

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ROKU, INC.,  
Petitioner,

v.

UNIVERSAL ELECTRONICS, INC.,  
Patent Owner.

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IPR2021-00758  
Patent 9,641,785 B2

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Before PATRICK M. BOUCHER, SHARON FENICK, and  
RUSSELL E. CASS, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining All Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

In response to a Petition (Paper 2, “Pet.”) filed by Roku, Inc. (“Petitioner”), we instituted an *inter partes* review of claims 1–13 of U.S. Patent No. 9,641,785 B2 (Ex. 1001, “the ’785 patent”). Paper 7 (“Dec.”). During the trial, Universal Electronics, Inc. (“Patent Owner”) filed a Response (Paper 14, “PO Resp.”), to which Petitioner filed a Reply (Paper 18, “Reply”) and Patent Owner filed a Sur-reply (Paper 22, “Sur-reply”). An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 27 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1–13 are unpatentable.

## I. BACKGROUND

### *A. The ’785 Patent*

#### *1. Overview*

The ’785 patent “relates generally to systems in which a universal controlling device may be configured for use in conjunction with multiple interconnected consumer electronic appliances.” Ex. 1001, 1:36–39. Figure 1 of the ’785 patent is reproduced below.

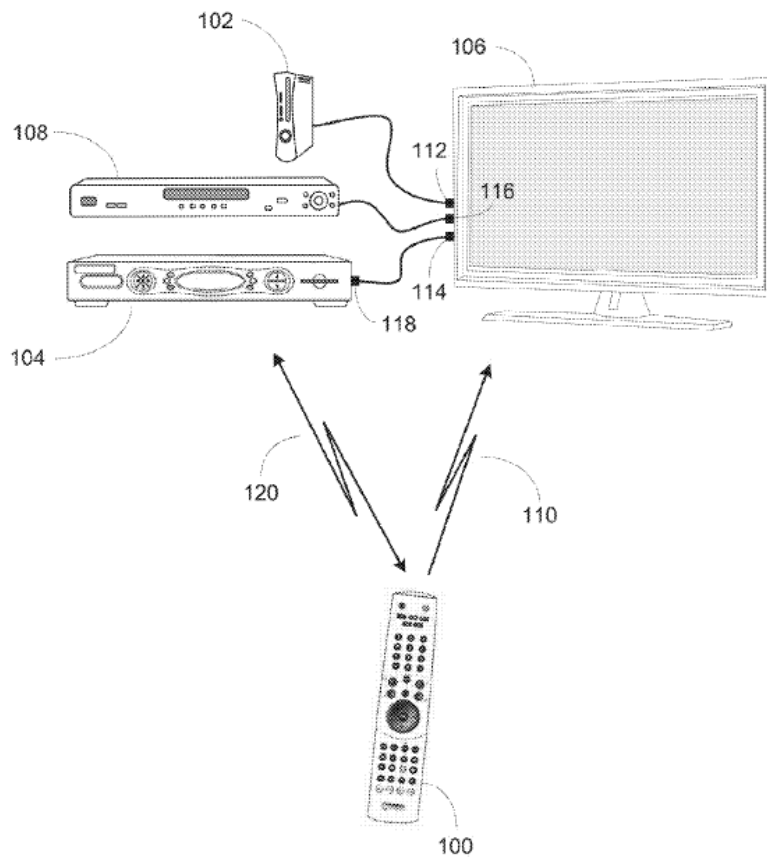


Figure 1

Figure 1 illustrates an exemplary system in which a controlling device is used to control various appliances. *Id.* at 2:1–3. In the illustration, controlling device 100 may be used to control set-top box (“STB”) 104, television 106, DVD player 108, and/or game console 102. *Id.* at 2:19–23. The digital and audio outputs of appliances 102, 104, and 108 (such as output 118 of STB 104) may be attached to digital inputs 112, 114, and 116 of television 106 using the High-Definition Multimedia Interface (“HDMI”) standard. *Id.* at 2:23–26. Controlling device 100 may transmit commands to the appliances using infrared (“IR”), radio-frequency (“RF”), point-to-point, or networked protocols, and such transmission protocols may be

unidirectional 110 or bidirectional 120 as appropriate for the particular appliance. *Id.* at 2:26–33.

“The capabilities of individual appliances may be discovered, assessed, and control methods adjusted accordingly,” such as by “substituting direct digital commands issued over the interconnecting bus for wireless infrared or RF command transmissions from a portable device where appropriate.” *Id.* at 1:45–50. The ’785 patent explains generally that “which appliance[s] are connected to which inputs of which other appliance[s]” may be established by “direct interrogation or by monitoring of digital status during setup.” *Id.* at 1:50–55. More specifically, the patent describes how the programming of STB 104 “may determine whether the attached appliance[, such as television 106,] supports CEC [i.e., Consumer Electronics Control] control over the HDMI connection.” *Id.* at 6:22–24. This determination may be made in multiple ways: it may be (1) “based on information contained in the retrieved EDID [i.e., Extended Display Identification Data]”; (2) “empirically derived based on the appliance’s response (or lack thereof) to a CEC query”; (3) “obtained by referencing a local or remote database of appliance capabilities using appliance identity information embedded in the EDID or previously gathered during initial setup of controlling device 100”; or (4) by “any other suitable method.” *Id.* at 6:24–31.

We discuss further aspects of the disclosure of the ’785 patent below in the specific context of the parties’ positions.

## *2. Illustrative Claim*

Independent claim 1 (the '785 patent's only independent claim) is illustrative of the challenged claims and is reproduced below.

1. A system, comprising:
  - a media source device; and
  - a controlling device in communication with the media source device via a first communications link;wherein the media source device is programmed to provide to the controlling device via the first communications link a message having data which indicates whether a media sink device coupled to the media source device is responsive or unresponsive to a command communication transmitted to the media sink device by the media source device via a second communications link between the media source device and the media sink device and wherein the controlling device is programmed to use the data within the message to automatically configure the controlling device such that the controlling device will respond to an activation of an input element of the controlling device by issuing a communication directly to the media sink device via a third communications link between the controlling device and the media sink device to control the functional operation of the media sink device when the data in the message indicates that the media sink device is unresponsive to the command communication and by issuing a communication directly to the media source device via the first communications link to cause the media source device to issue a command to control the functional operation of the media sink device via the second communications link in the event that data indicates that the media sink device is responsive to the command communication.

Ex. 1001, 9:25–10:10.

### 3. *Prosecution History*

Through a chain of continuation applications, the '785 patent claims the benefit of the filing date of U.S. Patent Nos. 9,380,250 (Ex. 1015, “the '250 patent,” issued from “the parent application”) and 9,019,435 (Ex. 1006, “the '435 patent,” issued from “the grandparent application”). Ex. 1001, code (63). During prosecution of the three applications in this chain, only the grandparent application received an art-based rejection. Ex. 1002 (prosecution history of the '785 patent), 61–66; *see generally* Exs. 1016 (prosecution history of the '250 patent), 1017 (prosecution history of the '435 patent). The parent application was filed with a terminal disclaimer over the '435 patent, and was allowed after minor Examiner’s Amendments made with the Notice of Allowability. Ex. 1016, 72–73, 80–90. The claims of the application that matured into the '785 patent were initially rejected under the doctrine of obviousness-type double patenting, but allowed after a terminal disclaimer over the '435 patent was filed. Ex. 1002, 62–66, 90–91, 109.

The claims of the grandparent application were amended during prosecution in response to multiple rejections. *See* Ex. 1017, 82–104 (first Office Action), 120–125 (Response to first Office Action), 129–142 (second Office Action), 157–167 (Response to second Office Action), 172–188 (third Office Action). Of particular note is the amendment made in response to the second Office Action, in which independent claim 1 was amended to recite a specific “message” communicated from a “second controllable appliance.” *See id.* at 158. The Examiner ultimately allowed this form of the claim, which is reproduced below, after reopening prosecution in response to the Applicant’s filing of an appeal with an Appeal Brief. *Id.* at

207–212 (Request for Pre-Appeal Review), 219–220 (panel decision from Pre-Appeal Brief Review to proceed to Board of Patent Appeals and Interferences), 221–238 (Appeal Brief), 242–247 (*Ex Parte Quayle* Office Action), 268–275 (Response to *Ex Parte Quayle* Office Action), 280–284 (allowance of application).

1. A method for configuring a controlling device to control a functional operation of a first controllable appliance, comprising:
  - determining by a second controllable appliance if the first controllable appliance is responsive to a command communication transmitted to the first controllable appliance by the second controllable appliance via a digital communications link;
  - communicating a message from the second controllable appliance to the controlling device, the message having data indicative of a result of the determining step; and
  - using by the controlling device the message communicated from the second controllable appliance to the controlling device to automatically configure the controlling device whereupon the controlling device is caused to issue a communication directly to the first controllable appliance to control the functional operation of the first controllable appliance in the event that data in the message communicated from the second controllable appliance to the controlling device indicates that the first controllable appliance is unresponsive to the command communication and to issue a communication directly to the second controllable appliance to control the functional operation of the first controllable appliance via the digital communications link in the event that data in the message communicated from the second controllable appliance to the controlling device indicates that the first controllable appliance is response to the command communication.

Ex. 1006, 9:2–30. According to Patent Owner, this form of claim 1 of the ’435 patent is “nearly identical” to challenged claim 1 of the ’785 patent. PO Resp. 9.

*B. Evidence*

Petitioner relies on the following references:

|         |                    |               |          |
|---------|--------------------|---------------|----------|
| Chardon | US 2012/0249890 A1 | Oct. 4, 2012  | Ex. 1005 |
| Mishra  | US 2001/0005197 A1 | June 28, 2001 | Ex. 1009 |

HDMI Licensing, LLC, High-Definition Multimedia Interface, Specification Version 1.3a (November 10, 2006) (Ex. 1010) (“HDMI 1.3a”)

In addition, Petitioner relies on a Declaration by Samuel H. Russ, Ph.D. Ex. 1003. Dr. Russ was cross-examined by Patent Owner, and a transcript of his deposition was entered into the record. Ex. 2006. Patent Owner relies on a Declaration by Don Turnbull, Ph.D. Ex. 2004. Dr. Turnbull was cross-examined by Petitioner, and a transcript of his deposition was also entered into the record.<sup>1</sup> Ex. 1052.

*C. Instituted Ground of Unpatentability*

Petitioner challenges, and we instituted review of, claims 1–13 on the following ground. Pet. 4; Dec. 31.

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<sup>1</sup> Petitioner asks that we “discount Dr. Turnbull’s testimony with respect to HDCP [i.e., High-bandwidth Digital Content Protection]” because Dr. Turnbull “did not know what HDCP stands for” and incorrectly testified that “HDCP break” is a term of art in the HDCP standard. Reply 10–11 n.4. We decline to do so after reviewing Dr. Turnbull’s testimony, and instead accord his testimony due weight when evaluated in context.

| Claim(s)<br>Challenged | 35 U.S.C. § <sup>2</sup> | References                 |
|------------------------|--------------------------|----------------------------|
| 1–13                   | 103                      | Chardon, HDMI 1.3a, Mishra |

*D. Real Parties in Interest*

The parties identify only themselves as real parties in interest.

Pet. 71; Paper 19, 1.

*E. Related Matters*

Both parties identify *Universal Electronics, Inc. v. Roku, Inc.*, No. 8:20-cv-00701 (C.D. Cal.) as involving the '785 patent. Pet. 71; Paper 19, 1. Patent Owner additionally identifies the following district court proceedings as related matters: (1) *Universal Electronics, Inc. v. Roku, Inc.*, No. 8:18-cv-01580 (C.D. Cal.); (2) *Universal Electronics, Inc. v. TCL Electronics Holdings Ltd.*, No. 8:20-00704 (C.D. Cal.); (3) *Universal Electronics, Inc. v. Hisense Co., Ltd.*, No. 8:20-00696 (C.D. Cal.); and (4) *Universal Electronics, Inc. v. Funai Electric Company, Ltd.*, No. 8:20-cv-00700 (C.D. Cal.). Paper 19, 1. Patent Owner also identifies *Certain Electronic Devices, Including Streaming Players, Televisions, Set Top Boxes, Remote Controllers, and Components Thereof*, Inv. No. 337-TA-

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<sup>2</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended various provisions of 35 U.S.C. Petitioner contends that “[t]he earliest priority date of the '785 patent, on its face, is September 22, 2011,” which is before March 16, 2013 (the effective date of the relevant amendment). Pet. 3. Patent Owner agrees with this date, and does not contest that the pre-AIA versions of those provisions accordingly apply. See PO Resp. 13 (identification of priority date in statement of proposed level of skill in the art).

1200 (U.S.I.T.C. 2020) as a related matter before the International Trade Commission. *Id.*

The '785 patent is one of several patents owned by Patent Owner that are challenged by Petitioner in various petitions for *inter partes* review, including in IPR2019-01595, IPR2019-01608, IPR2019-01612, IPR2019-01613, IPR2019-01614, IPR2019-01615, IPR2019-01619, IPR2019-01620, IPR2019-01621, IPR2020-00951, IPR2020-00952, IPR2020-00953, IPR2020-01012, IPR2021-00261, IPR2021-00262, IPR2021-00263, IPR2021-00264, IPR2021-00299, and IPR2021-00455. *See* Pet. 72; Paper 19, 2–3.

## II. ANALYSIS

### *A. Legal Principles*

A claim is unpatentable for obviousness under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of

nonobviousness, i.e., secondary considerations.<sup>3</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

#### *B. Level of Ordinary Skill in the Art*

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person of ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir.

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<sup>3</sup> The parties do not address objective indicia of nonobviousness, which accordingly do not form part of our analysis. See Pet. 68–69 (noting that evidence related to objective indicia of nonobviousness for other patents was presented in an ITC proceeding under protective order and unavailable to Petitioner, and that Petitioner asserts that it is “not presently aware of any publicly available secondary indicia of non-obviousness with the required nexus to the challenged claims of the ’785 patent”).

1998). “This legal construct is akin to the ‘reasonable person’ used as a reference in negligence determinations” and “also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Petitioner proposes that a person of ordinary skill in the art would have had general knowledge of home theater systems, control of devices within the home theater systems, and remote control devices, as well as: (1) at least a bachelor’s degree in electrical engineering, computer engineering, or equivalent coursework, and (2) at least one year of experience researching or developing structure and operating principles of common digital content reproduction and related appliances, contemporary television and home theater standards, and specifications of consumer digital reproducing devices of the time.

Pet. 13–14 (citing Ex. 1003 ¶¶ 15–19). Patent Owner proposes instead that a person of ordinary skill in the art

would have had a bachelor’s degree that involved software design and development coursework, for example, electrical engineering, computer engineering, computer science, cognitive science, industrial engineering, information systems, information studies, or a similar degree, and at least one year of work experience in software programming, development, or design of consumer applications as of Sep. 22, 2011, the priority date of the 785 Patent. Additional education might substitute for some of the experience, and substantial experience might substitute for some of the educational background.

PO Resp. 12–13.

As Patent Owner observes, the two proposals differ “in terms of the level of experience specifically with home theater systems.” *Id.* at 12.

Petitioner’s proposal is reasonable on the current record, and is additionally supported by the testimony of Dr. Russ. *See* Ex. 1003 ¶¶ 15–19. Patent Owner notes that its expert, Dr. Turnbull, agrees with Patent Owner’s proposed articulation, but that Dr. Turnbull’s “conclusions resulting from his analysis did not change when reviewing the cited references from the perspective of the level of ordinary skill in the art as proposed by the Petition.” PO Resp. 13 (citing Ex. 2004 ¶¶ 24–29, 31–41).

We adopt Petitioner’s articulation of the level of ordinary skill for purposes of this Decision. We note, however, that we would reach the same ultimate conclusion were we to adopt Patent Owner’s proposal.

### *C. Claim Construction*

The Board uses “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). The specification may reveal a special definition given to a claim term by the patentee. *Phillips*, 415 F.3d at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998).

### *1. Undisputed Terms*

The claims recite a number of structural terms that do not appear elsewhere in the specification of the '785 patent, but the parties agree how these terms map to elements shown in Figure 1 of the '785 patent. This is illustrated by Patent Owner's annotated version of that drawing, reproduced below. PO Resp. 4.

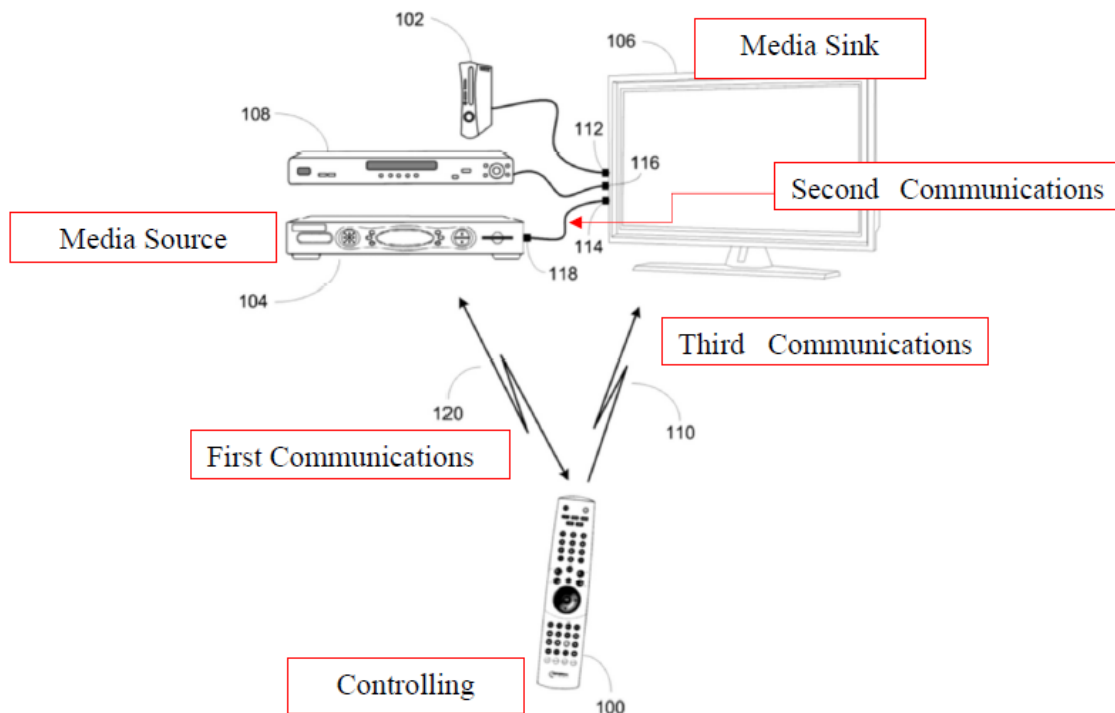


Figure 1

Annotated Figure 1 illustrates an exemplary system in which a controlling device and a set top box may be utilized, as annotated by Patent Owner with labels in red outlines. Ex. 1001, 2:1–3. Notably, Patent Owner's annotations on the reproduction of Figure 1 above are substantially identical to similar annotations made by Petitioner on the same drawing (not reproduced here). Pet. 37.

Thus, the parties agree that, within the context of the disclosure of the '785 patent, (1) an example of the recited “controlling device” is controlling device 100; (2) an example of a “media source device” is STB 104; (3) an example of a “media sink device” is television 106; (4) an example of the recited “first communications link” is bidirectional communication link 120; (5) an example of the recited “second communications link” is the HDMI connection between STB output 118 and television input 114; and (6) an example of the recited “third communications link” is unidirectional communication link 110. *See* Pet. 37; PO Resp. 4. We agree with these correspondences.

2. *“message having data . . .”*

Independent claim 1 recites “a message having data which indicates whether a media sink device coupled to the media source device is responsive or unresponsive to a command communication transmitted to the media sink device by the media source device via a second communications link between the media source device and the media sink device.”<sup>4</sup> Ex. 1001, 9:31–36. In the Institution Decision, we directed the parties “to take express positions . . . during the trial” whether “properly construed claims require actual transmission of the command communication to trigger the recited ‘message having data,’” and “to explain how the record evidence supports their respective positions.” Dec. 25. That is, based on the preliminary record, we identified a potential ambiguity in the recited clause

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<sup>4</sup> We refer to the entire quoted phrase as the “message having data” limitation.

that undergirds the respective positions of the parties. Those positions are substantially maintained by the parties on the full record.

In its Response, Patent Owner contends that the “message having data” limitation “can generally be understood by its plain and ordinary meaning, in light of the specification” and that “[t]herefore, no explicit claim construction is warranted.” PO Resp. 14–15. Nevertheless, Patent Owner makes clear in its Sur-reply that its position is that the “message having data” must result from actual transmission of a “command communication”: “the claim language itself is clear in the requirement that the ‘message having data’ provided to a controlling device encompasses data reflecting whether a media sink device responds to an *explicit* ‘command’ sent to that media sink device.” Sur-reply 3 (emphasis added).

Petitioner disagrees, contending that Patent Owner “commits the classic error of reading a disclosed embodiment into the claim, to the exclusion of other disclosed embodiments.” Reply 13. In particular, Petitioner’s position is that “[n]either the plain claim language nor the ’785 patent specification *require[s]* actual transmission of a specific ‘command communication’ . . . before the claimed ‘message having data’ is provided from the media source device to the controlling device indicating whether the sink device will be responsive or unresponsive [to] ‘a command communication.’” *Id.* at 5.

*a. Plain and Ordinary Meaning*

In the sole independent claim of the ’785 patent, the only active programming step recited for the media source device is “to provide to the controlling device . . . a message having data.” Ex. 1001, 9:29–31. The rest

of the clause describes characteristics of the “message having data,” including the requirement that it “indicate” whether the media sink device “is responsive or unresponsive” to the “command communication.” *Id.* at 9:31–37. No express language recites that a “command communication” be transmitted to effect that “indicat[ion].” *See generally id.* at 9:25–10:10.

In contending that Petitioner’s proposed construction is too broad, Patent Owner contends that “[t]he claim language does not say that the message having data is indicative of whether a media sink device is capable or incapable of responding to a command,” at least not explicitly. Sur-reply 3–4. Although it is true that the claim does not use such direct language, Petitioner observes that “the claim term ‘command communication’ in the first wherein clause is related to how *the source device* is programmed, and is not repeated again in the claim.” Reply 6. Petitioner thus reasons that the recited “command communication” is not linked to the “functional operation of the media sink device” recited in the two “by issuing” clauses (Ex. 1001, 9:42, 10:4) that describe how the “controlling device” is programmed in the second wherein clause (Ex. 1001, 9:37). Reply 6–7. We agree with Petitioner that “[t]his is significant because it suggests that the ‘command communication’ in the first wherein clause indicates generic responsiveness of the media sink device, such as whether the media sink device is responsive to CEC commands.” *Id.* at 7. We also agree with Petitioner that this “refutes the notion . . . that the claimed ‘command communication’ is somehow a very ‘specific command,’ like an ‘input select command’ or a ‘volume up command,’ that is designed to control a specific functional operation of the media sink device.” *Id.*

We thus find that the plain and ordinary meaning of the claim language more strongly favors Petitioner's position that a "command communication" need not actually be transmitted in order for the "message having data" to indicate responsiveness to the "command communication."

*b. Specification*

Because of its particular relevance to construction of the "message having data" limitation, Figure 5 of the '785 patent is reproduced below with coloring added by Patent Owner. PO Resp. 5.

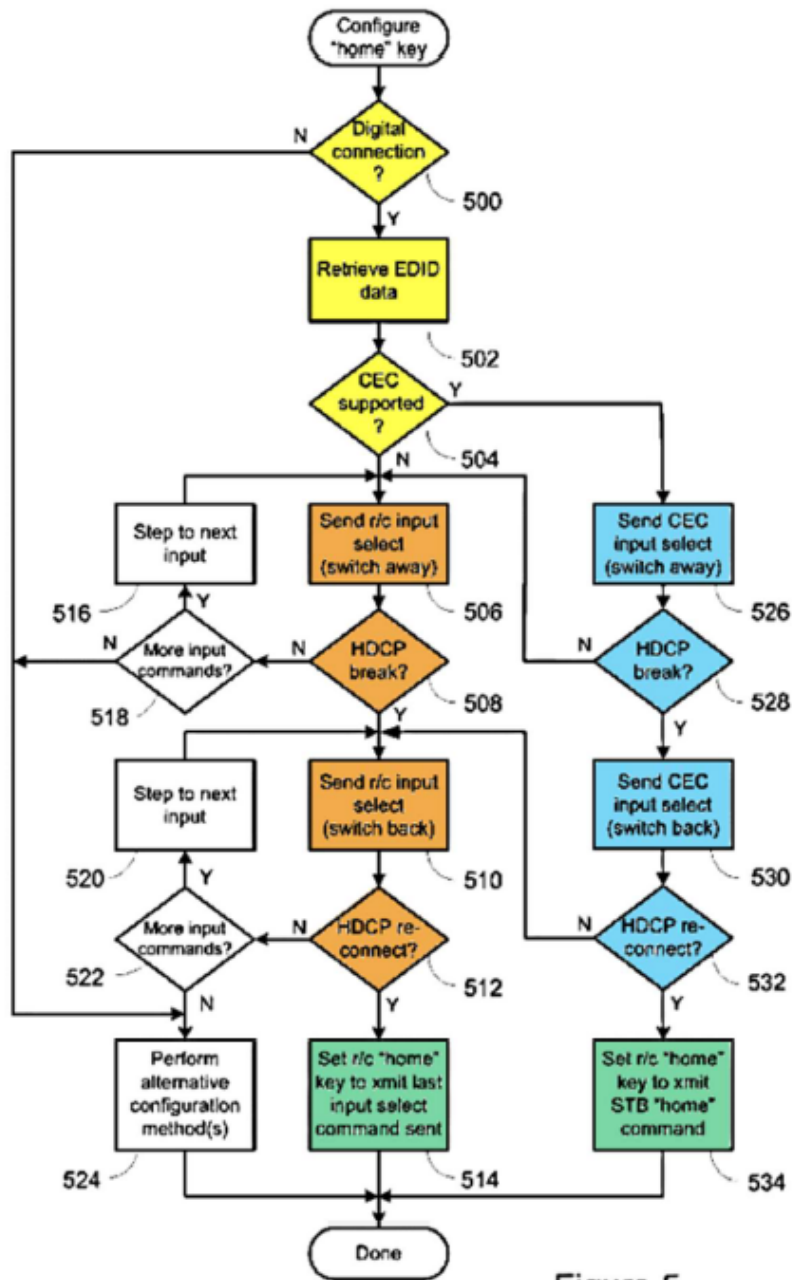


Figure 5

Figure 5 illustrates “an exemplary series of steps” that may be performed to configure a “home” key on the controlling device. Ex. 1001, 2:10–12, 5:63–6:7. The function of the “home” key is “to return an entertainment system to a known state,” illustrated particularly so that activation of the “home” key “may serve to command TV 106 to select as its active input that port which

is connected to STB 104.” *Id.* at 1:56–61, 5:25–32. The ’785 patent emphasizes that the methods illustrated by Figure 5 “may be applied, mutatis mutandis, to the provision of similar functionality to any suitable key of a controlling device.” *Id.* at 5:49–54.

Patent Owner’s coloring of the drawing usefully identifies three groups of steps shown respectively in yellow, blue, and orange. First, the yellow steps are used (1) to establish whether a display appliance (such as a television) is connected to the HDMI port at step 500; and (2) if so, to retrieve the display appliance’s EDID at step 502 and to determine at step 504 whether the display appliance supports Consumer Electronics Control (“CEC”) over the HDMI connection. *Id.* at 6:8–24. “This determination may be made based on information contained in the retrieved EDID, may be empirically derived based on the [display] appliance’s response (or lack thereof) to a CEC query, may be obtained by referencing a local or remote database of appliance capabilities using appliance identity information embedded in the EDID . . . , or any other suitable method.” *Id.* at 6:24–31.

Second, the blue steps may be executed when the display appliance supports CEC control. At step 526, a CEC command is issued via the HDMI interconnection to cause the display appliance to select a different input as its current source. *Id.* at 6:31–35. If a High-bandwidth Digital Content Protection (“HDCP”) break occurs at step 528, meaning that authentication fails, a CEC input select command is issued at step 530 to return the display appliance to the EDID-indicated HDMI port. *Id.* at 6:35–49. If that command causes reconnection at step 532, “it has been established that the [display] appliance . . . may be successfully switched back to the correct input for display of STB output via the use of a CEC

command issued over the HDMI interconnection.” *Id.* at 6:49–55. A message is accordingly communicated to the controlling device at step 534 to configure the “home” key to transmit a command to the STB, causing the verified CEC input select command to be issued to the display device. *Id.* at 6:56–60.

Third, the orange steps may be executed when the display appliance does not support CEC control or when no HDCP break occurs at (blue) step 528. At step 506, a preparatory command is transmitted, such as to select an input to which the STB is not connected. *Id.* at 7:10–12. For instance, the command may seek to cause the display device to switch away from the EDID-indicated HDMI port (to which the STB is connected) to another port. *Id.* at 7:12–16. If an HDCP break occurs at step 508, attempts are made at steps 510, 512 with sequential issuance of possible input select commands to determine which input select command will restore the display device to the input port to which the STB is connected. *Id.* at 7:16–28. Upon successful reconnection, a message is communicated to the controlling device at step 514 to configure the “home” key to transmit the successful input select command to the display device. *Id.* at 7:40–45.

Patent Owner contends that Figure 5 and its related disclosure support its proposed construction of requiring actual transmission of a “command communication” by focusing on the CEC commands executed at step 526 or step 530. *See* Sur-reply 7. If that “command is successful (e.g., if a ‘CEC input select (switch away)’ command results in a confirmation that an HDCP break was successful),” Patent Owner says, “then the methodology concludes with the setting of the controlling device to send commands to the STB (a media source device) such that the STB communicates with the

media sink device to execute the input select command.” *Id.* (citing Ex 2004 ¶ 55). On the other hand, “[i]f the same command is unsuccessful (e.g., if a ‘CEC input select (switch away)’ command results in a determination that an HDCP break was unsuccessful),” Patent Owner adds, “then the methodology switches to the orange steps (steps 506-512).” *Id.* Patent Owner explains that such steps “test IR-based input select commands transmitted directly from the controlling device to the media sink device before setting the controlling device to send commands directly to the media sink device (thereby skipping the media source device) to execute the input select command.” *Id.*

Patent Owner summarizes its position as follows:

The ’785 patent therefore describes two different configurations of the remote control based on the information received at the remote control that is indicative of whether the media sink device is responsive or unresponsive to the CEC command that was issued by the media source device. In one configuration, the remote control transmits commands to the media sink device indirectly [at step 534], by communicating with the media source device and causing the media source device to issue a command to the media sink device. Ex. 1001, at 6:56-60 and Claim 1 and Ex. 2004 at 61. In the other configuration, the remote control transmits commands directly [at step 514] to the media sink device.

PO Resp. 6–7. We agree that the methodology identified by Patent Owner is consistent with Patent Owner’s position and is supported by Dr. Turnbull. *See* Ex. 2004 ¶¶ 55–61.

Petitioner contends that Patent Owner’s “attempt to read steps 526/528 of Figure 5 onto claim 1, to the exclusion of preceding steps 500-504, is not consistent with the ’785 patent specification.” Reply 10. Rather,

according to Petitioner, “[o]ther portions of Figure 5 are more applicable to determining whether the media sink device will be responsive or unresponsive to CEC commands—namely, steps 500/502/504.” *Id.* at 11. That is, Petitioner reasons that the “message having data” recited in the claim is met as a result of the determination at step 504 of the “media sink’s general responsiveness to CEC commands (i.e., ‘command communication[.]’).” *Id.* Petitioner correctly observes, and Patent Owner does not dispute, that “that step does *not* expressly *require* a specific triggering ‘command communication’ like a ‘CEC input select’ to be sent.” *Id.* at 11–12.

Steps 500/502/504 result in a general determination regarding “whether the attached appliance [(‘media sink device’)] supports CEC control over the HDMI connection [(‘second communications link’)].” Ex. 1001, 6:22–24, 7:4–6. However, HDCP break detection steps 528 and 532 provide data for an “assum[ption] that input switching via CEC commands is not adequately supported by the appliance.” *Id.* at 6:63-67. As Petitioner argues, the “command communication” in the “message having data” limitation is not tied, in the language of the claim, to the later-recited “activation of an input element” or the “communication . . . to control the functional operation of the media sink device.” Reply 6–7. Because of this, we agree with Petitioner that, reading the claim in light of the specification, steps 500/502/504 support the “message having data” limitation.

In light of these considerations, we determine that the specification supports Petitioner’s position.

*c. Prosecution History*

As we note above in our summary of the prosecution history of the '785 patent and its ancestors, an Appeal Brief was filed during prosecution of the grandparent application after that application was initially rejected by the Examiner. *See supra* § I.A.3.; Ex. 1007, 231–238. To support its claim-construction position, Patent Owner directs our attention to the section of that Appeal Brief titled “Summary of the Claimed Subject Matter.” *See* PO Resp. 23; Ex. 1017, 222–223. The summary of claim 1 of the grandparent application includes “reference, by way of example only, to the specification in the record.” Ex. 1017, 222. Patent Owner characterizes that summary as “point[ing] to the command (steps 526, 530), responsive / non-responsive determination (steps 528, 532) and message-based configuration (steps 514 or 534) of Figure 5 in describing the scope.” PO Resp. 23 (citing Ex. 1017, 222; Ex. 2004, 72–73). At the oral hearing, Patent Owner stated that, “in reference to a discussion of . . . a command communication,” the Applicant “point cited specifically to a portion of the specification . . . that correlates to the '785 patent at column 6, line 19, through column 6, line 55.” Tr. 35:10–36:3.

We do not find this aspect of the prosecution history sufficient to discriminate between the parties’ positions. First, the Appeal Brief summary includes no specific reference-number identification to the steps of Figure 5; instead it includes only specific reference-number identification of the structural components of Figure 1. Second, while the cited specification passage that Patent Owner highlights includes reference to steps of Figure 5, it includes reference both to steps 526, 528, 530, 532 and to step 504 where “the STB programming may determine whether the attached appliance

supports CEC control over the HDMI connection.” Ex. 1001, 6:19–55. The Appeal Brief thus cited portions of the specification that support both Patent Owner’s and Petitioner’s positions for the reasons we discuss above.

*d. Evaluation*

Throughout its briefs and at the oral hearing, Patent Owner articulated a theory of independent claim 1 of the ’785 patent that is coherent and sensible in the context of the invention. That is, Patent Owner views the claim as covering a situation in which a “command communication” is sent from the media source device to the media sink device prior to generation of a “message having data” that indicates responsiveness or unresponsiveness to that “command communication.” *See* Tr. 28:4–14. According to Patent Owner, “the reason for that is [that] the message having data gives information to th[e] controlling device to suggest whether or not that controlling device is able to utilize this . . . command communication style between the source and the sink for the specific command that is being programmed into a particular button.” *Id.*

Patent Owner’s theory of the claim further “[ties] the initial command to what is ultimately being controlled later.” *Id.* at 30:12–21. Specifically, a “communication” is subsequently issued to control the functional operation of the media sink device either directly to the media sink device or via the media source device as an intermediary, depending on the responsiveness of the “command communication.” *Id.* at 28:15–29:10. In this respect, Patent Owner treats the yellow steps of Figure 5 as “generic” steps that “wouldn’t be tied to any specific command but would be just some initial determination to . . . determine whether or not a particular remote control

and sink device is even eligible to use the claimed configuration.” *Id.* at 32:1–10; *see also id.* at 33:2–7 (“And, therefore, within the context of this claim, this does still make sense that you would want to . . . check and recheck your work, if you will, checking to see if CEC is enabled at all, and then checking to see whether a particular CEC command would be usable or whether you need to find a workaround if it’s not usable.”).

The ultimate difficulty with Patent Owner’s theory is that it presumes relationships between various elements of the claim, but such relationships are not expressed by the language of the claim. This includes relationships between the “command communication,” the “functional operation of the media sink device,” and “activation of an input element of the controlling device.” *See id.* at 29:13–31:20, 33:10–35:2. Under such circumstances, we necessarily agree with Petitioner that “[t]he patentee chose to claim broadly and vaguely,” such that there is “no principled reason to exclude steps 500/502/504 from reading on the broadly-worded first wherein clause [that the media source device is programmed to provide the ‘message having data’ to the controlling device].” *See Reply 13.*

For the reasons explained above, the prosecution history of the ’785 patent and its ancestors provides insufficient basis to discriminate between the parties’ positions. But both the plain and ordinary meaning of the claim language and the specification of the ’785 patent support Petitioner’s position, which we accordingly adopt. That is, we construe the “message having data” limitation as not requiring actual transmission of a “command communication” to indicate responsiveness to such a “command communication.”

*D. Scope and Content of the Prior Art*

*1. Chardon*

Chardon describes “a remote-control system configured to operate on a variety of remote control platforms, such as High Definition Multi-Media Interface appliances.” Ex. 1005 ¶ 1. Such a system may be embodied in an entertainment system with a set of HDMI appliances that include, for example, an HDMI display and speakers, and HDMI sources such as a cable or a satellite set-top box, a personal video recorder, a DVD player, and a personal computer, among others. *Id.* ¶¶ 30, 37, Fig. 1. A multimedia gateway having a remote-control engine may be included in the entertainment system. *Id.* ¶¶ 30–32, 44. The entertainment system also supports access, such as via a connection to a remote server, to a database that stores sets of command codes. *Id.* ¶¶ 30–35. For example, the remote database may store sets of IR and CEC command codes with a link that associates a given appliance with the set of command codes configured to control that appliance.

The remote-control system includes a memory and processor to store and operate a remote-control engine application, with sets of command codes (including IR and CEC) command codes stored in the remote-control memory. *Id.* ¶¶ 39, 43. The remote control may also include in IR transceiver, an RF transceiver, and a bus that includes a CEC bus or communication port over which CEC command codes may be communicated to HDMI appliances. *Id.* ¶¶ 38–40, 43.

Figure 3 of Chardon is reproduced below.

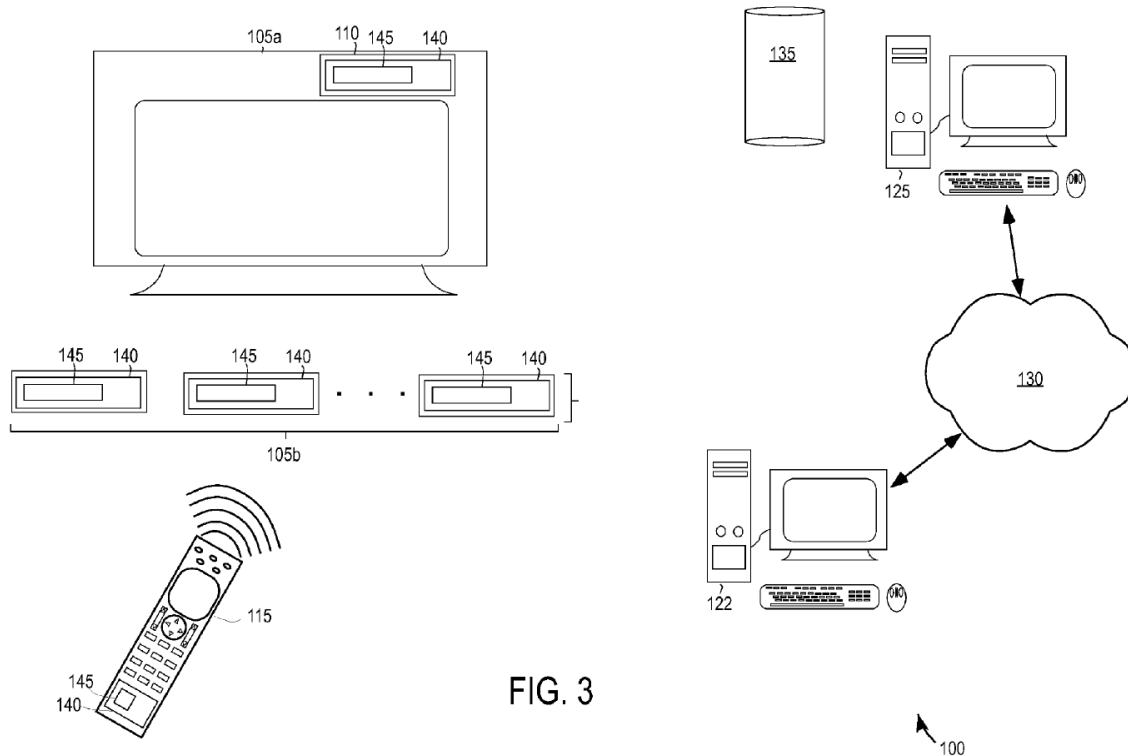


FIG. 3

Figure 3 is a simplified schematic of an entertainment system. *Id.* ¶ 42. A set of HDMI appliances includes HDMI display 105a and set of HDMI sources 105b. *Id.* ¶¶ 30, 42. Each HDMI appliance, as well as multimedia gateway 110 and remote-control device 115, includes remote-control system 140 configured to run remote-control engine 105. *Id.* ¶¶ 36, 43. Entertainment system 100 may also include computer 122, which may communicate with remote server 125 via network 130. *Id.* ¶¶ 33, 42.

In some instances, “the remote-control engine operating on the remote-control system of the multimedia gateway is configured to collect the EDID of an HDMI display,” if the multimedia gateway and HDMI display are coupled by an HDMI cable. *Id.* ¶ 44. Remote-control engine 105 of multimedia gateway 110 or remote-control device 115 may query HDMI display 105a, such as by two way IR or RF communication, to collect the

EDID, which may then be linked for HDMI display 105a with the locally stored set of command codes. *Id.*

In operation, the remote-control engine sends a CEC command code to an HDMI appliance to be executed. *Id.* ¶ 58, Fig. 5 (element 500). If a response is not received indicating that the command code has been received and executed, an IR command code is sent to the HDMI appliance. *Id.* ¶ 58, Fig. 5 (elements 510, 530, 540); *see also id.* ¶ 62, Fig. 6.

## 2. *HDMI 1.3a*<sup>5</sup>

HDMI 1.3a is version 1.3 of the High-Definition Multimedia Interface specification. Ex. 1010, 17. “The High-Definition Multimedia Interface is provided for transmitting digital television audiovisual signals from DVD players, set-top boxes and other audiovisual sources to television sets, projectors and other video displays.” *Id.* HDMI carries audio, video, control, and status information. *Id.* HDMI 1.3a describes transmitting the audiovisual signals from an audiovisual source (a device with HDMI output) to an HDMI sink (a device with an HDMI input) such as television sets, projectors, and other video displays. *Id.* at 17, 21. HDMI 1.3a describes an optional CEC line “for high-level user control of HDMI-connected devices.” *Id.* at 139; *see id.* at 24, 128.

Petitioner provides multiple pieces of evidence to support its contention that HDMI 1.3a is a printed publication under 35 U.S.C. § 102(b): (1) internet web pages referring to HDMI 1.3a, together with affidavits from the Internet Archive supporting a date of June 8, 2009,

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<sup>5</sup> When citing to HDMI 1.3a, we cite to the native pagination.

Exs. 1042, 1045, 1048, 1049; (2) a declaration by Steve Venuti, former Vice President of Marketing HDMI Licensing, LLC, who attests to facts within his personal knowledge that support public availability of HDMI 1.3a at least as of November, 2006, Ex. 1043; (3) citations to HDMI 1.3a as prior art by the Office before October 28, 2011, Exs. 1037–1041; and (4) the date of November 10, 2006 on the face of HDMI 1.3a itself, Ex. 1010, 1. Patent Owner does not contest that HDMI 1.3a is prior art to the challenged claims. *See* PO Resp. 11–12. We have reviewed Petitioner’s evidence and find it sufficient to treat HDMI 1.3a as prior art.

### *3. Mishra*

Mishra discloses “a way to program a remote control unit to handle a variety of electronic devices in a fashion which is easy and quick for the user.” Ex. 1009 ¶ 5. Figure 1 of Mishra is reproduced below.

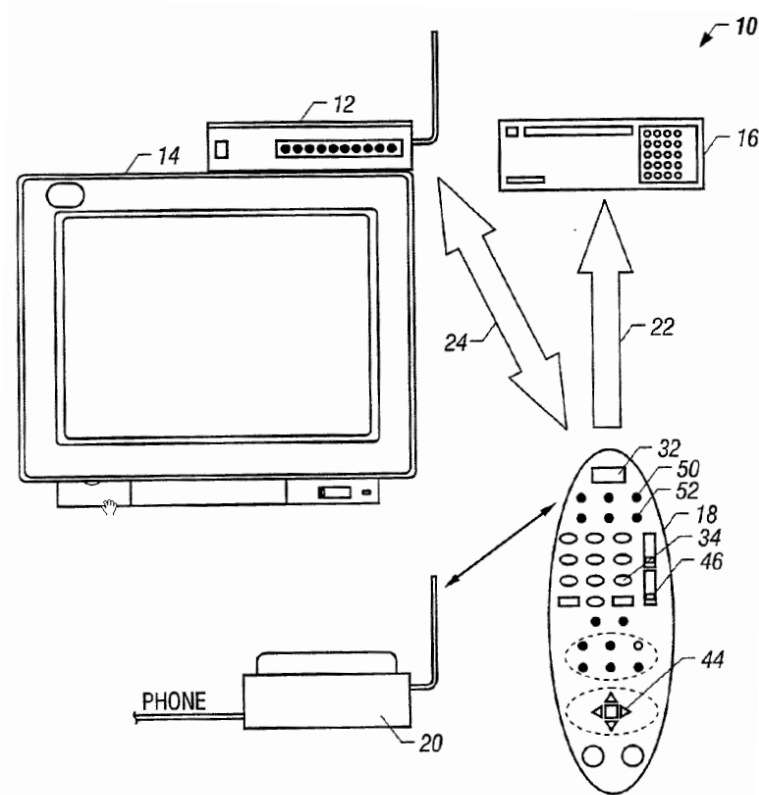


**FIG. 1**

Figure 1 is a schematic illustration of control system 10, which includes processor-based system 12 in communication with remote control unit 18. *Id.* ¶¶ 7, 14. System 12 may be a set-top computer system that works together with conventional television receiver 14. *Id.* ¶ 14. Remote control unit 18 may include display 32, keypad 34, and joy-stick navigational control 44. *Id.* ¶ 15. In addition, remote control unit 18 may include telephone off-hook button 46 and buttons 50, 52 that act as “on” and “off” controls for dedicated electronic devices, such as audio/visual receiver 16. *Id.*

Remote control unit 18 may communicate with system 12 using wireless communication such as IR or RF links, and system 12 can translate a command signal received from radio control unit 18 into a format

appropriate for controlling device 16. *Id.* ¶¶ 18, 20. “That is, it is not necessary to program [remote control unit 18] independently. Instead a variety of codes may be stored in the system 12.” *Id.* ¶ 20. Thus, when remote control unit 18 transmits a signal corresponding to a known function, system 12 can translate that signal and send information back to remote control unit 18 to control the particular device that remote control unit 18 is to operate. *Id.* Figure 1 depicts two communication pathways that illustrate this relaying process. Namely, pathway 24 provides bidirectional communication between remote control unit 18 and system 12, while pathway 22 is between remote control unit 18 and device 16. *Id.* ¶ 34.

For example, if a user presses a button on remote control unit 18, such as a “channel up button,” remote control unit 18 transmits a command to system 12, which receives the signal and “in turn sends [remote control unit 18] the necessary codes to increment the channel on the TV.” *Id.* ¶ 37. Remote control unit 18 takes these codes and sends them to the TV using protocols stored in its memory. *Id.*

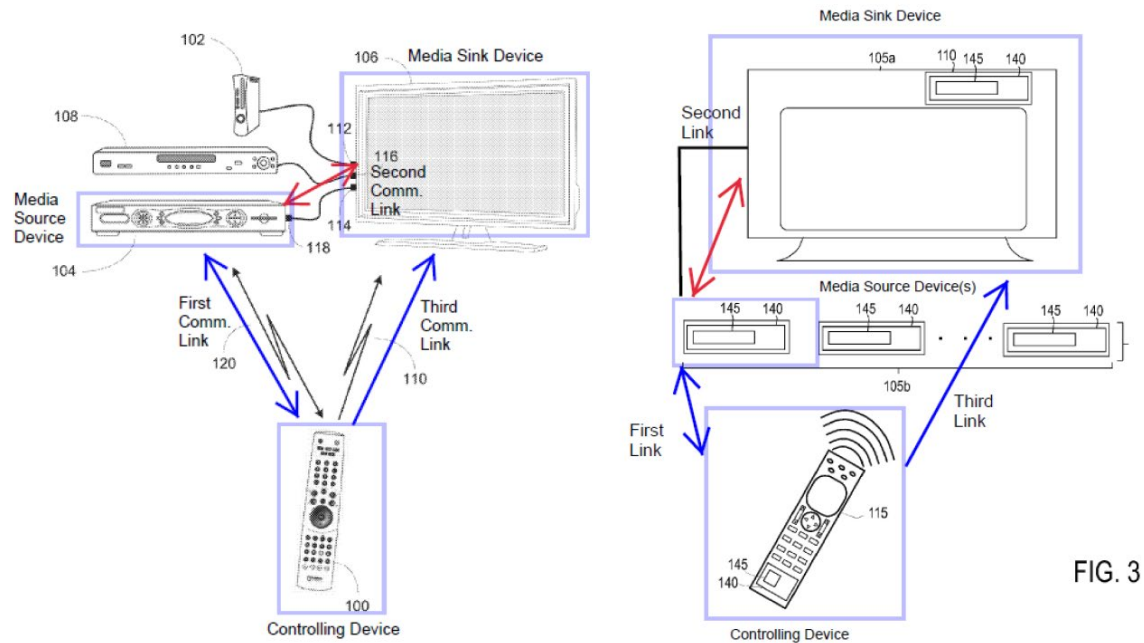
### *E. Independent Claim 1*

Petitioner challenges claim 1 as unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra. Pet. 29–62.

#### *1. Architecture*

In addressing the applied prior art, Petitioner notes that Chardon discloses an architecture similar to that described by the ’785 patent. *Id.* at 36–37. Petitioner illustrates this similarity by providing an annotated

comparison of Figure 1 of the '785 patent with Figure 3 of Chardon, reproduced below. *Id.* at 37.



Petitioner's annotations to Figure 1 of the '785 patent (on the left) and Figure 3 of Chardon (on the right), reproduced above, illustrate Petitioner's position that "[t]he '785 patent and Chardon both thus describe home theater system topologies that include a triangle of communication options between a controlling device (like a remote control), a media source device (like a set top box or a DVD player), and a media sink device (like a TV or HDMI display)." *Id.*

Petitioner's annotations also usefully summarize various correspondences that Petitioner draws between the structural limitations of independent claim 1 and Chardon's disclosure: between (1) the recited "system" and Chardon's entertainment system 100, *id.* at 38–39; (2) the recited "media source device" and any one of Chardon's HDMI sources 105b, *id.* at 39; (3) the recited "controlling device in communication with the media source device" and Chardon's remote control system 140, *id.* at 39–

41; (4) the recited “first communications link” and an IR link between Chardon’s controlling device 115 and one of Chardon’s HDMI sources 105b, *id.* at 42–43; (5) the recited “media sink device” and a target appliance like Chardon’s HDMI display 105a, *id.* at 43; (6) the recited “second communications link” and an HDMI interface between Chardon’s HDMI sources 105b and Chardon’s HDMI display 105a, *id.* at 44–45; and (7) the recited “third communications link” and an IR link between Chardon’s controlling device 115 and Chardon’s HDMI display 105, *id.* at 60–61. These identifications are supported by the testimony of Dr. Russ, and are not disputed by Patent Owner. *See* Ex. 1003 ¶¶ 187–192, 195–198, 200, 236; PO Resp. 15–30. We find Petitioner’s identification of these architectural aspects of the claim sufficient.

## *2. Providing a “message having data”*

Independent claim 1 recites that “the media source device is programmed to provide to the controlling device via the first communications link a message having data which indicates whether a media sink device coupled to the media source device is responsive or unresponsive to a command communication transmitted to the media sink device by the media source device via a second communications link between the media source device and the media sink device.” Ex. 1001, 9:29–37.

Petitioner characterizes this requirement as “little more than making ‘the controlling device’ (e.g., Chardon’s remote control device 115) aware that an intended ‘media sink device’ (e.g., target appliance like Chardon’s HDMI display 105a) will/will not be responsive to a command transmitted

to it from a connected ‘media source device’ (e.g., one of Chardon’s media source devices 105b like a STB or DVD player).” Pet. 43 (citing Ex. 1003 ¶¶ 197–198). Petitioner specifically addresses providing the recited “message having data” by pointing to Chardon’s “leverag[ing] of a built-in HDMI feature,” namely the ability of connected HDMI appliances “to remotely control one another.” *Id.* at 44 (citing Ex. 1005 ¶ 3).

According to Dr. Russ, this feature “simplifies the controlling operations and enables controlling devices to ‘operate on a variety of remote control platforms,’ thereby ensuring that an intended target appliance ultimately receives control commands.” Ex. 1003 ¶ 199 (citing Ex. 1005 ¶¶ 1, 3). “So in the event that the intended target appliance is not responsive to a command sent from a connected appliance (which may have initially received the command from the controlling device), the controlling device can then send the command directly to the intended target appliance.” *Id.*

According to Dr. Russ, a person of ordinary skill in the art “would have turned to [HDMI 1.3a] to fill in any details lacking in Chardon with respect to how HDMI-capable devices operate.” Ex. 1003 ¶ 171. This is so, Dr. Russ testifies, in light of HDMI 1.3a’s express disclosure that it “completely describes the [HDMI] interface such that one could implement a complete transmission and interconnect solution or any portion of the interface.” *Id.*; Ex. 1010, 17. Petitioner additionally contends that a person of ordinary skill in the art “would have a reasonable expectation of success in comb[in]ing Chardon and [HDMI 1.3a] because Chardon itself expressly relies on common HDMI features and on HDMI-compatible devices in certain embodiments.” Pet. 30. We find Petitioner’s reasoning to effect the

combination of HDMI 1.3a with Chardon supported by rational underpinning, and note that Patent Owner does not contest this reasoning.

Petitioner accordingly relies on teachings of HDMI 1.3a in combination with Chardon to identify three specific examples of how the providing a “message having data” limitation is met through the combination of Chardon with HDMI 1.3a. *See id.* at 45–48. To “round out Chardon’s read” onto this limitation, Petitioner further observes that Chardon teaches various ways that a controlled device shares response information with its controlling device. *Id.* at 50–51 (citing Ex. 1005 ¶¶ 50, 63; Ex. 1003 ¶¶ 213–216). In addition, Petitioner relies on Mishra “to establish the level of understanding of a [person of ordinary skill in the art] interpreting and fully leveraging the robust capabilities of Chardon’s remote control system 140 and remote control engine 145.” *Id.* at 52.

First, Petitioner observes that Chardon explains that its HDMI sources 105b operating remote control engines 145 may query HDMI display 105a to collect its EDID. *Id.* at 46 (citing Ex. 1005 ¶ 44). And Petitioner further observes that HDMI 1.3a discloses that a source device may request a sink’s EDID to discover the sink’s configuration and capabilities. *Id.* (citing Ex. 1010, 25). In light of these disclosures, Dr. Russ testifies that “by learning the device configuration and capabilities via an EDID, the controlling device (or any other HDMI device) will be able to determine whether the sink device will be responsive or unresponsive to received commands.” Ex. 1003 ¶ 202.

Second, Petitioner observes that Chardon explains that its HDMI sources 105b may “collect the CEC vendor identifier (ID) of one or more of the HDMI appliances in entertainment system 100.” Pet. 46 (quoting

Ex. 1005 ¶ 49). Dr. Russ explains that “receipt by a media source device of a CEC vendor ID will also inform it as to whether the receiving sink device will be responsive or unresponsive to received commands.” Ex. 1003 ¶ 203.

Third, Petitioner points to Chardon’s description that remote control engine 145 operating on HDMI source 105b may exchange messages in the form of a “hand-shake” operation with HDMI display 105a. Pet. 46–47 (citing Ex. 1005 ¶ 58). Dr. Russ highlights that “Chardon further explains that this hand-shake operation, where ‘the HDMI appliance is configured to provide the response information to the remote control engine,’ can be performed ‘during setup of the remote control engine, during initial connection of the HDMI appliance to the entertainment system based on a query from the remote control engine, etc.’” Ex. 1003 ¶ 205 (quoting Ex. 1005 ¶ 59).

Both Petitioner and Dr. Russ characterize these three scenarios as examples where “Chardon’s media source device performs command communication with Chardon’s media sink device.” Pet. 47; Ex. 1003 ¶ 206. Dr. Russ further opines (and Petitioner repeats) that a person of ordinary skill in the art “would understand that such response information corresponds to the claimed ‘message having data’ indicative of whether the media sink device will or will not be responsive to command communication transmitted to the media sink device via the HDMI interface.” Ex. 1003 ¶ 206; Pet. 47. “So, based on the EDID, Vendor ID, and/or the result of the hand-shake, Chardon’s DVD player (the claimed ‘media source device’) determines if Chardon’s HDMI display 105a (the claimed ‘media sink device’) will or will not be responsive to command controls transmitted from

the DVD player to the HDMI display over the HDMI interface.” Ex. 1003 ¶ 206; *see* Pet. 47.

Patent Owner disputes this aspect of Petitioner’s analysis primarily based on its position that “Petitioner’s interpretation [of the ‘message having data’ limitation] is inconsistent with claim 1 and the specification of the ’785 Patent.” PO Resp. 20; *see also id.* (“FIG. 5 of the ’785 patent and the supporting disclosure within the specification of the ’785 patent is clear that a ‘message having data which indicates whether . . . the media sink device . . . is responsive or unresponsive to a command communication’ is only transmitted from the media source device to the controlling device after the media source device transmits an actual command communication to the media sink device and the media source device makes a determination of whether the media sink device is responsive or unresponsive to the command communication.”). Patent Owner’s argument is unpersuasive because it is not commensurate with our adopted construction. That is, we disagree that “[b]ecause Petitioner does not identify a specific command that in-turn triggers the specific message containing the data disclosed and claimed in the ’785 Patent, the Petition must fail.”<sup>6</sup> *See id.* at 24.

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<sup>6</sup> Petitioner presents an alternative argument that focuses on the <Give Device Vendor ID> instruction described by HDMI 1.3a. Pet. 46–47; Reply 23–24; *see* Ex. 1010, 214–215. Petitioner identifies this instruction as a “command communication” transmitted by a media source device to a media sink device, which responds with a <Device Vendor ID> that allows the media source device to ascertain whether the media sink device is responsive or unresponsive to the instruction. Reply 24 (citing Ex. 1010, 214–215; Ex. 1003 ¶¶ 76–78, 152–154, 230). We agree with Petitioner that this meets the “message having data” limitation even under Patent Owner’s theory.

Patent Owner also contends that “[e]qually missing from the Petition is any example of the alleged ‘message’ (i.e. EDID, Vendor ID, or hand-shake) being provided to the controlling device” because the examples Petitioner provides “correspond only to preliminary steps 500, 502, and 504 of Figure 5 [of the ’785 patent] and at most determine a media sink device’s *capabilities*.” PO Resp. 24. This argument is again incommensurate with our adopted construction. As we discuss above, we agree with Petitioner that, because of the breadth of the claim, there is “no principled reason to exclude steps 500/502/504 from reading on the broadly-worded first wherein clause [that the media source device is programmed to provide the “message having data” to the controlling device].” *See* Reply 13; *supra* § II.C.2.d.

We accordingly determine that Petitioner makes a sufficient showing with respect to the providing a “message having data” limitation.

### *3. Configuration of the Controlling Device*

Independent claim 1 recites that “the controlling device is programmed to use the data within the message to automatically configure the controlling device such that the controlling device will respond to an activation of an input element of the controlling device.” Ex. 1001, 9:37–41. For this limitation, Petitioner observes that “Chardon’s remote control device 115 is programmed to configure itself to communicate directly with an intended target appliance (if necessary) when responding to an activation of an ‘input element’ such as ‘power on’ or set the input to ‘HDMI 2 input.’” Pet. 55 (citing Ex. 1005 ¶ 66; Ex. 1003 ¶ 225).

Petitioner identifies multiple “ways the controlling device can automatically configure itself.” *See id.* at 55–58. These include Chardon’s

description of configuring remote-control device 115 “to transmit and receive in IR, RF, etc. and may include a communication port for communication of CEC command codes.” *Id.* at 56 (quoting Ex. 1005 ¶ 43) (citing Ex. 1003 ¶¶ 226–228). Dr. Russ testifies that “[s]uch configuration is consistent with Chardon’s view of modern remote control devices,” and that a person of ordinary skill in the art “would also understand the general operations of a remote control device to include ‘input element[s]’ that can be activated to perform a controlling operation.” Ex. 1003 ¶ 229.

In addition, Petitioner identifies an operation described in Chardon “where the remote control engine of a remote control device can display failed commands (or not display successful commands) when receiving the ‘response information’ from other remote control engines.” Pet. 58 (citing Ex. 1005 ¶ 67). Dr. Russ supports this identification, stating that a person of ordinary skill in the art “would have understood that the displaying of failed command codes (from DVD player to display) enables a user to configure the remote control device to control operations of the display directly through user interactive methods.” Ex. 1003 ¶ 231 (citing Ex. 1005 ¶ 54).

Patent Owner disputes the sufficiency of Petitioner’s showing because “Petitioner fails to explain how the remote control device uses EDID data, CEC Vendor ID data, or an HDMI handshake (*i.e.* the alleged ‘message’) for automatic configuration.” PO Resp. 26. But Petitioner specifically explains that “Chardon’s remote control device can also automatically configure itself based on the claimed ‘data within the message’ (e.g., responsive information such as Vendor ID, EDID, hand-shake messaging described above) that it receives from other remote control engines running on other HDMI appliances.” Pet. 57. As one example, the Petition points to Chardon’s

specific disclosure that, upon receiving the message data, its “remote-control device may be configured to ‘link’ the CEC vendor ID for an HDMI appliance with the locally stored . . . sets of command codes (set of IR command codes and/or set of CEC command codes) for the HDMI appliance.” *Id.* (quoting Ex. 1005 ¶ 50).

Petitioner reinforces this point in its Reply by directing our attention to Chardon’s explanation that “[t]he multi-media gateway may be configured by supplying sets of command codes to the multi-media gateway for the appliances that are in entertainment system 100.” Reply 22 (quoting Ex. 1005 ¶ 46). Because those command codes are obtained using the HDMI display’s EDID or CEC Vendor ID, Petitioner reasons that “Chardon thus unambiguously uses the data within the message to automatically configure the controlling device to communicate with a sink device via t[w]o separate communication pathways—namely CEC over HDMI via an HDMI appliance, or directly via IR, depending on target device responsiveness.” Reply 22 (citing Ex. 1005 ¶ 44; Ex. 1003 ¶¶ 225–239). Patent Owner essentially confirms this reading of Chardon, as does the cited testimony of Patent Owner’s expert, Dr. Turnbull:

At best, Chardon’s discussion of command code databases indicates that device-identifying data, such as an EDID or CEC Vendor ID can be ‘linked’ with sets of command codes within the command code database such that a remote control engine (either executing on a device physically connected via HDMI to other HDMI appliances or on a wireless remote control) can identify the correct set of command codes for sending commands directly to a specific appliance.

PO Resp. 26 (citing Ex. 2004 ¶¶ 81, 87, 88, 133–135; Ex. 1005 ¶¶ 45, 50).

Patent Owner nevertheless argues that Petitioner's argument is "pointing to a possible configuration of the remote control device and is not pointing to an example of the remote control device being automatically configured based on data within the message indicating responsiveness." *Id.* at 27. But this argument is predicated on Patent Owner's presumed construction of "message having data," which we have not adopted. This is illustrated by Petitioner, who observes that Chardon and the '785 patent "work[] the same way." Reply 22. That is, as Petitioner states, the yellow steps of Figure 5 of the '785 patent (i.e., steps 500, 502, 504) rely on HDMI-CEC protocols to establish media sink responsiveness to CEC commands. Although we recognize that Patent Owner disagrees that these steps have any legitimate bearing on construction of the "message having data" limitation, we agree with Petitioner's characterization:

The '785 patent [establishes media sink device responsiveness] by empirically deriving device responsiveness via "the appliance's response (or lack thereof) to a CEC query" or it determines responsiveness "by referencing a local or remote database of appliance capabilities using appliance identity information embedded in the EDID or previously gathered during initial set up of controlling device 100, or any suitable method."

*Id.* (quoting Ex. 1001, 6:22–31).

We accordingly determine that Petitioner makes a sufficient showing with respect to this limitation.<sup>7</sup>

*4. Unresponsive to the Command Communication:  
Issuing a Communication via the Third Communications Link*

Independent claim 1 requires “issuing a communication directly to the media sink device via a third communications link between the controlling device and the media sink device to control the functional operation of the media sink device when the data in the message indicates that the media sink device is unresponsive to the command communication.” Ex. 1001, 9:42–10:3. Referring to features described by Chardon, Petitioner asserts that

[t]his feature is little more than causing the controlling device (e.g., remote control device 115) to transmit a command communication (e.g., volume up, power off, channel up) directly to the media sink device (e.g., HDMI display 105a) when the media sink device is determined to be unresponsive to the media source device (e.g., Chardon’s DVD player).

Pet. 59.

Petitioner further points to a specific example in which Chardon describes “monitoring the CEC bus for a response issued from the second

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<sup>7</sup> Patent Owner argues in its Sur-reply that the International Trade Commission reached a conclusion that supports Patent Owner’s position when considering the claims of U.S. Patent No. 10,593,196 (“the ’196 patent”). Sur-reply 14. We do not give weight to the Commission’s conclusion because Petitioner has not had an opportunity to address Patent Owner’s argument. *See* 37 C.F.R. § 42.23(a); Tr. 47:23–48:3 (confirming that the ITC opinion “was available [but] not quite finalized) when the Patent Owner Response was filed because the ITC opinion was “still under the [Presidential] review period”).

HDMI appliance in response to receipt and execution of the CEC command code.” *Id.* (quoting Ex. 1005 ¶ 12). Petitioner reasons that the limitation is met because Chardon explicitly describes, when “a response is not issued from the second HDMI appliance,” both “determining an IR command code that corresponds to the CEC command code for the second HDMI appliance” and “transmitting the IR command code to the second HDMI appliance to perform a function associated with the CEC command code.” *Id.* at 59–60 (citing Ex. 1003 ¶¶ 234–235); Ex. 1005 ¶ 12.

Patent Owner disputes Petitioner’s showing as “fail[ing] to explain what the alleged ‘communication’ is in Chardon.” PO Resp. 28. But as Petitioner reiterates in its Reply, “[t]he Petition is clear that the ‘communication’ is any communication that ‘controls the functional operation of the media sink device,’ like volume up, power off, channel up, input change command, etc.” Reply (citing Pet. 59, 61; Ex. 1003 ¶ 233).

In addition, Patent Owner contends that Petitioner “fails to explain how Chardon’s alleged ‘message’ (*i.e.* EDID, CEC vendor ID, etc.) indicates that the HDMI display (e.g., the alleged ‘media sink device’) ‘will be [*sic: is*] *unresponsive* to the command communication.’” PO Resp. 28 (quoting Ex. 1001, 10:3) (emphasis by Patent Owner). But as Petitioner observes, Chardon expressly teaches that, when the media source device does not receive a response to a <Give Vendor Device ID> instruction sent to a media sink device, the remote control engine is configured to communicate via IR directly with the media sink device. Reply 25 (citing Ex. 1005 ¶¶ 12, 58, 66; Ex. 1003 ¶¶ 234–236).

We determine that Petitioner makes a sufficient showing with respect to this limitation.

*5. Responsive to the Command Communication:  
Issuing a Communication via the  
First and Second Communications Links*

Independent claim 1 requires “issuing a communication directly to the media source device via the first communications link to cause the media source device to issue a command to control the functional operation of the media sink device via the second communications link in the event that data indicates that the media sink device is response to the command communication.” Ex. 1001, 10:4–10. Again referring to features described by Chardon, Petitioner asserts that

[t]his feature is little more than causing the ‘controlling device’ (e.g., Chardon’s remote control device 115) to send a command (e.g., one touch play macro command, volume up command, or an input change command) to its ‘media source device’ (e.g., DVD player) and to only send an alternative communication to its ‘media sink device’ (e.g., HDMI display) if the command fails.

Pet. 61. Petitioner further points to a specific example in Chardon where its controlling device “issue[s] a command to its media source device to cause the media source device to transmit a set of CEC command codes to its media sink device to control a functional operation of the media sink device, when the media sink device supports CEC.” *Id.* (citing Ex. 1005 ¶ 12; Ex. 1003 ¶¶ 237–239).

In the context of this limitation, Patent Owner repeats its argument that Petitioner “fails to explain what the alleged ‘communication’ is in Chardon.” PO Resp. 29. This argument is unpersuasive in light of Petitioner’s specific identification of Chardon’s communications that control the media sink device’s functional operation like volume up, power off,

channel up, input change command, etc. *See* Reply 25. We also find unpersuasive Patent Owner’s contention that Petition is “silent regarding the automatic configuration of the controlling device based on the receipt of an indication that the ‘media sink device’ will be responsive to the command communication. *See* PO Resp. 30. But Petitioner observes that Chardon expressly teaches that, “when a media source device . . . indicates that the media sink device is *responsive* to CEC commands, Chardon discloses configuring its remote control engine to communicate via its source device using CEC commands over an HDMI interface.” Reply at 25–26 (citing Ex. 1005 ¶¶ 12, 58, 66; Ex. 1003 ¶¶ 237–239). As Petitioner emphasizes, Chardon teaches that “the described remote control engine may operate on any of the HDMI appliances.” Ex. 1005 ¶ 65.

We determine that Petitioner makes a sufficient showing with respect to this limitation.

#### *6. Combination of References*

Petitioner reasons that a person of ordinary skill in the art would have combined the teachings of Chardon, HDMI 1.3a, and Mishra. Pet. 29–33. First, Petitioner contends that such a skilled artisan would have turned to HDMI 1.3a in light of Chardon’s express reliance on the features and capabilities of HDMI-compliant devices. *Id.* at 29–30 (citing Ex. 1003 ¶ 171); Ex. 1005, Abstr. In turn, HDMI 1.3a “completely describes the [HDMI] interface such that one could implement a complete transmission and interconnect solution or any portion of the interface.” Ex. 1010, 17. In addition, Petitioner contends that a person of ordinary skill in the art would have had a reasonable expectation of success in integrating the HDMI

features described by HDMI 1.3a into Chardon's described embodiments because of Chardon's reliance on such features. Petitioner thus articulates sufficient reasoning supported by rational underpinning to effect the combination. As Petitioner notes, Patent Owner "does not challenge the motivation to combine Chardon with [HDMI 1.3a]." Reply 26.

Second, Petitioner contends that a person of ordinary skill in the art would also combine the teachings of Mishra to the combination of Chardon and HDMI 1.3a. Pet. 31–33. In particular, Petitioner notes that Chardon describes a remote control device with two-way communication capabilities, and contends that a skilled artisan would "leverage" such capabilities with Mishra's wireless configuration of remote control devices. *Id.* at 32. According to Petitioner," a person of ordinary skill in the art "would have thus looked to Mishra's ability to configure a remote control device using a wireless means, such as a transmitter, as confirmation that, for example, messages including responsiveness data may be sent from Chardon's media devices (e.g., a media source device) to its remote control device 115." *Id.* at 33 (citing Ex. 1003 ¶ 176). Petitioner thus relies in its analysis on Mishra as "demonstrat[ing] the relevant background information," "establish[ing] the level of understanding" for fully leveraging Chardon's remote-control capabilities, and to support its contention that it would have been obvious to receive responsiveness data through two-way communication links. *Id.*

Patent Owner disputes Petitioner's rationale because "[c]onfiguring Chardon's remote control as recited in claim 1 of the '785 patent would be redundant with the functionality of the described multimedia gateway." PO Resp. 30–31. In addition, Patent Owner contends that the disclosures of Chardon and Mishra are "inconsistent" because "Mishra merely discusses

very general concepts for programming a remote control unit” and “Chardon does not require the configuration of a remote control device at all.” *Id.* at 32–33. But Petitioner specifically notes that Chardon teaches that its remote control system 140 can be situated in remote control device 115, but “does not provide details for programming such a wireless remote control.”

Reply 27. Petitioner’s reliance on Mishra in its patentability analysis is modest, and looking to Mishra for details for such programming provides a rational underpinning that supports Petitioner’s reasoning.

We accordingly determine that Petitioner articulates sufficient reason to effect the combination of teachings of Chardon, HDMI 1.3a, and Mishra that it uses in its analysis.<sup>8</sup>

### 7. Summary

For the reasons explained above, Petitioner sufficiently shows that each limitation of independent claim 1 is met by the combination of the asserted references, and articulates reasons, supported by rational underpinning, to combine the teachings of the asserted references. We accordingly conclude that Petitioner shows, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

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<sup>8</sup> Patent Owner again argues in its Sur-reply that the International Trade Commission’s determinations in considering obviousness of claims of the ’196 patent support its position. Sur-reply 19–20; *see supra* n.5. For the same reasons, we do not give weight to the Commission’s determination because Petitioner has not had an opportunity to address Patent Owner’s argument. *See* 37 C.F.R. § 42.23(a).

*F. Dependent Claims*

*1. Dependent Claims 2 and 4*

Claims 2 and 4 depend from claim 1 and recite specific structures for the media source device, respectively “an Internet connected media streaming device” and “a set-top box device.” Ex. 1001, 10:11–13, 10:16–17. For these claims, Petitioner identifies Chardon’s teachings that HDMI sources may include a “set-top box” or any of various other structures, such as “a personal video recorder (PVR), a DVD player (e.g., a Blu-ray™ disk player), a computer (desktop, laptop, netbook, tablet, PDA, etc.), a smartphone, a portable media player (iPod™, iPad™, etc.), a digital camera, a digital video camera, a digital media adapter, etc.” Pet. 62–63 (citing Ex. 1005 ¶ 30). Chardon explicitly discloses that such sources may be “network enabled” such that the disclosure plainly meets the claim limitations. *See* Ex. 1005 ¶¶ 30, 45.

Patent Owner does not contest Petitioner’s showing for claims 2 and 4 outside of its arguments directed at independent claim 1. We accordingly conclude that Petitioner shows, by a preponderance of the evidence that claims 2 and 4 are unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

*2. Dependent Claims 3 and 5*

Claims 3 and 5 depend respectively from claims 2 and 4, and recite that “the media sink device comprises a television.” Ex. 1001, 10:14–15, 10:18–19. Chardon discloses that the media sink device may be an HDMI display that includes a “Sony Internet TV,” thereby plainly meeting these

limitations. Ex. 1005 ¶ 30, 33. Petitioner makes this identification, which Patent Owner does not dispute. Pet. 62–63.

We accordingly conclude that Petitioner shows, by a preponderance of the evidence, that claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

### *3. Dependent Claim 6*

Claim 6 depends from claim 1 and recites that “the media source device is programmed to transfer media to the media sink device via the second communications link.” Ex. 1001, 10:20–22. In addressing this limitation, Petitioner points to Chardon’s disclosure that its sources are “‘configured to source media to multi-media gateway 110 and HDMI display 105a,’ through the HDMI interface, which corresponds to the claimed ‘second communications link.’” Pet. 63 (quoting Ex. 1005 ¶ 30). We agree that this disclosure meets the limitation, which Patent Owner does not dispute.

We accordingly conclude that Petitioner shows, by a preponderance of the evidence, that claim 6 is unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

### *4. Dependent Claims 7 and 8*

Claim 7 depends from claim 1 and recites that “the functional operation comprises an input selection functional operation.” Ex. 1001, 10:23–24. Claim 8 depends from claim 7 and recites that “the input selection functional operation causes a selection by the media sink device of a specific one of a plurality of input ports of the media sink device.” *Id.* at

10:25–28. For these limitations, Petitioner identifies Chardon’s disclosure of a DVD player that “may issue CEC command codes to an HDMI TV to . . . switch the input to the HDMI DVD player,” thus acting as a function operation that causes a selection by the media sink device of a specific one of a plurality of input ports of the media sink device. Pet. 65 (quoting Ex. 1005 ¶ 3). Patent Owner does not dispute this identification, which we find meets the limitations.

We accordingly conclude that Petitioner shows, by a preponderance of the evidence, that claims 7 and 8 are unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

#### *5. Dependent Claims 9–13*

Claims 9–13 depend directly or indirectly from independent claim 1 and recite various specific types of communication links for the first, second, and third communication links, including wireless, wired, rf, and infrared communication links. Ex. 1001, 10:29–43. Patent Owner does not dispute Petitioner’s identification of these various types of communication links by Chardon, and we find Petitioner’s identification sufficient. Pet. 65–68.

We accordingly conclude that Petitioner shows, by a preponderance of the evidence, that claims 9–13 are unpatentable under 35 U.S.C. § 103(a) over Chardon, HDMI 1.3a, and Mishra.

### III. CONCLUSION<sup>9</sup>

The table below summarizes our conclusions as to the challenged claims.

| <b>Claims</b>              | <b>35 U.S.C.<br/>§</b> | <b>Reference(s)/<br/>Basis</b>   | <b>Claims<br/>Shown<br/>Unpatentable</b> | <b>Claims Not<br/>Shown<br/>Unpatentable</b> |
|----------------------------|------------------------|----------------------------------|------------------------------------------|----------------------------------------------|
| 1–13                       | 103                    | Chardon,<br>HDMI 1.3a,<br>Mishra | 1–13                                     |                                              |
| <b>Overall<br/>Outcome</b> |                        |                                  | 1–13                                     |                                              |

### IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1–13 of U.S. Patent No. 9,641,785 B2 have been shown to be unpatentable;

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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<sup>9</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

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