which contains the requested information." Qi, 76. In the *calibration* phase, the Power Receiver "sends information" to the Power Transmitter, including Received Power Packets, which are used "to improve its power loss method for Foreign Object Detection." Qi, 80. The Power Transmitter then "send[s] an ACK Response" or "NAK Response" depending on whether the "Received Power Value" in the packet "satisfies the Power Transmitter." Qi, 61. Upon sending and receiving the ACK Response, the Power Receiver and transmitter "proceed to the power transfer phase." Qi, 61, 80. Lastly, the "renegotiation phase" contemplates the Power Transmitter "mak[ing] adjustments" during the power transfer phase, such as "reduc[ing] [the Power Receiver's] power consumption" if the Power Transmitter "determine[s] that a Foreign Object has entered the magnetic field." Qi, 69, 83–84.



Qi, 85. Baker ¶ 75.

2. Claim 15

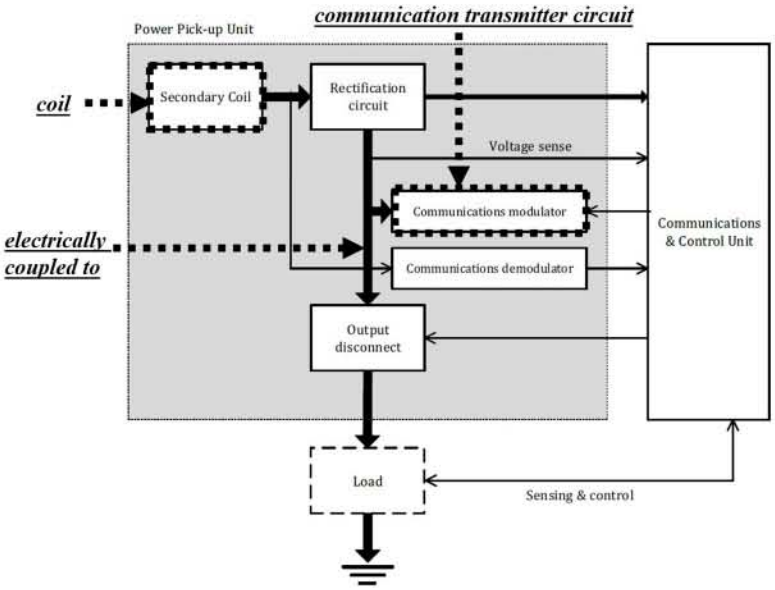
'777 Patent Claim 15	**The Qi Wireless Power Transfer System Power Class 0 Specification, Parts 1 and 2: Interface Definitions, v.1.2.3 (Feb. 2017) ("Qi") alone, and optionally in view of U.S. Patent App. Pub. No. 2016/0336785 ("Gao")**
[15.pre] An electronic device capable of receiving power inductively, the electronic device comprising:	**To the extent the preamble is limiting, Qi discloses *an electronic device*** (*e.g.*, a "Mobile Device" having a "Power Receiver") ***capable of receiving power inductively*** (*e.g.*, capable of "acquir[ing] near field inductive power"). ***E.g.*, Qi:** **Qi** discloses a wireless power transfer system that allows for "contactless power transfer from a Base Station to a Mobile Device that is based on near-field magnetic induction between coils." Qi, 9. The Base Station is a "device that is able to provide near field inductive power" and includes a "Power Transmitter [PTx]" that "generates near field inductive power and controls its transfer to a Power Receiver." Qi, 11, 13. The Mobile Device "consume[s] near field inductive power" and includes a "Power Receiver [PRx]" that "acquires near field inductive power and controls its availability at its output" to, e.g., "[c]harg[e] a connected battery." Qi, 12–13, 30. Baker ¶¶ 76–78. • **9:** "***A method of contactless power transfer from a Base Station to a Mobile Device that is based on nearfield magnetic induction between coils***." • **11:** "***Base Station*** A device that is able to provide near field inductive power . . . ." • **12:** "***Mobile Device*** A device that is able to consume near field inductive power . . . ." • **13:** "***Power Receiver*** The subsystem of a Mobile Device that ***acquires near field inductive power*** and controls its availability at its output." • **13:** "***Power Transmitter*** The subsystem of a Base Station that ***generates near field inductive power and controls its transfer to a Power Receiver***." • **30:** "A ***Power Receiver shall be able to function meaningfully*** if the Power Transmitter restrictions limit the output of power from the Power Receiver to 5 W. ***Meaningful functionality includes: . . . Charging a connected battery*** at a rate that is lower than intended."
[15.a] an inductive charging receiver coil;	**Qi discloses *an inductive charging receiver coil*** (*e.g.*, "Secondary Coil").

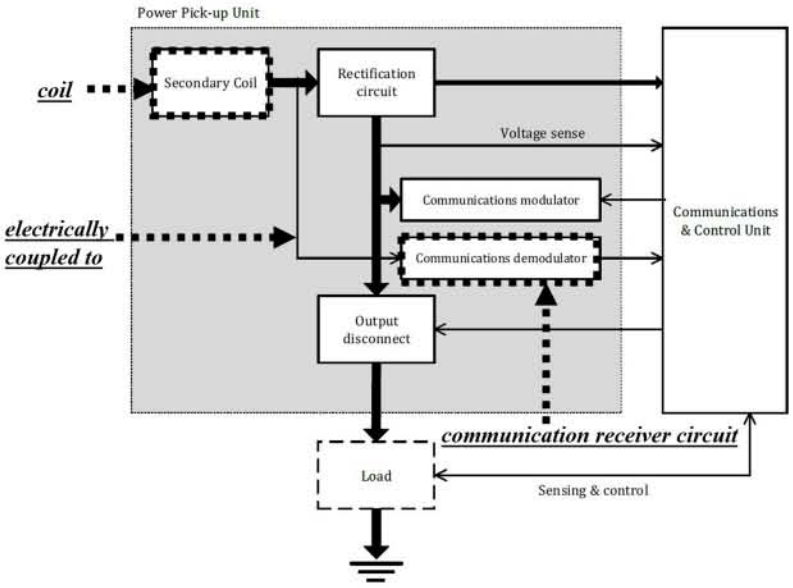
	E.g.*, Qi:** *See* [15.pre]. **Qi** further discloses a "Secondary Coil," which is a "component of a Power Receiver that converts magnetic flux to electromotive force" through induction to, e.g., "[c]harg[e] a connected battery." Qi, 14, 30. The "Secondary Coil" receives "power" from a "Primary Coil" in the Power Transmitter through "magnetic induction." Qi, 9, 13. Baker ¶¶ 79–82. • **26 (Fig. 5):**  • **9:** "A method of ***contactless power transfer from a Base Station to a Mobile Device that is ***based on nearfield magnetic induction between coils***." • **13:** "***Primary Coil A component of a Power Transmitter*** that converts electric current to magnetic flux." • **14:** "***Secondary Coil The component of a Power Receiver that converts magnetic flux to electromotive force***." • **30:** "A ***Power Receiver shall be able to function meaningfully*** if the Power Transmitter restrictions limit the output of power from the Power Receiver to 5 W. ***Meaningful functionality includes: . . . Charging a connected battery*** at a rate that is lower than intended."
[15.b] a communication transmitter circuit electrically coupled to the inductive charging receiver coil for	**Qi discloses *a communication transmitter circuit*** (*e.g.*, a "communications modulator") ***electrically coupled to the inductive charging receiver coil*** (*e.g.*, electrically coupled to the "Secondary Coil") ***for communicating through the coil*** (*e.g.*, "Power Receiver communicates to the Power Transmitter using

communicating through the coil;	backscatter modulation" through the "Secondary Coil"). ***E.g.*, Qi:** *See* [15.a]. **Qi** further discloses that the Power Receiver consists of a "Power Pick-up Unit" that includes, *inter alia*, a "communications modulator" to communicate with the Power Transmitter by "modulat[ing] the Primary Cell current and Primary Cell voltage"[10] of the Power Transmitter's coil. Qi, 25, 29. For example, the Power Receiver communicates with the Power Transmitter "using backscatter modulation" through the "Secondary Coil" by "modulating the amount of power that [the Power Receiver] draws" from the Power Transmitter. Qi, 86. The Power Transmitter "detects this as a modulation of the current through and/or voltage across [its] Primary Cell" as a form of "amplitude modulat[ion]" such that the Power Receiver uses its coil to communicate with the Power Transmitter. Qi, 86. Baker ¶¶ 83–87. As shown in Figure 5 below, the communications modulator is electrically coupled to the "Secondary Coil" through the rectification circuit in order to use it for backscatter modulation. Qi, 14, 26.[11] Baker ¶ 87. • **14:** "***Secondary Coil The component of a Power Receiver that converts magnetic flux to electromotive force***." • **25:** "A ***communications modulator*** (see Section 3.1.4, Communications modulator). On the DC side of the Power Receiver, the communications modulator typically consists of a resistor in series with a switch . . . ." • **25:** "Figure 5. Functional block diagram for an Extended Power Profile Power Receiver. The presence of a communications demodulator is the only difference with

[10] A "Primary Cell" is defined as a "single Primary Coil . . . used to provide a sufficiently high magnetic flux through the Active Area" to "provid[e] power to the Mobile Device." Qi, 11, 13.

[11] This is consistent with the '777 Patent, which shows the "Communication & Control" element electrically coupled to the receiver's "Coil" through the "Rectifier / Filter." The "Communication & Control" element includes a "receiver MCU" that "communicates back to the charger by modulating the receiver load by rapidly closing and opening a switch in series with a modulation load at a pre-determined speed and coding pattern." '777 Patent, 14:9–13.

	the functional block diagram of a Baseline Power Profile Power Receiver." • **26 (Fig. 5):**  • **29:** "***The Power Receiver shall have the means to modulate the Primary Cell current and Primary Cell voltage as defined in Section 5.3.2.1***, *Modulation scheme*. This version of the Specification leaves the specific loading method as a design choice to the Power Receiver. Typical methods include modulation of a resistive load on the DC side of the Power Receiver and modulation of a capacitive load on the AC side of the Power Receiver." • **86:** "***The Power Receiver communicates to the Power Transmitter using backscatter modulation***. For this purpose, ***the Power Receiver modulates the amount of power that it draws from the Power Signal. The Power Transmitter detects this as a modulation of the current through and/or voltage across the Primary Cell***. In other words, the Power Receiver and Power Transmitter use an amplitude modulated Power Signal to provide a Power Receiver to Power Transmitter communications channel."
[15.c] a communication receiver circuit electrically coupled to the inductive charging receiver coil for communicating through the coil; and	**Qi discloses *a communication receiver circuit*** (*e.g.*, a "communications demodulator") ***electrically coupled to the inductive charging receiver coil*** (*e.g.*, electrically coupled to the "Secondary Coil") ***for communicating through the coil*** (*e.g.*, receives "data" from the Power Transmitter by "Frequency Shift Keying" through the "Secondary Coil"). ***E.g.*, Qi:**

	See [15.b]. **Qi** further discloses that the "Power Pick-up Unit" of the Power Receiver includes, *inter alia*, a "communications demodulator" to receive and demodulate "data" communications from the Power Transmitter using Frequency Shift Keying, whereby the "Power Transmitter modulates the Operating Frequency of the Power Signal." Qi, 25–26, 29, 106, Fig. 5. Baker ¶¶ 88–92. As shown in Figure 5 below, the communications demodulator is electrically coupled to the "Secondary Coil," as shown by the arrow extending from the "Secondary Coil" to the "[c]ommunications demodulator" element.[12] Baker ¶ 92. • **25–26:** "Figure 5 illustrates an example of a functional block diagram for an Extended Power Profile Power Receiver. ***The communications demodulator enables the communication of data from the Power Transmitter to an Extended Power Profile Power Receiver.*** The presence of a communications demodulator is the only difference with the functional block diagram of a Baseline Power Profile Power Receiver." • **26 (Fig. 5):** 

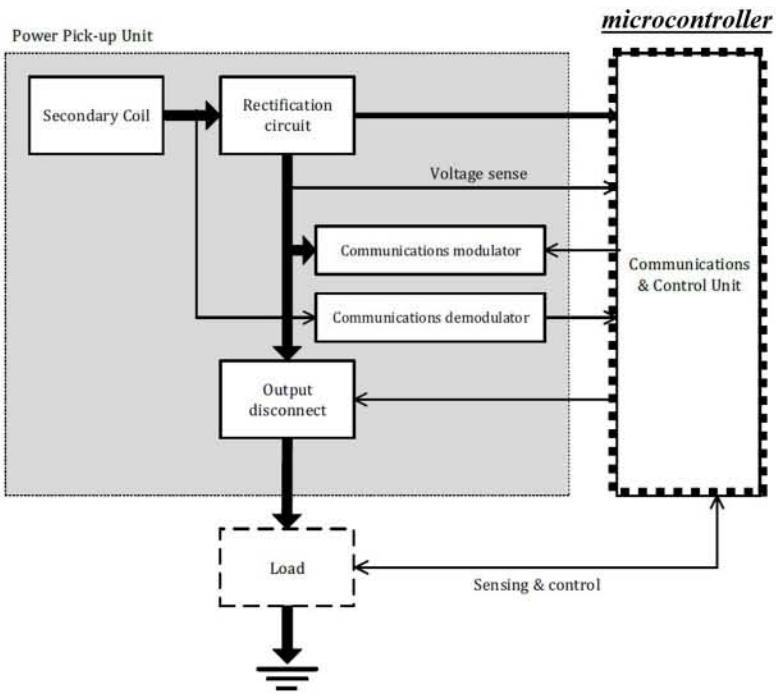
[12] This is consistent with the '777 Patent, which shows the "Communication & Control" element electrically coupled to the receiver's "Coil" through the "Rectifier / Filter." The "Communication & Control" element includes an MCU that "monitor[s] communication from the charger (in case of bi-directional communication)." '777 Patent, 17:23–27.

	• **29:** "For the Extended Power Profile, the ***Power Receiver shall have the means to demodulate frequency-shift keying (FSK) data from the Power Signal frequency*** as defined in Section 5.3.2.1 . . . ." • **106:** "***The Power Transmitter communicates to the Power Receiver using Frequency Shift Keying, in which the Power Transmitter modulates the Operating Frequency of the Power Signal***." • **106:** "The ***Power Transmitter shall switch its Operating Frequency between the Operating Frequency fop in the unmodulated state and the Operating Frequency fmod in the modulated state***. The difference between these two frequencies is characterized by two parameters: *Polarity.* This parameter determines whether the difference between $f$mod and $f$op is positive or negative. . . . *Depth.* This parameter determines the magnitude of the difference between $f$op and $f$mod."
[15.d] a microcontroller, wherein the microcontroller is configured for:	**Qi discloses *a microcontroller*** (*e.g.*, "Communications and Control Unit"). ***E.g.*, Qi:** **Qi** discloses a "Communications and Control Unit" that is "the digital logic part of the Power Receiver" to "control[] the power transfer" and "execute[] the relevant power control algorithms and protocols, drive[] the communications modulator, control[] the output disconnect switch, and monitor[] several sensing circuits in both the Power Pick-up Unit and the load." Qi, 11, 25. Indeed, using a microcontroller to implement inductive charging protocols was well-known in the art such that a POSITA would have understood that the communications and control unit discloses or at least renders obvious using a microcontroller.[13] Baker ¶¶ 93–96. **Qi's** Communications and Control Unit discloses a "microcontroller" even under the Examiners' claim construction

[13] *See, e.g.*, Ex. 1007 at 15–16, 21 ("[A] 32-bit ARM® Cortex®-M0 processor [] manage[s] all the digital control required to comply with the WPC" communication protocol); Gao [0017] (disclosing a "a micro-controller unit (MCU)" that functions in "a power receiver mode," and processes "an ASK-modulated power signal" (amplitude-shift keying) or "an FSK-modulated power signal" (frequency-shift keying)). Baker ¶ 95.

	in the '558 Reexam of a "special-purpose, single-chip computer designed and built to handle a particular, narrowly defined task. In addition to the central processing unit (CPU), a microcontroller usually contains its own memory, input/output channels (ports), and timers," as discussed in Section III.B. Ex. 1003 at 1687. The Communications and Control Unit has the special purpose of "control[ling] the power transfer" in the Power Receiver and thus handles a particular, narrowly defined task. Qi, 11, 25. A POSITA would have understood, or at least found it obvious, that the "digital logic" of the Communications and Control Unit comprises a single-chip computer designed for this purpose and contains memory, input/output channels (ports), and timers.[14] Baker ¶ 96. • **11:** "***Communications and Control Unit*** The functional part of a ***Power Transmitter or Power Receiver that controls the power transfer***." • **25–26:** "***The Communications and Control Unit . . . comprises the digital logic part of the Power Receiver. This unit executes the relevant power control algorithms and protocols***, drives the communications modulator, controls the output disconnect switch, and monitors several sensing circuits in both the Power Pick-up Unit and the load . . . ." • **26 (Fig. 5):**

[14] *See, e.g.*, Gao, [0089] ("FIG. 8 shows . . . an MCU 840 that implements the FSK demodulator circuit 160 and the controller 140 of FIG. 1."), [0090] ("The MCU 840 includes a timer 850, a controller 860, and a memory 870 along with counters, general-purpose IO, UARTs, ADCs, and other supporting functions and peripherals (not illustrated)."); *see also* Ex. 1016, Abstract, [0044]–[0045], [0053], Fig. 1 (disclosing a "single chip microcontroller unit" with "digital logic circuitry 516 within the MCU" comprising a "processing core" with "memory," a "port," and "timers"); Ex. 1017, [0009] ("micro-controller (single chip computer consisting of a: central processor unit (CPU), plus integrated, on-chip, auxiliary, input/output (I/O) bus circuitry, plus ancillary interrupt and timing and memory circuits, plus a small amount of on-chip electrically erasable programmable read only memory (EEPROM) for computer program store, plus a small amount of on-chip static random access memory (SRAM) for temporary working data store.").

	
[15.d.i] operating in a first mode of operation using a first protocol, wherein the first protocol is an inductive charging communication-and-control protocol that comprises uni-directional messaging, wherein the first mode of operation comprises:	**Qi discloses the microcontroller** (*see* [15.d]) **is configured for *operating in a first mode of operation using a first protocol*** (*e.g.*, mode of operation where the "Communications and Control Unit . . . executes the relevant power control algorithms and protocols" for the "Baseline Power Profile"), ***wherein the first protocol is an inductive charging communication-and-control protocol*** (*e.g.*, "protocol[]" for "communicat[ing]" "data" and controlling the Power Receiver and Power Transmitter to "[c]harg[e] a connected battery" of the "Mobile Device" through "magnetic induction") ***that comprises uni-directional messaging*** (*e.g.*, "Packet[s]" sent from the Power Receiver to the Power Transmitter only). ***E.g.*, Qi:** *See* [15.pre]–[15.d]. **Qi** discloses that the Power Receiver's Communication and Control Unit "executes . . . power control algorithms and protocols" to "[c]harg[e] a connected battery" of the "Mobile Device" through "magnetic induction." Qi, 9, 24–25, 30. The Communication and Control Unit operates in two modes, namely the "Baseline Power Profile" and the "Extended Power Profile." Qi, 9, 44. Devices operate using the "Baseline Power Profile" to transfer "up to about 5W" and the "Extended Power Profile" to transfer "up to about 15W." Qi, 9. In a first mode of operation, power is transferred via "magnetic induction" from the Power Transmitter to "[c]harg[e] a . . . battery" connected to the Power Receiver using the "protocol" for the "Baseline Power Profile." Qi, 9, 24–25, 30. As discussed in [15.b]–[15.c], the Power

	Receiver and Power Transmitter communicate data such that a POSITA would have understood and at least found it obvious that the "power control algorithms and protocols" for the Baseline Power Profile disclose an inductive charging communication-and-control protocol. Baker ¶¶ 97–109. The Baseline Power Profile uses uni-directional messaging to send messages from the Power Receiver to the Power Transmitter "using backscatter modulation," as discussed in [15.b].[15] The Baseline Power Profile "comprises four phases . . . , namely *selection, ping, identification & configuration,* and *power transfer*" during which only the Power Receiver communicates messages to the Power Transmitter. Qi, 44–45. Baker ¶ 101. During the *selection* phase, no messages are sent between the Power Transmitter and Power Receiver. In the *selection* phase, "the Power Transmitter . . . monitors the Interface Surface for the placement and removal of objects" and "proceed[s] to the *ping* phase after detecting the placement of an object." Qi, 45, 50. The Power Receiver enters this phase "[a]s soon as the Power Transmitter applies a Power Signal." Qi, 72. If the Power Receiver detects that the "rectified voltage" generated from the power signal is "sufficiently high," it will enter the *ping* phase and immediately send a "first Packet" to the Power Transmitter. Qi, 72. Baker ¶ 102. In the *ping* phase, messages are sent only from the Power Receiver to the Power Transmitter such that the messaging is uni-directional. In this phase, the Power Transmitter "appl[ies] a Power Signal" and attempts to "detect the start of a Packet" communicated from the Power Receiver within a specified time period. Qi, 51. The Power Receiver transmits either a "Signal Strength Packet or an End Power Transfer Packet as its first packet . . . immediately upon entering the *ping* phase." Qi, 73. After transmitting a Signal Strength Packet, the Power Receiver proceeds to the *identification & configuration* phase, and the Power Transmitter will proceed to this phase if the "Signal Strength Packet" is "correctly receive[d]." Qi, 51, 73. If the Power Receiver sends an End Power Transfer Packet, the Power Receiver remains in the *ping* phase and sends additional End Power Transfer Packets, and the Power Transmitter reverts to the *selection* phase. Qi, 51, 73. Baker ¶ 103. In the *identification & configuration* phase, the Power Transmitter "identif[ies] the Power Receiver and collect[s] configuration

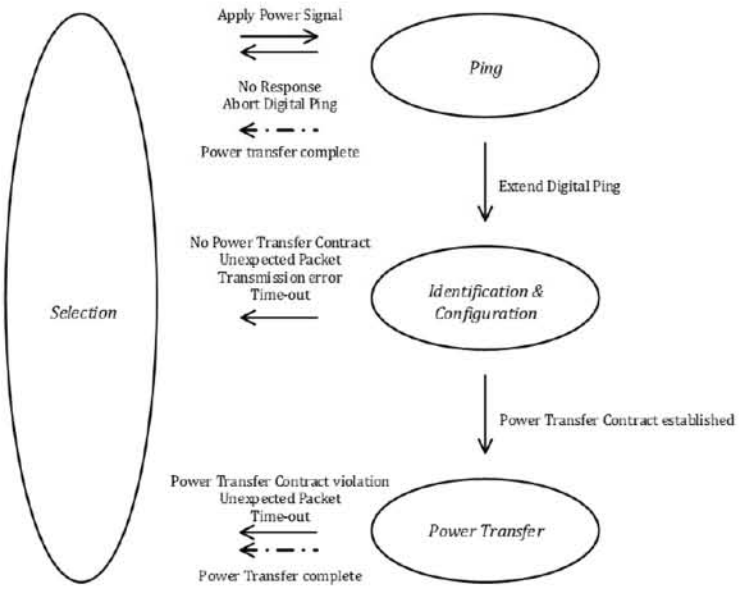
[15] This is consistent with the '777 Patent, which discloses "a uni-directional communication (from the receiver to the charger) is described." '777 Patent, 14:52–58.

	information," such as the "maximum amount of power that the Power Receiver intends to provide at its output." Qi, 46, 53. The Power Receiver transmits a sequence of packets, including, *inter alia*, "an Identification Packet" and a "Configuration Packet." Qi, 73. After transmitting a configuration packet, the Power Receiver "proceed[s] to the *power transfer* phase." Qi, 74. If the Power Transmitter "correctly receive[s] all Packets in the sequence," it "creates a Power Transfer Contract" and "proceed[s] to the *power transfer* phase." Qi, 54. Thus, during this phase, the communication is uni-directional from Power Receiver to Power Transmitter. Baker ¶ 104. In the *power transfer* phase, the Power Transmitter "provides power" and "controls the power transfer to the Power Receiver" by "adjusting its Primary Cell current in response to control data that it receives from the Power Receiver." Qi, 46, 63. The Power Receiver "controls the power transfer from the Power Transmitter, by means of control data that it transmits to the latter," including by transmitting "Received Power Packet[s]" and "Control Error Packet[s]" to the Power Transmitter to increase or decrease the "Primary Cell current." Qi, 80. The system leaves the *power transfer* phase if there is a violation of the Power Transfer Contract or upon "request of the Power Receiver," such as by sending an "End Power Transfer Packet." Qi, 46, 80–81. Baker ¶ 105. As discussed in Section III.B, the Board construed the terms "uni-directional" and "bi-directional" such that "those terms are mutually exclusive types of messaging, i.e., that unidirectional messaging is not just merely one side of bidirectional messaging." IPR2023-01102, Pap. 11, at *14–15 (P.T.A.B. Jan. 10, 2024) (Ex. 1009). **Qi** discloses uni-directional messaging under this construction because the messages sent in the Baseline Power Profile are independent from, and therefore not a subset of, the messages sent for the Extended Power Profile discussed below in [15.d.ii]–[15.d.ii.3]. Baker ¶ 106. As discussed in Section III.B, the Examiners in the '558 Reexam construed the terms "first mode of operation/first protocol" and "inductive charging communication-and-control protocol" as "a set of rules or procedures to allow devices to charge and communicate using induction." Ex. 1003 at 1690–91. As discussed in [15.d.i], **Qi** defines the Baseline Power Profile communication protocol that is used to charge a battery connected to the Power Receiver, including the various rules and procedures for doing so through magnetic induction. Qi, 9, 24–25, 30, 44–45. Thus, **Qi** satisfies the Examiners' construction. Baker ¶ 107. As discussed in Section III.B, Patent Owner proposed

	constructing "inductive charging communication-and-control protocol" to mean "complete set of communication and control rules and procedures to provide persistent inductive charging, including a setup phase and an output power delivery phase to charge a device." Ex. 1003 at 1758. **Qi** discloses this limitation under this construction because **Qi** discloses that the communication protocol for the Baseline Power Profile comprises a complete set of communication and control rules and procedures to provide persistent inductive charging, such that inductive power is received in the Baseline Power Profile mode of operation (as discussed in [15.d.ii.2]). This mode of operation includes setup phases and output power delivery phases to charge a battery connected to the Power Receiver. *See* [15.d.i]–[15.d.i.2]. Baker ¶ 108. To the extent Patent Owner argues **Qi** does not disclose this limitation, Patent Owner argued in the district court litigation that this same functionality meets the limitation because it is allegedly practiced by Samsung's products. For example, Patent Owner alleged Samsung's "S22 Ultra operates as an inductive power receiver using the WPC BPP communication and control protocol in which the S22 Ultra sends uni-directional communications to the base system" such that **Qi's** disclosure of a Baseline Power Profile mode of operation using an inductive charging communication-and-control protocol comprising uni-directional messaging as discussed above meets the limitation pursuant to Patent Owner's allegations. Ex. 1008 ("Complaint") ¶ 304. Baker ¶ 109. • **9:** "***A Baseline Power Profile supporting transfer of up to about 5 W and an Extended Power Profile supporting transfer of up to about 15 W of power using an appropriate Secondary Coil*** (having a typical outer dimension of around 40 mm)." • **9:** "***A simple communications protocol enabling the Mobile Device to take full control of the power transfer***." • **11:** "Active Area The part of the Interface Surface of a Base Station or Mobile Device through which a ***sufficiently high magnetic flux penetrates when the Base Station is providing power to the Mobile Device***." • **24–25:** "The ***Communications and Control Unit . . . executes the relevant power control algorithms and protocols***, drives the communications modulator, controls the output disconnect switch, and monitors several sensing circuits in both the Power Pick-up Unit and the load."

	• **30:** "***A Power Receiver shall be able to function meaningfully if the Power Transmitter restrictions limit the output of power from the Power Receiver to 5 W***. Meaningful functionality includes: ***Charging a connected battery at a rate that is lower than intended***. Providing a clear and unambiguous indication to the user that the Power Receiver cannot draw the amount of power from the Power Transmitter that it needs to function properly. See Section 13.2, User interaction with a Mobile Device." • **44:** "As noted in Section 1.4.2, this Power Class 0 Specification includes both the ***Baseline Power Profile (power transfers up to 5 W) and the Extended Power Profile (power transfers greater than 5 W)***. . . . This Specification also describes ***FOD extensions, which use bidirectional communications and negotiation between the Power Transmitter (PTx) and Power Receiver (PRx) to enhance the options for Foreign Object Detection***. . . . Baseline Power Profile Power Transmitters and Power Receivers may support the FOD extensions. Extended Power Profile Power Transmitters and Power Receivers shall support the FOD extensions. . . . From a system control perspective, power transfer from a ***Power Transmitter to a Power Receiver comprises four phases in the Baseline Power Profile, namely selection, ping, identification & configuration, and power transfer***. . . . By definition, if the Power Transmitter is not applying a Power Signal, the system is in the selection phase. This means that a transition from any of the other phases to the selection phase involves the Power Transmitter removing the Power Signal." • **45 (Fig. 16):**

Figure 16. Power transfer phases—Baseline Power Profile



- **45–46:** "***selection*** In this phase, ***the Power Transmitter typically monitors the Interface Surface for the placement and removal of objects.*** The Power Transmitter may use a variety of methods for this purpose . . . .

  ping In this phase, ***the Power Transmitter executes a Digital Ping, and listens for a response.*** If the Power Transmitter discovers a Power Receiver, the Power Transmitter may extend the Digital Ping, i.e. maintain the Power Signal at the level of the Digital Ping. . . .

  identification & configuration In this phase, ***the Power Transmitter identifies the selected Power Receiver, and obtains configuration information such as the maximum amount of power that the Power Receiver intends to provide at its output.*** The Power Transmitter uses this information to create a Power Transfer Contract. This Power Transfer Contract contains limits for several parameters that characterize the power transfer in the power transfer phase . . . .

  power transfer In this phase, ***the Power Transmitter continues to provide power to the Power Receiver, adjusting its Primary Cell current in response to control data that it receives from the Power Receiver.*** Throughout this phase, the Power Transmitter monitors the parameters that are contained in the Power Transfer Contract. A violation of any of the stated limits on any of those parameters causes the Power Transmitter to abort the power transfer, and returns the system to the selection phase. Finally, the system may also leave the power

	transfer phase on request of the Power Receiver. Section 5.1.2 defines the system control protocols in the ping, identification & configuration, and power transfer phases from a Power Transmitter perspective . . . . ***Throughout the power transfer phase, the Power Transmitter and Power Receiver control the amount of power that is transferred.*** Figure 17 illustrates a schematic diagram of the power transfer control loop, which basically operates as follows: the Power Receiver selects a desired Control Point: a desired output current and/or voltage, a temperature measured somewhere in the Mobile Device, etc. In addition, the Power Receiver determines its actual Control Point. The Power Receiver may use any approach to determine a Control Point. Moreover, the Power Receiver may change this approach at any time during the power transfer phase . . . ." • **50:** "***In the selection phase the Power Transmitter determines if it will proceed to the ping phase after detecting the placement of an object.*** This Specification does not define how the Power Transmitter makes this determination . . . ." • **51:** "***In the ping phase, the Power Transmitter shall execute a Digital Ping.*** This Digital Ping shall proceed as follows, with conditions appearing earlier in this list taking precedence over conditions appearing later. . . ***If the Power Transmitter does not detect the start of a Packet in the time window tping*** after the Primary Cell current amplitude reaches 50% of the stable level, t***he Power Transmitter shall remove the Power Signal*** (i.e. reduce the Primary Cell current to zero) within *t*terminate. See Figure 19(a) . . . . ***If the Power Transmitter correctly receives a Signal Strength Packet, the Power Transmitter may proceed to the identification & configuration phase*** of the power transfer, maintaining the Power Signal at the Operating Point as defined for the particular Power Transmitter design. See Figure 19(b) . . . ***If the Power Transmitter does not proceed to the identification & configuration phase, the Power Transmitter shall revert to the selection phase***." • **53:** "***In the identification & configuration phase, the Power Transmitter shall identify the Power Receiver and collect configuration information.*** For this purpose, the Power Transmitter shall correctly receive the following

	sequence of Packets in the order shown and without changing its Operating Point." • **54:** "***If the Power Transmitter has correctly received all Packets in the sequence*** (see Figure 20(d)), ***the Power Transmitter shall create a Power Transfer Contract***. . . . FOD extensions not supported: If the Power Transmitter ***has created a Power Transfer Contract***, the Power Transmitter ***may proceed to the power transfer phase*** . . . ." • **63:** "***In the power transfer phase, the Power Transmitter controls the power transfer to the Power Receiver, in response to control data that it receives from the latter. For this purpose, the Power Transmitter shall receive zero or more of the following Packets:*** ***Control Error Packet.*** ***Received Power Packet.*** Charge Status Packet. ***End Power Transfer Packet.*** Renegotiate Packet. Any Proprietary Packet (as listed in Table 26) . . . ." • **72:** "***As soon as the Power Transmitter applies a Power Signal, the Power Receiver shall enter the selection phase*** if the Power Receiver is not in the selection phase already . . . ." • **73:** "If the Power Receiver responds to the Digital Ping, ***the Power Receiver shall transmit either a Signal Strength Packet or an End Power Transfer Packet as its first Packet*** . . . The Power Receiver shall transmit this first Packet immediately upon entering the *ping* phase. . . . After the Power Receiver has transmitted a Signal Strength Packet, ***the Power Receiver shall proceed to the identification & configuration phase. After the Power Receiver has transmitted an End Power Transfer Packet, it shall remain in the ping phase. In that case, the Power Receiver should transmit additional End Power Transfer Packets***." • **73:** "***In the identification & configuration phase, the Power Receiver shall transmit the following sequence of Packets:***

	If the Power Receiver enters the identification & configuration phase from the ping phase, an Identification Packet. . . . ***A Configuration Packet.***" • **74:** "With respect to the above timing constraints, ***if the Power Receiver has entered the identification & configuration phase from the ping phase, the Packet directly preceding the Identification Packet is the Signal Strength Packet, which the Power Receiver has transmitted in the ping phase***. See Figure 29 and Table 17. FOD extensions not supported: The Power Receiver shall set the Neg bit in its Configuration packet to ZERO. It should also set the Polarity bit to ZERO and Depth field to 0x0. ***After the Power Receiver has transmitted a Configuration Packet, the Power Receiver shall proceed to the power transfer phase***." • **80:** "***In the power transfer phase, the Power Receiver controls the power transfer from the Power Transmitter, by means of control data that it transmits to the latter.*** For this purpose, the Power Receiver shall transmit zero or more of the following Packets: ***Control Error Packet.*** The Power Receiver shall set the Control Error Value to zero if the actual Control Point is equal to the desired Control Point. The Power Receiver shall set the Control Error Value to a negative value to request a decrease of the Primary Cell current. The Power Receiver shall set the Control Error Value to a positive value to request an increase of the Primary Cell current. See Sections 5.1.1, Overview (informative), and 5.1.2.6.1, Power transfer control. ***Received Power Packet.*** Charge Status Packet. ***End Power Transfer Packet.*** Any Proprietary Packet (as listed in Table 26)." • **81:** "Moreover, if the ***Power Receiver has transmitted an End Power Transfer Packet***, the Power Receiver shall

	remain in the power transfer phase until the Power Transmitter removes the Power Signal . . . ."
[15.d.i.1] sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol; and	**Qi discloses the first mode of operation** (*see* [15.d.i]) **comprises *sending, using the communication transmitter circuit*** (*e.g.*, "communications protocol" for the "Baseline Power Profile" involves sending via the "communications modulator"; *see* [15.b])**, *a first communication to an inductive charger*** (*e.g.*, an "Identification Packet" or "Configuration Packet" to the "Power Transmitter")**, *wherein the first communication identifies the first protocol*** (*e.g.*, the "Identification Packet" identifies the Power Receiver's "Baseline Power Profile" / the "Configuration Packet" has "Prop" "bit . . . set to ZERO" or "Neg" bit set to zero). ***E.g.*, Qi:** *See* [15.b], [15.d.i]. As discussed in [15.b] and [15.d.i], **Qi** discloses an *identification and configuration phase* whereby an "Identification Packet" or "Configuration Packet" is transmitted from the Power Receiver to the Power Transmitter via the communications modulator. **Qi** further discloses the Identification Packet includes a "Major Version" and a "Minor Version" that "identif[y] to which revision of this Specification the Power Receiver complies . . . according to the power profile of the Power Receiver" such as the "Baseline Power Profile." Qi, 98. A POSITA would have understood and at least found it obvious that the identification of the Baseline Power Profile discloses identifying the use of the communication protocol for inductive charging using the Baseline Power Profile. Baker ¶¶ 110–19. **Qi** further discloses the Configuration Packet includes a "Prop" bit that indicates the Power Transmitter should transfer power according to the Baseline Power Profile communication protocol (i.e., "this bit is set to ZERO") or the Extended Power Profile communication protocol (i.e., "this bit is set to ONE"). Qi, 97. A POSITA would have understood and at least found it obvious that the Configuration Packet identifies the use of the Baseline Power Profile communication protocol when the Prop bit is set to zero. Baker ¶ 114. **Qi** further discloses the Configuration Packet includes a "Neg" bit that is set to one if the Power Transmitter should "send an ACK Response . . . indicating to the Power Receiver that it is entering the *negotiation* phase" that is part of only the Extended Power Profile communication protocol, as discussed below in [15.d.ii]. Qi, 97. The Neg bit is otherwise set to zero. Qi, 97. A POSITA would have understood and at least found it obvious that the Configuration Packet identifies the use of the Baseline Power Profile communication protocol when the

	Neg bit is set to zero such that the *negotiation* phase is not entered and the Power Receiver and transmitter enter the *power transfer* phase. Baker ¶ 114. As discussed in Section III.B, the Examiners in the '558 Reexam construed "wherein the first communication identifies the first protocol" to mean "some form or data header that identifies the particular protocol being used in the communication." Ex. 1003 at 1691–1692. As discussed above in [15.d.i.1], **Qi** discloses the Identification and Configuration Packets that identify the protocol. Thus, these packets include "some form" that identifies the particular protocol being used such that **Qi** satisfies this construction. Baker ¶ 115. To the extent the Examiners' construction intended to require the identification of the protocol be in the header of a packet, this construction impermissibly narrows the claim's scope, as the limitation "communication [to identify] the first protocol" does not require the communication to identify the protocol in the header of a packet as opposed to another portion of the packet, such as the preamble, message, or checksum disclosed in **Qi**. Qi, 88–89. Further, the specification and file history do not support such a narrow construction, including through lexicography or disclaimer. The specification does not describe including an identification of the protocol in the header of a packet, as supported by the Examiners' finding that the '777 Patent specification does not teach the "Added Protocol Identifier Limitations" ([15.d.i.1], [15.d.ii.1]), as discussed in Section II.D.3. The file history also does not indicate the identification of the protocol is in the header of a packet, as discussed in Section III.D.1 (discussing that the claims substantially changed right before allowance to include this limitation). Thus, a construction requiring the identification of the protocol to be in the header of a packet would impermissibly narrow the claim scope. Baker ¶ 116. Even if the claim were to be construed to require the identification of the protocol be in the header of a packet, **Qi** would render obvious the limitation under this construction. **Qi** discloses a packet format that includes a "preamble, a header, a message, and a checksum," whereby the header "consists of a single byte that indicates the Packet type" and the message includes information related to that packet type. Qi, 88–91. The message portion of the Identification and Configuration Packets discussed above includes the identification of the protocol being used. However, a POSITA would have found it obvious to include this identification in the header of the packets, as this is merely a design choice, and it was well-known to include an identification of a protocol in the

	header of a packet.[16] Baker ¶ 117. To the extent Patent Owner argues **Qi** does not disclose this limitation, Patent Owner argued in the district court litigation that this same functionality meets the limitation because it is allegedly practiced by Samsung's products. For example, Patent Owner alleged Samsung's "S22 Ultra sends an ***Identification packet*** to the base system, such as, the WPC Major and Minor Rev. number, which, per WPC, identifies the S22 Ultra as a BPP compatible receiver (≤5 Watts) adhering to WPC 1.2 for this first protocol." Ex. 1008 ("Complaint") ¶ 306. Thus, **Qi's** Identification Packet disclosure discussed above meets the limitation pursuant to Patent Owner's allegations. Further, Patent Owner alleged "[t]he S22 Ultra sends further messages to the base system for ***Configuration, which messages include various configuration information to enable charging according to this first protocol, including maximum power level (5 Watts) associated with this first mode***, as illustrated below from the WPC version-1.2.4 specification." Ex. 1008 ("Complaint") ¶ 307. Thus, **Qi's** Configuration Packet disclosure discussed above meets the limitation pursuant to Patent Owner's allegations. Baker ¶ 118. To the extent that further disclosure of this element is required, **Qi** renders obvious this limitation under both Patent Owner's and Requester's interpretations from the district court litigation. Under Patent Owner's interpretation, the claimed electronic device capable of receiving power inductively (the receiver) need only be "configured for" operating in both claimed modes—a separate showing of a single charger "that would cause the receiver to operate in both modes" is not required. *See* Ex. 1026 (Mojo's Surreply Opposing Samsung's Renewed Motion for Judgment as a Matter of Law of Noninfringement, *Mojo Mobility, Inc. v. Samsung Electronics Co.*, Civil Action No. 2:22-cv-00398-JRG-RSP, Dkt No. 387 (E.D. Tex. June 23, 2025)) at 5–6 ("Claim 15 specifies that the receiver can operate in two modes, not that a single charger exists that would cause the receiver to operate in both modes. . . . [B]ecause claim 15 is a receiver claim, infringement does not depend on the existence of a single hypothetical charger that would cause the receiver to use both of

[16] *See, e.g.*, Ex. 1020 at [0014] ("An aspect of computer-readable storage medium containing a set of instructions executable by a processor" wherein "[t]he instructions include . . . code for providing protocol ***translation between packets and physical frames transported over the wireless connection, each of the physical frames including a header identifying the protocol instance performing the translation for the physical frame***.").

	its modes."). Under Requester's interpretation, the claimed electronic device must be able to use both modes with a single inductive charger. *See* Ex. 1027 (Samsung's Renewed Motion for Judgment as a Matter of Law of Noninfringement, *Mojo Mobility, Inc. v. Samsung Electronics Co.*, Civil Action No. 2:22-cv-00398-JRG-RSP, Dkt. No. 381 (E.D. Tex. June 23, 2025) at 8. Nevertheless, **Qi** renders obvious such a device as it discloses the Power Transmitter receives a "Configuration Packet" and proceeds to either the power transfer phase directly thereafter if "the Neg bit . . . is set to ZERO," as part of the Baseline Power Profile mode of operation, or to the negotiation phase if "the Neg bit . . . is set to ONE," as part of the Extended Power Profile mode of operation. Qi, 54. A POSITA would have at least found obvious to use the same transmitter with the same receiver in both the Baseline Power Profile and Extended Power Profile modes of operation. For example, it would have been obvious to implement the Power Receiver such that it informs the Power Transmitter to enter the Baseline Power Profile mode of operation from the Extended Power Profile when, e.g., the temperature of the Power Receiver or the battery it is charging is too high.[17] Such an implementation would have advantageously decreased the power level of the inductive power transfer immediately to less than 5W instead of incrementally over several iterations. For example, **Qi** discloses that the Power Transmitter uses Control Error Packets sent by the Power Receiver to "determine a new Primary Cell current," but the Power Transmitter "has a short time window to control its actual Primary Cell current towards the new Primary Cell current" and wait for "additional control and status information" from the Power Receiver before, e.g., lowering the Primary Cell current when receiving another Control Error Packet indicating the power level of the transfer is too high. Qi, 46–47, Fig. 17. Thus, **Qi** renders obvious using the same charger for both modes of operation. Baker ¶ 119. • **9:** "***A simple communications protocol enabling the Mobile Device to take full control of the power transfer***." • **25:** "***A communications modulator (see Section 3.1.4, Communications modulator).*** On the DC side of the Power Receiver, the communications modulator typically

[17] *See, e.g.*, U.S. Patent App. Pub. No. 2016/0268833 ("**Lee**") (Ex. 1028), [0296] (device 800 "determines to change the charging power into the first charging power" that is "smaller than the second charging power" when device 800 "senses a temperature that is greater than or equal to a predetermined degree").

consists of a resistor in series with a switch. On the AC side of the Power Receiver, the communications modulator typically consists of a capacitor in series with a switch (not shown in Figure 4)."

- **73:** "In the identification & configuration phase, ***the Power Receiver shall transmit*** the following sequence of Packets:

  If the Power Receiver enters the identification & configuration phase from the ping phase, ***an Identification Packet***

  . . .

  A Configuration Packet . . . ."

- **88–89**: "The Power Receiver shall communicate to the Power Transmitter using Packets. As shown in Figure 38, a ***Packet*** consists of 4 parts, namely ***a preamble, a header, a message, and a checksum*** . . . . The ***header consists of a single byte that indicates the Packet type***."

- **96–97:** "Table 34 defines the format of the message contained in a Configuration Packet."

Table 34. Message in a Configuration Packet

	b_7	b_6	b_5	b_4	b_3	b_2	b_1	b_0
B_0	Power Class		Maximum Power Value					
B_1	Reserved							
B_2	Prop	Reserved			ZERO	Count		
B_3	Window Size					Window Offset		
B_4	Neg*	Polarity*	Depth*		Reserved			

* Applicable to the FOD extensions only. Without FOD extension support, these bits are Reserved.

. . .

Prop ***If this bit is set to ZERO, the Power Transmitter shall control the power transfer according to the method defined in Section 5.1.2.6.1, Power transfer control. If this bit is set to ONE, the Power Transmitter may control the power transfer according to a proprietary method instead of the method defined in Section 5.1.2.6.1***. However, if this bit is set to ONE, the Power Transmitter shall continue to ensure that the received Control Error Packets comply with the timings defined in Section 5.1.2.6.

. . .

Neg ***If this bit is set to ZERO, the Power Transmitter***

shall refrain from sending a Response. If this bit is set to ONE, the Power Transmitter shall send an ACK Response following the end of the Configuration Packet indicating to the Power Receiver that it is entering the negotiation phase. See Section 5.1.2.3, *Identification & configuration phase (PTx perspective)*.

Polarity A ZERO in this bit indicates to the Power Transmitter to use the default FSK polarity. A ONE in this bit indicates to the Power Transmitter to use a reversed FSK polarity. See Section 5.3.2.1, *Modulation scheme*, for details.

Depth The unsigned integer contained in this field selects the FSK modulation depth as defined in Section 5.3.2.1 . . . ."

- **98:** "Table 35 ***defines the format of the*** message contained in an ***Identification Packet***.

Table 35. Identification

	b7	b6	b5	b4	b3	b2	b1	b0
B0	Major Version				Minor Version			
B1	(MSB)	Manufacturer Code						
B2								(LSB)
B3	Ext	(MSB)	Basic Device Identifier					
⋮								
B6								(LSB)

Major Version. ***The combination of this field and the Minor Version field identifies to which revision of this Specification the Power Receiver complies***. The Major Version field shall contain the binary coded digit value 0x1.

Minor Version. The combination of this field and the Major Version field identifies to which minor revision of this Specification the Power Receiver complies. ***The Minor Version field shall be set according to the power profile of the Power Receiver***."

- **98 (Table 36):**

	Table 36. Minor Version field settings | PRx Power Profile | Minor Version Setting | Neg Bit | | --- | --- | --- | | Baseline Power Profile | 0x1 or 0x2 | ZERO | | Baseline Power Profile with FOD Extensions | 0x2 | ONE | | Extended Power Profile | 0x2 | ONE |
[15.d.i.2] receiving power using the inductive charging receiver coil;	**Qi discloses the first mode of operation** (*see* [15.d.i]) **comprises** ***receiving power using the inductive charging receiver coil*** (*e.g.*, "acquir[ing] near field inductive power" via the "Secondary Coil"). *See, e.g.*, Qi, 13–14. ***E.g.*, Qi:** *See* [15.pre]–[15.a], [15.d.i]. **Qi** further discloses that, during the *power transfer* phase of the Baseline Power Profile communication protocol, the power receiver "acquires near field inductive power" of "up to about 5W" via the Secondary Coil from the Power Transmitter. Qi, 9, 11, 13–14, 46. This is different from the Extended Power Profile communication protocol that supports power transfer of "up to about 15W," as discussed below in [15.d.ii.2]. Qi, 9, 11, 13–14, 46. Baker ¶¶ 120–23.
[15.d.ii] operating in a second mode of operation using a second protocol, wherein the second protocol is an inductive charging communication-and-control protocol that defines bi-directional messaging, wherein the second mode of operation comprises:	**Qi discloses the microcontroller** (*see* [15.d]) **is configured for** ***operating in a second mode of operation using a second protocol*** (*e.g.*, mode of operation where the "Communications and Control Unit . . . executes the relevant" "communication[] protocol" for the "Extended Power Profile"), ***wherein the second protocol is an inductive charging communication-and-control protocol*** (*e.g.*, "protocol[]" for "communicat[ing]" "data" and controlling the Power Receiver and Power Transmitter to "[c]harg[e] a connected battery" of the "Mobile Device" through "magnetic induction") ***that defines bi-directional messaging*** (*e.g.*, "bidirectional communications" of "Packet[s]" sent between the Power Receiver and Power Transmitter). *See, e.g.*, Qi, 9, 25, 30. ***E.g.*, Qi:** *See* [15.d], [15.d.i]. As discussed in [15.d] and [15.d.i], **Qi** discloses a Communications and Control Unit configured to execute the communication protocol for an Extended Power Profile to transfer more power than when operating using the communication protocol for the Baseline Power Profile. Qi, 9, 11, 25, 44. Baker ¶¶ 124–36. **Qi** further discloses that the Power Receiver's Communication and Control Unit "executes . . . power control algorithms and

	protocols" to "[c]harg[e] a connected battery" of the "Mobile Device" through "magnetic induction." Qi, 9, 24–25, 30. In a second mode of operation, power is transferred via "magnetic induction" from the Power Transmitter to "[c]harg[e] a . . . battery" connected to the Power Receiver using the "protocol" for the "Extended Power Profile." Qi, 9, 25, 30, 44. The protocol for the "Extended Power Profile" comprises the four phases involving uni-directional messaging from Power Receiver to Power Transmitter, as discussed in [15.d.i], and three additional phases, including *negotiation*, *calibration*, and *renegotiation*. Qi, 44–49, 85. The additional *negotiation*, *calibration*, and *renegotiation* phases for the Extended Power Profile communication protocol involve communications between the Power Transmitter and the Power Receiver such that the Extended Power Profile involves "bidirectional communications and negotiation between the Power Transmitter (PTx) and Power Receiver (PRx)." Qi, 44, 48–49. Because the Extended Power Profile communications protocol is used for communication and control of the inductive power transfer from the Power Transmitter to the Power Receiver, a POSITA would have understood and at least found it obvious that such a protocol is an inductive charging communication-and-control protocol. Baker ¶ 128. In the *negotiation* phase, the Power Receiver "send[s] a series of Packets" to the Power Transmitter "that contain requests to update the Power Transfer Contract" discussed in [15.d.i]. Qi, 76. In response to receiving each packet, the Power Transmitter "send[s]" to the Power Receiver either "a Response, which indicates whether the Power Transmitter grants the request, denies the request, or does not recognize the request" or "a data packet, which contains the requested information." Qi, 76. For example, the Power Receiver sends a "General Request Packet" to the Power Transmitter to request information, and the Power Transmitter responds with "a Packet containing the information that is requested by the Power Receiver." Qi, 60, 79. Baker ¶ 129. In the *calibration* phase, the Power Receiver "sends information" to the Power Transmitter, including Received Power Packets, which are used "to improve its power loss method for Foreign Object Detection." Qi, 80. Upon receipt of this information, the Power Transmitter "send[s] an ACK Response" or "NAK Response" depending on whether the "Received Power Value" in the packet "satisfies the Power Transmitter." Qi, 61. Upon sending and receiving the ACK Response, the Power Receiver and transmitter "proceed to the power transfer phase." Qi, 61, 80. Baker ¶ 130.

	In the *renegotiation* phase, the Power Receiver "make[s] adjustments to the Power Transfer Contract." Qi, 49. In this phase, the Power Receiver and Power Transmitter behave the same as in the *negotiation* phase with various exceptions that do not affect, e.g., a General Request Packet being sent to the Power Transmitter, which responds to the Power Receiver with the requested information. Qi, 69, 84. Baker ¶ 131. To the extent it is argued that communications must be sent while power is being transferred, the Power Transmitter sends, e.g., a "NAK Response" during the *power transfer* phase in the Extended Power Profile if, e.g., "[i]t has determined that a Foreign Object has entered the magnetic field," "[i]t cannot support the current power level because of an increase in ambient temperature," or "[i]t is operating close to or beyond its limits due to, for example, a low coupling condition." Qi 83. In response thereto, the Power Receiver "reduce[s] its power consumption," "transmit[s] an End Power Packet" to the power transmitter," or "involve[s] the user to resolve the condition." Qi 83. Baker ¶ 132. As discussed in [15.d.i] and Section III.B, the Examiners in the '558 Reexam construed the terms "second mode of operation/second protocol" and "inductive charging communication-and-control protocol" as "a set of rules or procedures to allow devices to charge and communicate using induction." As discussed in [15.d.ii], **Qi** defines the Extended Power Profile communication protocol that is used to charge a battery connected to the Power Receiver, including the various rules and procedures for doing so through magnetic induction. Qi, 9, 24–25, 30, 44–45. Thus, **Qi** satisfies the Examiners' construction. Baker ¶ 133. As discussed in Section III.B, Patent Owner proposed a construction that the term "inductive charging communication-and-control protocol" means "complete set of communication and control rules and procedures to provide persistent inductive charging, including a setup phase and an output power delivery phase to charge a device." Ex. 1003 at 1758. **Qi** discloses this limitation under this construction because **Qi** discloses the communication protocol for the Extended Power Profile comprises a complete set of communication and control rules and procedures to provide persistent inductive charging, such that inductive power is received in the Extended Power Profile mode of operation (as discussed in [15.d.ii.2]). This mode of operation includes setup phases and output power delivery phases to charge a battery connected to the Power Receiver. *See* [15.d.ii]–[15.d.ii.2]. Baker ¶ 134. As discussed in Section III.B, the Examiners in the '558 Reexam

	indicated that the recited first and second protocols can be the same (i.e., they can be the same or different), while Patent Owner argued the inductive charging communication-and-control protocols cannot be the same. Ex. 1003 at 1691; 1764. In the '558 Reexam, '6413 Partovi disclosed a single communication protocol involving a ping process (the first mode of operation using a protocol of uni-directional messaging) followed by a subsequent process to charge the receiving device (the second mode of operation using a protocol of bi-directional messaging). Ex. 1003 at 1859. Patent Owner argued that this was all part of the same protocol such that the use of two different protocols was not disclosed. Ex. 1003 at 1761, 1859. **Qi** discloses two inductive charging communication-and-control protocols, namely the Baseline Power Profile communication protocol and the Extended Power Profile communication protocol, whereby the Extended Power Profile communication protocol is not part of the same communication protocol as the Baseline Power Profile communication protocol and thus satisfies the Patent Owner's proposed construction. Baker ¶ 135. To the extent Patent Owner argues **Qi** does not disclose this limitation, Patent Owner argued in the district court litigation that this same functionality meets the limitation because it is allegedly practiced by Samsung's products. For example, Patent Owner alleged "Since the 5400 Duo is capable of delivering higher power levels according to Samsung Wireless Fast Charge, the ***5400 Duo responds with Acknowledge and Reserved messages*** sent by FSK modulation of the operating frequency, which messages the S22 Ultra receives." Ex. 1008 ("Complaint") ¶ 312. **Qi's** ACK Response disclosure discussed above meets the limitation pursuant to Patent Owner's allegations. Baker ¶ 136. • **9:** "***A method of contactless power transfer from a Base Station to a Mobile Device that is based on nearfield magnetic induction between coils***." • **44:** "As noted in Section 1.4.2, this Power Class 0 Specification includes both the ***Baseline Power Profile (power transfers up to 5 W) and the Extended Power Profile (power transfers greater than 5 W)***. While much of the information presented in this Specification applies to both power profiles, there are some differences. Those differences are identified in this specification as they occur. ***This Specification also describes FOD extensions, which use bidirectional communications and negotiation between the Power Transmitter (PTx) and Power Receiver (PRx)*** to enhance the options for Foreign Object

	Detection. Support for FOD extensions is optional in the Baseline Power Profile but mandatory in the Extended Power Profile: Baseline Power Profile Power Transmitters and Power Receivers may support the FOD extensions. ***Extended Power Profile Power Transmitters and Power Receivers shall support the FOD extensions.*** • **49:** "***Renegotiation phase***. In this phase, ***the Power Receiver can make adjustments to the Power Transfer Contract***, if so desired. If necessary, this phase may be aborted prematurely without changing the Power Transfer Contract." • **60:** "***General Request Packet***[¶] ***The Power Transmitter shall send a Packet containing the information that is requested by the Power Receiver*** . . . ." • **61:** "In the calibration phase, the Power Transmitter should receive information from ***the Power Receiver that the Power Transmitter can use to improve the power loss method for Foreign Object Detection*** (see Section 11.4, *FOD based on calibrated power loss accounting*)." . . . "If the Power Transmitter receives a 24-bit Received Power Packet with Mode = '010' (calibration mode for a connected load), and the ***Received Power Value*** satisfies the Power Transmitter, ***it shall send an ACK Response and proceed to the power transfer phase***. Otherwise, it shall ***send a NAK Response***." • **69:** "***The behavior of the Power Transmitter in the renegotiation phase shall be the same as in the negotiation phase with the following exceptions***. ***If the Power Transmitter receives a Control Error Packet, Received Power Packet, or Charge Status Packet, it shall discard the temporary Power Transfer Contract and return to the power transfer phase***. ***If the Power Transmitter receives an FOD Status Packet, it shall send an ND Response*** . . . ." • **76:** "In the *negotiation* phase, the Power Receiver shall send a series of Packets that contain ***requests to update the Power Transfer Contract***. In response to each Packet, ***the***

	Power Receiver should receive either a Response, which indicates whether the Power Transmitter grants the request, denies the request, or does not recognize the request; or a data Packet, which contains the requested information." • **79:** "***General request[¶] The Power Receiver can use this request check if the Power Transmitter has detected a Foreign Object*** prior to receiving this FOD Status Packet . . . ***If the Power Receiver receives a NAK Response or an ND Response, it should not attempt to provide more than 5 W of power at its output until the Power Transmitter removes the Power Signal (which should happen within 5 seconds)***." • **80:** "In the calibration phase, ***the Power Receiver sends information to the Power Transmitter, which the latter can use to improve its power loss method for Foreign Object Detection*** (see Section 11.4, *FOD based on calibrated power loss accounting*). In particular, the Power Receiver transmits Received Power information, with the Power Receiver having attached a "light" load and a "connected" load. In the *calibration* phase, the behavior of the Power Receiver shall be the same as in the *power transfer* phase, with the following additions." • **83:** "The Power Transmitter typically ***sends a NAK Response in one or more of the following cases.*** ***It has determined that a Foreign Object has entered the magnetic field.*** ***It cannot support the current power level because of an increase in ambient temperature.*** ***It is operating close to or beyond its limits due to, for example, a low coupling condition.*** ***In response to the NAK, the Power Receiver should:*** ***reduce its power consumption,*** ***transmit an End Power Packet with End Power Transfer Code = 0x0B (Restart Power Transfer), or*** ***involve the user to resolve the condition that causes the Power Transmitter to send a NAK Response*** . . . ."
[15.d.ii.1] sending,	**Qi discloses the second mode of operation** (*see* [15.d.ii])

using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol;	**comprises *sending, using the communication transmitter circuit*** (*e.g.*, "communications protocol" for the "Extended Power Profile" involves sending, via the "communications modulator"; *see* [15.b], [15.d.i.1])**, *a second communication to the inductive charger*** (*e.g.*, an "Identification Packet" or "Configuration Packet" to the "Power Transmitter"; *see* [15.d.i.1])**, *wherein the second communication identifies the second protocol*** (*e.g.*, the Identification Packet identifies the Power Receiver's "Extended Power Profile" / the "Configuration Packet" has "Prop" "bit . . . set to ONE" or "Neg" bit set to one). *See, e.g.*, Qi, 9, 45, 73, 96–98. ***E.g.*, Qi:** *See* [15.d.i.1]. As discussed in [15.d.i.1], **Qi** discloses Identification and Configuration Packets that each identify the protocol used for the inductive power transfer. A POSITA would have understood and at least found it obvious that the identification of the Extended Power Profile in an Identification Packet discloses identifying the use of the communication protocol for inductive charging using the Extended Power Profile. Further, a POSITA would have understood and at least found it obvious that the Configuration Packet identifies the use of the Extended Power Profile communication protocol when the Prop bit is set to one. A POSITA would have understood and at least found it obvious that the Configuration Packet identifies the use of the Extended Power Profile communication protocol when the Neg bit is set to one such that the *negotiation* phase is entered. Baker ¶¶ 137–43. As discussed in Section III.B, the Examiners in the '558 Reexam construed "wherein the first communication identifies the first protocol" to mean "some form or data header that identifies the particular protocol being used in the communication." Ex. 1003 at 1691–1692. As discussed above in [15.d.i.1], **Qi** discloses the Identification and Configuration Packets that identify the protocol. Thus, these packets include "some form" that identifies the particular protocol being used such that **Qi** satisfies this construction. Baker ¶ 141. As discussed in [15.d.i.1], to the extent the Examiners' construction intended to require the identification of the protocol be in the header of a packet, this construction impermissibly narrows the claim's scope. Regardless, **Qi** renders obvious this limitation even if such a construction were to be adopted. Baker ¶ 142. As discussed in [15.d.i.1], **Qi** discloses or at least renders obvious the Patent Owner's interpretation, and renders obvious

	Requester's interpretation, regarding whether the same charger must be used in both of the recited modes of operation. Baker ¶ 143.
[15.d.ii.2] receiving power using the inductive charging receiver coil; and	**Qi discloses the second mode of operation** (*see* [15.d.ii]) **comprises *receiving power using the inductive charging receiver coil*** (*e.g.*, "acquir[ing] near field inductive power" via the "Secondary Coil"). *See, e.g.*, Qi, 9, 11–13. ***E.g.*, Qi:** *See* [15.a], [15.d.i.2], [15.d.ii]. As discussed in [15.d.i.2], **Qi** discloses that, during the *power transfer* phase of the Baseline Power Profile communication protocol, the power receiver "acquires near field inductive power" via the Secondary Coil from the Power Transmitter. Qi, 46. This also occurs during the *power transfer* phase of the Extended Power Profile communication protocol. Qi, 46. Unlike the Baseline Power Profile, the *power transfer* phase of the Extended Power Profile communications protocol supports "power transfers greater than 5 W." Qi, 44; *see also* [15.d.ii]. Baker ¶¶ 144–47.
[15.d.ii.3] receiving, using the receiver circuit, a frequency-modulated third communication from the inductive charger based on the second protocol; and	**Qi discloses the second mode of operation** (*see* [15.d.ii]) **comprises *receiving, using the receiver circuit*** (*e.g.*, "communication[] protocol" for the "Extended Power Profile" involves receiving, via the "communications demodulator"; *see* [15.c]), ***a frequency-modulated third communication*** (*e.g.*, a "Frequency Shift Key[ed]" "Packet containing the information that is requested by the Power Receiver" / "ACK Response") ***from the inductive charger based on the second protocol*** (*e.g.*, an "ND Response" from the "Power Transmitter" based on the Extended Power Profile "communications protocol"). *See, e.g.*, Qi, 9, 59, 60–61, 69, 79. ***E.g.*, Qi:** *See* [15.c], [15.d.ii]. As discussed in [15.c], the Power Receiver includes a communications demodulator that demodulates frequency-modulated communications received from the Power Transmitter "using Frequency Shift Keying" by "modulat[ing] the Operating Frequency of the Power Signal." Qi, 26, 29, 106. The Power Transmitter switches between two Operating Frequencies, namely "Operating Frequency f_{op} in the unmodulated state" and "Operating Frequency f_{mod} in the modulated state." Qi, 106. The difference between the frequencies is determined based on "Polarity" (i.e., "whether the difference between f_{mod} and f_{op} is positive or negative") and "Depth" (i.e., "the magnitude of the

	difference"). Qi, 106. The Power Receiver informs the Power Transmitter of the "Polarity" and "Depth" using, e.g., a "Configuration Packet," as discussed in [15.d.i.1] and [15.d.ii.1]. Baker ¶¶ 148–54. As discussed in [15.d.ii], such communications are sent only when the system operates using the communication protocol for the Extended Power Profile such that the frequency modulated communications are received based on system using that protocol. Exemplary communications received by the Power Receiver include "a Packet containing the information that is requested by the Power Receiver" received in the *negotiation phase* or an "ACK Response" received when the "Received Power Value" in a "Received Power Packet" satisfies the Power Transmitter, as discussed in [15.d.ii]. Baker ¶ 152. To the extent Patent Owner argues **Qi** does not disclose this limitation, Patent Owner argued in the district court litigation that this same functionality meets the limitation because it is allegedly practiced by Samsung's products. For example, Patent Owner alleged "[t]he ***Acknowledge*** and Reserved messages sent in Samsung Wireless Fast Charge are ***examples of the claimed third communications with the second protocol***" such that **Qi's** disclosure of an ACK Response as discussed above meets the limitation pursuant to Patent Owner's allegations. Ex. 1008 ("Complaint") ¶ 313. Baker ¶ 153. As discussed in [15.d.i.1], **Qi** discloses or at least renders obvious the Patent Owner's interpretation, and renders obvious Requester's interpretation, regarding whether the same charger must be used in both of the recited modes of operation. Baker ¶ 154. • **106:** "***The Power Transmitter communicates to the Power Receiver using Frequency Shift Keying, in which the Power Transmitter modulates the Operating Frequency of the Power Signal.*** . . . ***The Power Transmitter shall switch its Operating Frequency between the Operating Frequency fop in the unmodulated state and the Operating Frequency fmod in the modulated state.*** The difference between these two frequencies is characterized by two parameters: ***Polarity.*** This parameter determines whether ***the difference between fmod and fop is positive or negative***. NOTE In both the ***Configuration Packet*** and a Specific Request Packet that has its Request field set to 0x03 (FSK Parameters), the Power Receiver encodes the positive

polarity as a ZERO and the negative polarity as a ONE. In addition, note that a negative polarity typically increases the voltage induced in the Secondary Coil, and therefore should be used with care.

Depth. This parameter determines ***the magnitude of the difference between fop and fmod***.

NOTE Both the Configuration Packet and the Specific Request Packet (Request 0x03, FSK Parameters)) encode the modulation depth in a two-bit unsigned integer value . . . "

- **107 (Table 52):**

Table 52. FSK States

Polarity	Depth	$\frac{1}{f_{mod}} - \frac{1}{f_{op}}$ Minimum	$\frac{1}{f_{mod}} - \frac{1}{f_{op}}$ Maximum	Unit
positive	3	−282.00	−249.00	ns
positive	2	−157.00	−124.00	ns
positive	1	−94.50	−61.50	ns
positive	0	−63.25	−30.25	ns
negative	0	30.25	63.25	ns
negative	1	61.50	94.50	ns
negative	2	124.00	157.00	ns
negative	3	249.00	282.00	ns

- **111 (Table 55):**

Table 55. Format of a Response

	Message	Description	Format
ACK	Acknowledge	Accept a request	'11111111'
NAK	Not-Acknowledge	Deny a request	'00000000'
ND	Not-Defined	Unrecognized or invalid request	'01010101'

[15.e] wherein first mode of operation is associated with a first power level and the second mode of operation is associated with a second power level, and

Qi discloses *wherein [the] first mode of operation is associated with a first power level* (*e.g.*, operating using the "Baseline Power Profile (≤ 5 W)") ***and the second mode of operation is associated with a second power level*** (*e.g.*, operating using the "Extended Power Profile (≤ 15 W)").

***E.g.*, Qi:**

See [15.d.i].

As discussed in [15.d.i], **Qi** discloses that the Baseline Power Profile has a power level up to 5W, while the Extended Power Profile has a power level up to 15W. Qi, 8, 11. Baker ¶¶ 155–58.

	• **8:** "This document, *Parts 1 and 2: Interface Definitions,* defines the interface between a Power Transmitter and a Power Receiver, i.e. Power Class 0 Base Stations and Mobile Devices. ***Power Class 0 is the WPC designation for flat-surface devices, such as chargers, mobile phones, tablets, cameras, and battery packs, in the Baseline Power Profile (⩽ 5 W) and Extended Power Profile (⩽15 W)***." • **11:** "***Baseline Power Profile The minimum set of features applying to Power Transmitters and Power Receivers that can transfer no more than around 5 W of power***." • **11:** "***Extended Power Profile The minimum set of features applying to Power Transmitters and Power Receivers that can transfer power above 5 W***." • **118:** "[I]f Test Power Receiver #MP1 is positioned appropriately relative to the Power Transmitter, it can provide ***8 W of power at its output in configuration A***; ***15 W of power at its output in configuration B***; and ***12 W of power at its output in configuration C***."
[15.f] wherein the first power level and the second power level are different.	**Qi discloses *wherein the first power level*** (*e.g.*, "Baseline Power Profile (⩽ 5 W)") ***and the second power level are different*** (*e.g.*, different from "Extended Power Profile (⩽ 15 W)"). *See, e.g.*, Qi, 8, 11, 118. ***E.g.*, Qi:** *See* [15.e]. As discussed in [15.e], **Qi** discloses that the Baseline Power Profile has a power level up to 5W, while the Extended Power Profile has a power level up to 15W. Qi, 11. Baker ¶¶ 159–62.

E. Proposed Rejection 2: '777 Patent Claim 15 is Rendered Obvious by Qi in view of Gao

Challenged Claim 15 is rendered obvious over **Qi** in view of **Gao** as explained in detail below. Baker ¶ 163.

As explained in Section III.D, **Qi** alone anticipates and/or renders obvious Challenged Claim 15. To the extent it is argued that further disclosure of ***a microcontroller*** (claim limitation [15.d]) is required, **Qi** in view of **Gao** renders obvious this limitation. Baker ¶ 164.

For example, **Gao** discloses "a wireless charging system including a power transmitter and

a power receiver" with induction coils. Gao, [0017]. The power receiver includes a "control circuit 140" that "sends receiver status/control information" to the power transmitter using "ASK modulation" ("amplitude-shift keying") and receives information from the power transmitter using "FSK modulation" ("frequency-shift keying"). Gao, [0006], [0037], [0040]. A "micro-controller unit (MCU)" implements the control circuit 140. Gao, Fig. 8, [0089]. The power receiver complies "with the Qi Standard," including using "backscatter ASK modulation." Gao, [0053].

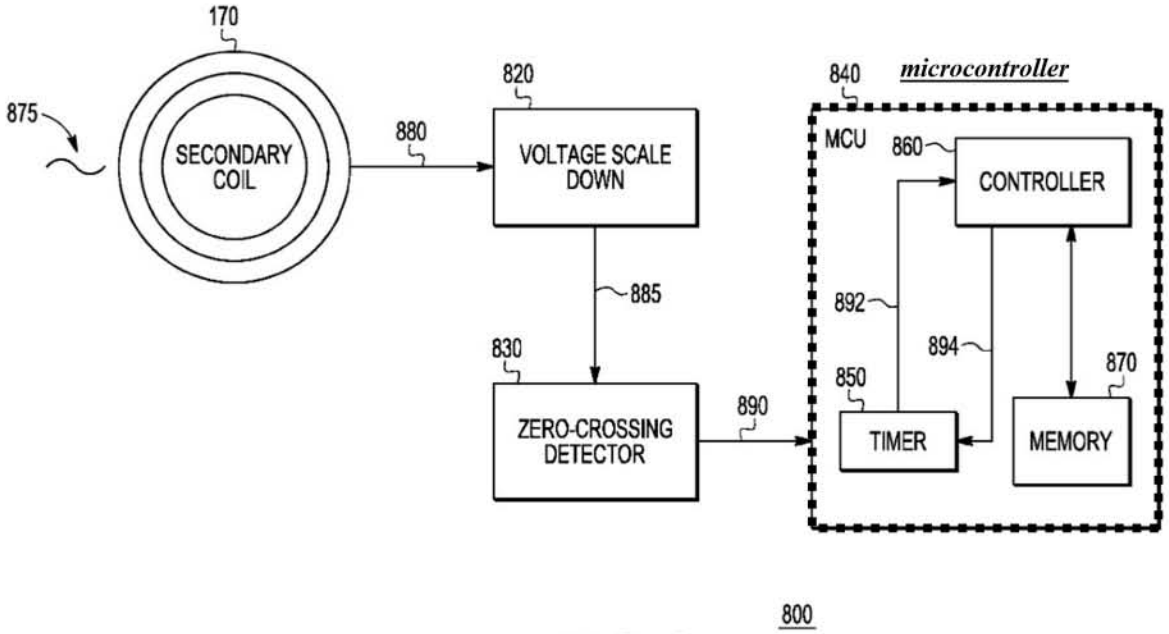


FIG. 8

Gao, Fig. 8. Baker ¶ 165.

Gao's disclosure of a "micro-controller unit (MCU)" also satisfies the claimed "microcontroller" under the Examiners' claim construction in the '558 Reexam of a "special-purpose, single-chip computer designed and built to handle a particular, narrowly defined task," discussed in Section III.B. Ex. 1003 at 1687 ("In addition to the central processing unit (CPU), a microcontroller usually contains its own memory, input/output channels (ports), and timers."). The MCU in the Power Receiver has the special purpose of "implement[ing] the FSK demodulator circuit 160 and the controller 140" in the Power Receiver, including to, e.g., "control[]" communications received via the FSK demodulator and sent via an "ASK modulator circuit," and thus handles a particular, narrowly defined task. Gao, [0032], [0036]–[0037], [0089]. The MCU also includes "a timer 850, . . . a memory 870 . . . , general-purpose IO, . . . and other supporting

functions and peripherals (not illustrated)." Gao, [0090]. A POSITA would have understood, or at least found it obvious, that the MCU comprises a single-chip computer. Baker ¶ 166.[18]

Qi and **Gao** are analogous art, in the same field as the '777 Patent, which includes wireless charging systems, and reasonably pertinent to the alleged problems addressed by the '777 Patent, including improvements to communications between system components. '777 Patent, Abstract, 1:53–2:3, 26:51–65; Qi, 9, 11–13, 14, 30; Gao, [0001], [0020]–[0026], [0044], [0053], [0084]. Baker ¶ 167.

A POSITA would have been motivated to apply **Gao's** microcontroller teachings in implementing **Qi's** Communications and Control Unit, as **Gao** advantageously provides the implementation details of using a microcontroller in a power receiver to perform the Qi-compliant functionality. The Communications and Control Unit inside **Qi's** Mobile Device is electrically coupled to the communications modulator and communications demodulator, which receive, decode, and transmit backscattered (amplitude-modulated) and frequency-modulated (through frequency shift keying) messages from/to the Base Station such that the Communications and Control Unit "controls the power transfer." Qi, 11, 25–26. A POSITA would have looked to a reference like **Gao**, which specifically teaches a "micro-controller unit (MCU)" involved in "detecting . . . and [] decoding" transmitted communications in the form of "ASK-modulated"[19] and "FSK-modulated" "power signals." Gao, [0017]. A POSITA would have understood that a micro-controller would facilitate the receipt and transmission of modulated signals in such as system and would have found it obvious to apply **Gao's** straightforward and complementary

[18] *See, e.g.,* Ex. 1016, Abstract, [0044]–[0045], [0053], Fig. 1 (disclosing a "single chip microcontroller unit" with "digital logic circuitry 516 within the MCU" comprising a "processing core" with "memory," a "port," and "timers"); *see also* Ex. 1017, [0009] ("micro-controller (single chip computer consisting of a: central processor unit (CPU), plus integrated, on-chip, auxiliary, input/output (I/O) bus circuitry, plus ancillary interrupt and timing and memory circuits, plus a small amount of on-chip electrically erasable programmable read only memory (EEPROM) for computer program store, plus a small amount of on-chip static random access memory (SRAM) for temporary working data store.").

[19] **Gao** further teaches that "amplitude-shift keying" ("ASK") modulation is also referred to as "backscatter [] modulation." Gao, [0006], [0022].

teachings to the Power Receiver's Communications & Control Unit taught by **Qi**. This implementation is nothing more than using a known technique to improve similar devices in the same way. Baker ¶ 168.

In view of the above, a POSITA would have had a reasonable expectation of success in applying **Gao's** teachings to implement **Qi's** Communication & Control Unit because it is a straightforward use of **Gao** for its intended purpose that would have yielded the predictable results of a device containing a microcontroller to implement the functionality disclosed in Qi. Indeed, both **Qi** and **Gao** disclose components that carry out their respective functionalities. Qi, 11, 25–26; Gao, [0022]–[0023], [0053]. This would have been a straightforward application of **Gao's** teachings in a manner that advantageously improves **Qi**'s Communication & Control Unit. Baker ¶ 169.

F. Proposed Rejections 3–4: Proposed Rejections 1–2 in further view of Lee

Challenged Claim 15 is rendered obvious over Qi (and optionally modified by Gao) in further view of Lee as explained in detail below. Baker ¶ 170.

As discussed above in Sections III.D–E, **Qi** alone and in view of **Gao** discloses and renders obvious Challenged Claim 15. Nonetheless, to the extent additional disclosure is required to show the use of the same inductive charger in the first and second modes of operation—e.g., claim limitations [15.d.i.1] (*sending, using the communication transmitter circuit, a first communication to an inductive charger, wherein the first communication identifies the first protocol*) and [15.d.ii.1] (*sending, using the communication transmitter circuit, a second communication to the inductive charger, wherein the second communication identifies the second protocol*)—**Lee** renders obvious these concepts when applied to **Qi** (optionally in view of **Gao**). Baker ¶ 171.

Lee discloses "a wireless charging system" that includes a "power supply device 500" coupled to a "wireless power supply device 600" that "wirelessly supplies power" to "a wireless power reception device 800." Lee, [0162], Fig. 5. Receiver device 800 "initiate[s] charging" based on a "second charging power provided from the wireless power supply device 600." Lee, [0295], Fig. 15. Subsequently, receiver device 800 "determines to change the charging power into the first charging power" (e.g., "5 V") that is "smaller than the second charging power" (e.g., "10 V") when receiver device 800 "senses a temperature that is greater than or equal to a predetermined degree." Lee, [0296], [0300], [0302], Fig. 15. Receiver device 800 subsequently "requests the wireless power supply device 600 to change the charging power," and in response thereto, the supply device

lowers the power to "the first charging power." Lee, [0297], [0302], Fig. 15.

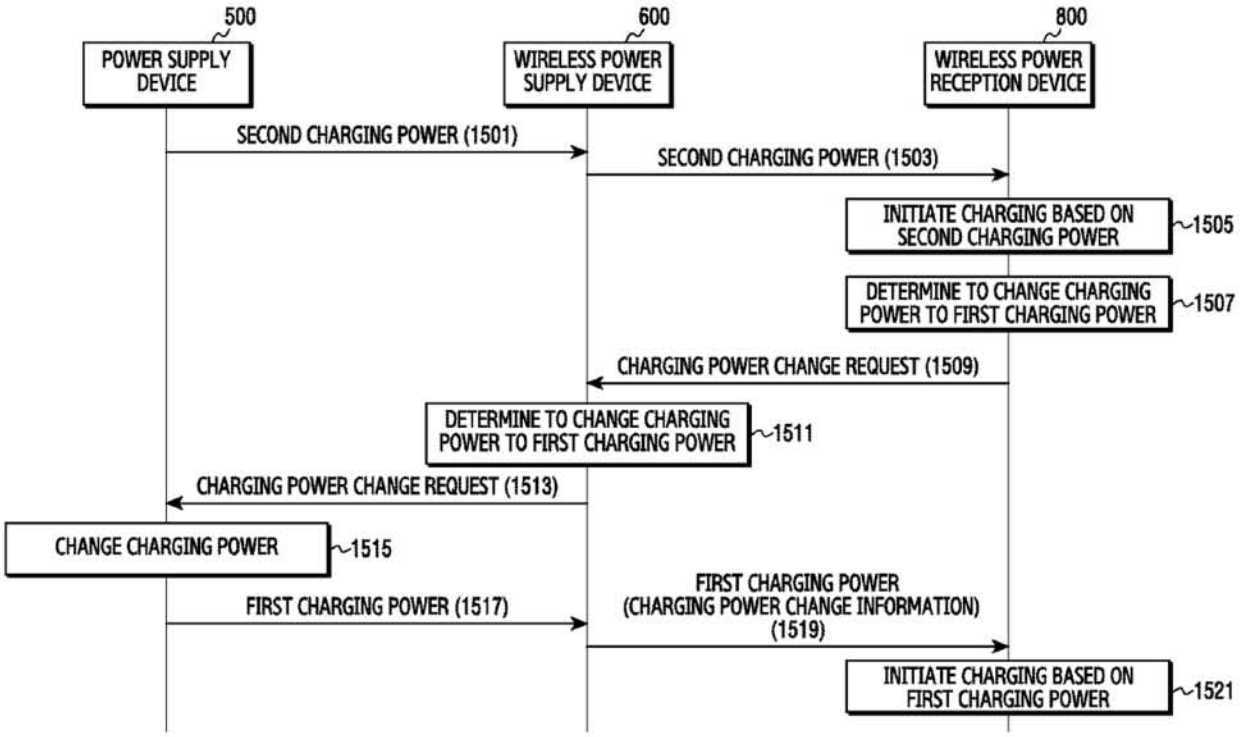


FIG.15

Lee, Fig. 15. Baker ¶ 172.

Qi, **Gao**, and **Lee** are analogous art, in the same field as the '777 Patent, which includes wireless charging systems, and reasonably pertinent to the alleged problems addressed by the '777 Patent, including improvements to communications between system components. '777 Patent, Abstract, 1:53–2:3, 26:51–65; Qi, 9, 11–13, 14, 30; Gao, [0001], [0020]–[0026], [0044], [0053], [0084]; Lee, Abstract, [0006]–[0008], [0295]–[0296], [0353]. Baker ¶ 173.

A POSITA would have been motivated to apply **Lee's** teachings of a power receiver switching between different modes with the same power transmitter in implementing the Power Receiver of **Qi** (optionally modified by **Gao**) to advantageously decrease the power level of the inductive power transfer immediately to less than 5W instead of incrementally over several iterations when, e.g., the Power Receiver determines the temperature of the battery it is charging rises above a predetermined threshold. Lee, [0296]. For example, **Qi** discloses that the Power Transmitter uses Control Error Packets sent by the Power Receiver to "determine a new Primary Cell current," but the Power Transmitter "has a short time window to control its actual Primary Cell current towards the new Primary Cell current" and wait for "additional control and status

information" from the Power Receiver before, e.g., lowering the Primary Cell current when receiving another Control Error Packet indicating the power level of the transfer is too high. Qi, 46–47, Fig. 17. Because the Extended Power Profile allows for up to 15W of power transfer, a POSITA would have understood the benefits of decreasing the transferred power immediately to 5W using the Baseline Power Profile mode of operation instead of incrementally decreasing the new Primary Cell current of the Power Transmitter over several iterative communications between the Power Receiver and Power Transmitter. Such an implementation would have used the same Power Transmitter for the Extended Power Profile as the Baseline Power Profile whereby the Power Receiver identifies to the Power Transmitter to use the Baseline Power Profile mode. This implementation is nothing more than using a known technique to improve similar devices in the same way. Baker ¶ 174.

In view of the above, a POSITA would have had a reasonable expectation of success in applying **Lee's** teachings to implement **Qi's** device (as optionally modified by **Gao**) because it is a straightforward use of **Lee** for its intended purpose that would have yielded the predictable results of a device containing two modes with different power levels to implement the functionality disclosed in **Qi** (as optionally modified by **Gao**). Indeed, both **Qi** and **Lee** disclose two modes of operation at different power levels. Qi, 8 ("Baseline Power Profile (≤ 5 W) and Extended Power Profile (≤ 15 W)."); Lee, [0296] ("[T]he wireless power reception device 800 may determine to execute charging based on the first charging power that is smaller than the second charging power when the wireless power reception device 800 checks a heat radiating state of the device or the battery, and senses a temperature that is greater than or equal to a predetermined degree."). This would have been a straightforward application of **Lee's** teachings in a manner that advantageously improves **Qi**'s device (as optionally modified by **Gao**). Baker ¶ 175.

IV. SECONDARY CONSIDERATIONS

With respect to the obviousness of the Challenged Claim, the Challenged Claim of the '777 Patent is overwhelmingly demonstrated as obvious by the Proposed Rejections presented herein. The strength of these Proposed Rejections cannot be and is not overcome by any alleged objective indicia. Baker ¶ 176.

In the Litigation, Patent Owner has raised allegations of secondary considerations, but has not demonstrated the required nexus between any such purported secondary consideration and the Challenged Claim. For example, Patent Owner has presented only conclusory allegations that

purportedly relate to several different patents without providing any explanation of any purported nexus to the Challenged Claim of the '777 Patent. Baker ¶ 177.

As detailed further below, based on Requester's understanding of Patent Owner's arguments to date, Patent Owner's conclusory allegations do not support a finding of secondary considerations—and certainly not one that overcomes the strong showing of obviousness in this Request, for the reasons set forth below. Baker ¶ 178.

Commercial success: As discussed in Sections III.D–F, wireless charging was well known before the effective filing date of the Challenged Claim. Patent Owner did not invent wireless charging, and therefore even if there were commercial success with a connection to the general feature of wireless charging, this does not have any nexus to the Challenged Claim. Further, to the extent Patent Owner contends that the alleged commercial success of Requester's products evidences commercial success of the Challenged Claim, those commercial products include many features unrelated to the claimed features that drive any alleged success of Requester's products. Thus, a nexus between the Challenged Claim and Requester's products cannot be presumed at least because the products are not "coextensive" with the "claimed features," including because the unclaimed features in the products amount to "more than additional insignificant features" that drive the success of the products. *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000); *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019). Baker ¶ 179.

Repeated Meetings with Requester: Patent Owner has asserted that its repeated meetings with Requester support secondary considerations of nonobviousness. While it is unclear what indicia of nonobviousness this purportedly supports, these meetings do not have a nexus to the Challenged Claim and do not weigh in favor of nonobviousness for the same reasons as discussed above. Baker ¶ 180.

Awards and Industry Praise: Patent Owner has identified no awards or industry praise for the claimed functionality. To the extent Patent Owner relies on any articles or other documents purportedly showing industry praise, Patent Owner has not shown that such praise is tied to functionality purportedly recited in the Challenged Claim. Baker ¶ 181.

Citations to Patent Owner's Patents: Patent Owner has asserted that Requester's use of Patent Owner's patents in different IPRs, and citations by others to Patent Owner's patents in various patents and patent applications, support secondary considerations of nonobviousness.

While it is unclear what indicia of nonobviousness this purportedly supports, there is no nexus between citations to Patent Owner's patents or patent applications and the Challenged Claim. Baker ¶ 182.

V. CONCLUSION

For at least the reasons set forth above, substantial new questions of patentability are raised concerning the Challenged Claim of the '777 Patent and the Challenged Claim is invalid as anticipated and obvious. Baker ¶¶ 183–84. It is therefore respectfully submitted that this Request for Reexamination of the '777 Patent be granted and claim 15 be found unpatentable. If there are any questions, Requester may be contacted at the below-listed telephone number.

As identified in the attached Certificate of Service and in accordance with 37 C.F.R. §§ 1.33(c) and 1.510(b)(5), a copy of the present Request, in its entirety, is being served to the address of the attorney or agent of record reflected in the publicly available records of the United States Patent and Trademark Office as designated in the Office's Patent Center system.

The Commissioner is hereby authorized to charge Deposit Account 50-4561 under Order No. 08Z8-432195 the *Ex Parte* Reexamination fee of $13,545 under 37 C.F.R. § 1.20(c)(2). Requester believes no other fee is due with this submission, however the Commissioner is hereby authorized to charge any fee deficiency or credit any over-payment to Deposit Account 50-4561.

Please direct all correspondence in this matter to the undersigned.

Dated: March 6, 2026

Respectfully submitted,
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