

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.,**
Petitioners,

v.

MAXELL, LTD.,
Patent Owner

Case: IPR2025-01310

U.S. Patent No. 12,160,681

**PATENT OWNER'S RESPONSE TO PETITION FOR *INTER PARTES*
REVIEW OF U.S. PATENT NO. 12,160,681**

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PATENT OWNER'S EXHIBIT LIST

Description	Exhibit #
Notice Letter to Samsung (July 7, 2021)	2001
Follow-up Notice Letter to Samsung (December 29, 2021)	2002
Docket Navigator Time to Trial Statistics for the Eastern District of Texas	2003
Docket Control Order, <i>Maxell, Ltd. v. Samsung Elecs. Co., Ltd.</i> , No. 5:25-cv-00052-RWS (E.D. Tex.)	2004
Jury Trial Transcript, Vol. 4, <i>Maxell, Ltd. v. Samsung Elecs. Co., Ltd.</i> , No. 5:23-cv-00092-RWS (E.D. Tex.)	2005
Complaint, <i>Maxell, Ltd. v. Samsung Elecs. Co., Ltd.</i> , No. 5:25-cv-00052-RWS (E.D. Tex.)	2006
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Law360 Article, "Maxell Scores \$43M EDTX Jury Win In ZTE Patent Trial"	2009
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LISTING OF CHALLENGED CLAIMS¹

Claim	Claim Text
[1pre]	A video transmitting apparatus comprising:
[1a]	wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, while the wireless communication is connected to the display apparatus after a new connection is established with the display apparatus, a first request message and a second request message to the display apparatus;
[1b]	audio/video signal generation circuitry configured to generate an audio/video signal stream;
[1c]	a memory; and
[1d]	control circuitry configured to:
[1e]	transmit, to the display apparatus via the wireless communication circuitry, the first request message together with a first number;
[1f]	receive capability information relating to the display apparatus from the display apparatus via the wireless communication circuitry;
[1g]	store the received capability information relating to the display apparatus in the memory;
[1h]	determine at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus;
[1i]	cause the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream;
[1j]	transmit the generated audio/video signal stream to the display apparatus via the wireless communication circuitry; and
[1k]	when a predetermined condition is met, transmit, to the display apparatus via the wireless communication circuitry, the second request message together with a second number which is different

¹ For convenience purposes only, Patent Owner adopts for this Response the numbering of claim elements advanced by Petitioner in the Petition (Paper 3) on page v-x. Patent Owner does not concede the appropriateness of such grouping and numbering of claim elements.

	from the first number,
[11]	wherein one of the first number transmitted with the first request message to the display apparatus and the second number transmitted with the second request message to the display apparatus is generated by increasing the other of the first number and the second number by an arbitrary number.
[2]	The video transmitting apparatus according to claim 1, wherein the capability information relates to either EDID (Extended Display Identification Data), normal rated power, brightness of display panel, or total operating time of the display apparatus.
[3]	The video transmitting apparatus according to claim 1, wherein the predetermined condition is met when identification information for wireless communication received from the display apparatus matches identification information stored in the memory.
[4]	The video transmitting apparatus according to claim 1, wherein the predetermined condition is met when specific information included in EDID (Extended Display Identification Data) received from the display apparatus matches specific information stored in the memory.
[5]	The video transmitting apparatus according to claim 4, wherein the specific information included in the EDID is either a checksum value, a CRC (Cyclic Redundancy Check) value, or a hash value of the EDID.
[6]	The video transmitting apparatus according to claim 1, wherein the control circuitry is further configured to transmit the first request message with the first number or the second request message with the second number periodically to the display apparatus via the wireless communication circuitry.
[7]	The video transmitting apparatus according to claim 1, wherein the control circuitry is further configured to store a third number in the memory, the third number being different from the first number, the third number being received from the display apparatus via the wireless communication circuitry.
[8a]	The video transmitting apparatus according to claim 7, wherein the third number is changed to a fourth number by the display apparatus, and
[8b]	wherein the control circuitry is further configured to store the fourth number in the memory, the fourth number being received from the display apparatus via the wireless communication circuitry.
[9pre]	A video transmitting apparatus comprising:

[9a]	wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, while the wireless communication is connected to the display apparatus after a new connection is established with the display apparatus, a first request message and a second request message to the display apparatus;
[9b]	audio/video signal generation circuitry configured to generate an audio/video signal stream;
[9c]	a memory; and
[9d]	control circuitry configured to:
[9e]	transmit, to the display apparatus via the wireless communication circuitry, the first request message together with a first number;
[9f]	receive capability information relating to the display apparatus from the display apparatus via the wireless communication circuitry;
[9g]	store the received capability information relating to the display apparatus in the memory;
[9h]	determine at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus;
[9i]	cause the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream;
[9j]	transmit the generated audio/video signal stream to the display apparatus via the wireless communication circuitry;
[9k]	when a predetermined condition is met, transmit, to the display apparatus via the wireless communication circuitry, the second request message together with a second number which is different from the first number;
[9l]	store a third number in the memory, the third number being different from the first number and received from the display apparatus via the wireless communication circuitry; and
[9m]	store a fourth number in the memory, the fourth number being generated by the display apparatus based on the third number and received from the display apparatus via the wireless communication circuitry,
[9n]	wherein one of the first number transmitted with the first request message to the display apparatus and the second number transmitted with the second request message to the display apparatus is generated by increasing the other of the first number and the second number by an arbitrary number.

[10]	The video transmitting apparatus according to claim 9, wherein the capability information relates to either EDID (Extended Display Identification Data), normal rated power, brightness of display panel, or total operating time of the display apparatus.
[11pre]	A method for controlling a video transmitting apparatus, the video transmitting apparatus comprising:
[11a]	wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, while the wireless communication is connected to the display apparatus after a new connection is established with the display apparatus, a first request message and a second request message to the display apparatus;
[11b]	audio/video signal generation circuitry configured to generate an audio/video signal stream; and
[11c]	a memory,
[11d]	the method comprising: transmitting, to the display apparatus via the wireless communication circuitry, the first request message together with a first number;
[11e]	receiving capability information relating to the display apparatus from the display apparatus via the wireless communication circuitry;
[11f]	storing the received capability information relating to the display apparatus in the memory;
[11g]	determining at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus;
[11h]	causing the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream;
[11i]	transmitting the generated audio/video signal stream to the display apparatus via the wireless communication circuitry; and
[11j]	in response to meeting a predetermined condition, transmitting, to the display apparatus via the wireless communication circuitry, the second request message together with a second number which is different from the first number,
[11k]	wherein one of the first number transmitted with the first request message to the display apparatus and the second number

	transmitted with the second request message to the display apparatus is generated by increasing the other of the first number and the second number by an arbitrary number.
[12]	The method according to claim 11, wherein the capability information relates to either EDID (Extended Display Identification Data), normal rated power, brightness of display panel, or total operating time of the display apparatus.
[13]	The method according to claim 11, wherein the second request message is sent in response to determining that identification information for wireless communication received from the display apparatus matches identification information stored in the memory.
[14]	The method according to claim 11, wherein the second request message is sent in response to determining that specific information included in EDID (Extended Display Identification Data) received from the display apparatus matches specific information stored in the memory.
[15]	The method according to claim 14, wherein the specific information included in the EDID is either a checksum value, a CRC (Cyclic Redundancy Check) value, or a hash value of the EDID.
[16]	The method according to claim 11, further comprising transmitting the first request message with the first number or the second request message with the second number periodically to the display apparatus via the wireless communication circuitry.
[17]	The method according to claim 11, further comprising storing a third number in the memory, the third number being different from the first number, the third number being received from the display apparatus via the wireless communication circuitry.
[18a]	The method according to claim 17, wherein the third number is changed to a fourth number by the display apparatus, and
[18b]	wherein the method further comprising storing the fourth number in the memory, the fourth number being received from the display apparatus via the wireless communication circuitry.
[19pre]	A method for controlling a video transmitting apparatus, the video transmitting apparatus comprising:
[19a]	wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, after a new connection is established with

	the display apparatus, a first request message and a second request message to the display apparatus while the wireless communication circuitry is connected with the display apparatus;
[19b]	audio/video signal generation circuitry configured to generate an audio/video signal stream; and
[19c]	a memory
[19d]	the method comprising: transmitting, to the display apparatus via the wireless communication circuitry, the first request message together with a first number;
[19e]	receiving capability information relating to the display apparatus from the display apparatus via the wireless communication circuitry;
[19f]	storing the received capability information relating to the display apparatus in the memory;
[19g]	determining at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus;
[19h]	causing the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream;
[19i]	transmitting the generated audio/video signal stream to the display apparatus via the wireless communication circuitry;
[19j]	in response to meeting a predetermined condition, transmitting, to the display apparatus via the wireless communication circuitry, the second request together with a second number which is different from the first number;
[19k]	storing a third number in the memory, the third number being different from the first number, the third number being received from the display apparatus via the wireless communication circuitry; and
[19l]	storing a fourth number in the memory, the fourth number being generated by the display apparatus based on the third number, the further number being received from the display apparatus via the wireless communication circuitry,
[19m]	wherein one of the first number transmitted with the first request message to the display apparatus and the second number transmitted with the second request message to the display apparatus is generated by increasing the other of the first number

	and the second number by an arbitrary number.
[20]	The method according to claim 19, wherein the capability information relates to either EDID (Extended Display Identification Data), normal rated power, brightness of display panel, or total operating time of the display apparatus.

I. INTRODUCTION

Patent Owner Maxell, Ltd. (“Patent Owner”) respectfully submits this Response because the Petition filed by Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., (hereinafter “Petitioner”) fails to demonstrate that claims 1-20 of U.S. Patent No. 12,160,681 (“the ’681 Patent”) (EX1001) are unpatentable.

The Petition fails on multiple independent grounds. For example, the cited references do not disclose the “when a predetermined condition is met” limitation, the second-request/second-number requirements, or the limitations the Examiner identified as the basis for allowance, as explained below.

Petitioner’s proposed multi-reference combinations also rely on hindsight and speculation rather than teachings grounded in the art.

Accordingly, the Board should confirm the patentability of all challenged claims.

II. BACKGROUND

A. Overview of the ’681 Patent

The ’681 Patent, entitled “Video Transmitter Apparatus and Video Receiver Apparatus,” is directed to techniques for efficiently exchanging receiver apparatus information between a video transmitter apparatus and a video receiver apparatus. Ex. 1001, Abstract; 1:5-15. As described in the Abstract, the video receiver apparatus includes a memory portion that memorizes receiver apparatus

information and history information that changes depending on alternation of the receiver apparatus information, and a transmitter/receiver portion configured to respond to requests from the video transmitter apparatus. *Id.*, Abstract.

The specification explains that, in video systems using interfaces such as HDMI—whether wired or wireless—the video transmitter apparatus reads receiver apparatus information indicating the capability and specifications of the video receiver apparatus, such as EDID, when transmitting video signals. Ex. 1001, 1:19–30. However, the specification identifies a technical problem in conventional systems: repeatedly transmitting receiver apparatus information can increase transmission volume and delay, particularly in environments with limited transmission capacity or wireless communication delays. *Id.* at 1:31–45; 2:1–10.

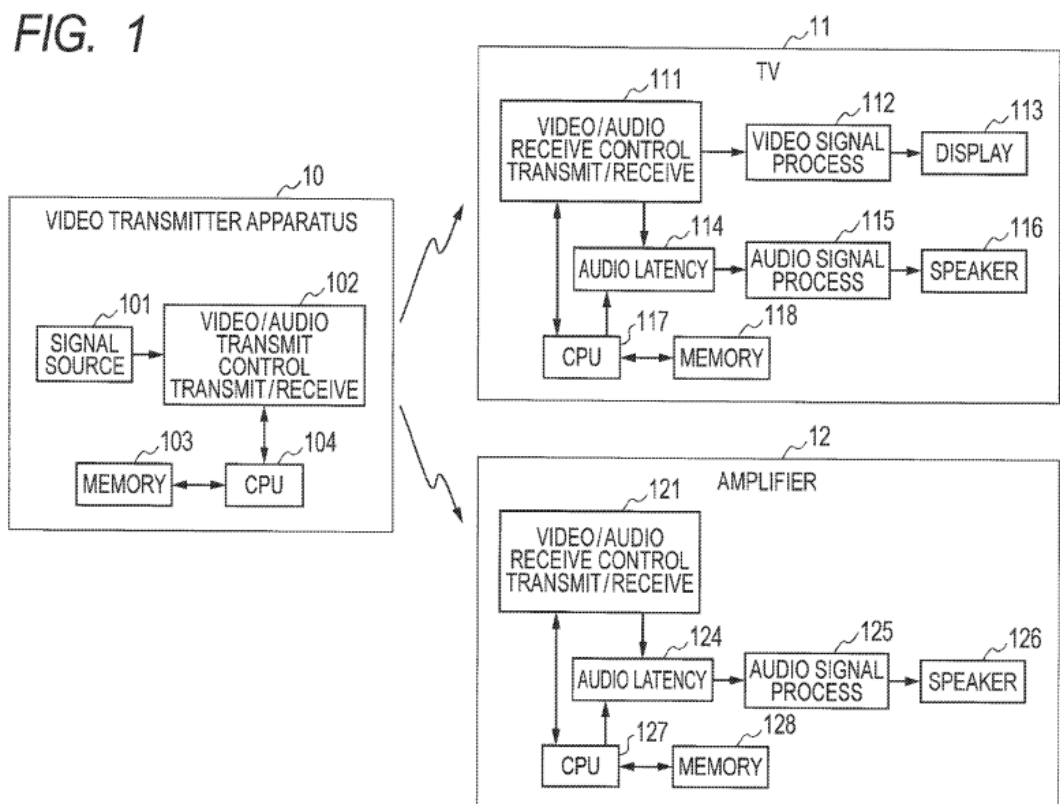
To address these issues, the '681 Patent discloses memorizing receiver apparatus information together with history information that reflects whether the receiver apparatus information has changed. *Id.* at 2:20–35. According to the disclosed embodiments, the video receiver apparatus memorizes its receiver apparatus information and associated history information and transmits that information to the video transmitter apparatus in response to a request. *Id.* at 2:36–55; Abstract.

The video transmitter apparatus likewise memorizes receiver apparatus information and history information received from the video receiver apparatus and compares the received history information with history information stored in its own memory. *Id.* at 3:11–30. When the history information received from the video receiver apparatus and the history information stored by the video transmitter apparatus are inconsistent, updated receiver apparatus information is transmitted. *Id.* at 3:31–45; Abstract. When the history information is consistent, transmission of receiver apparatus information may be omitted, thereby reducing communication volume and transmission time. *Id.* at 3:45–55.

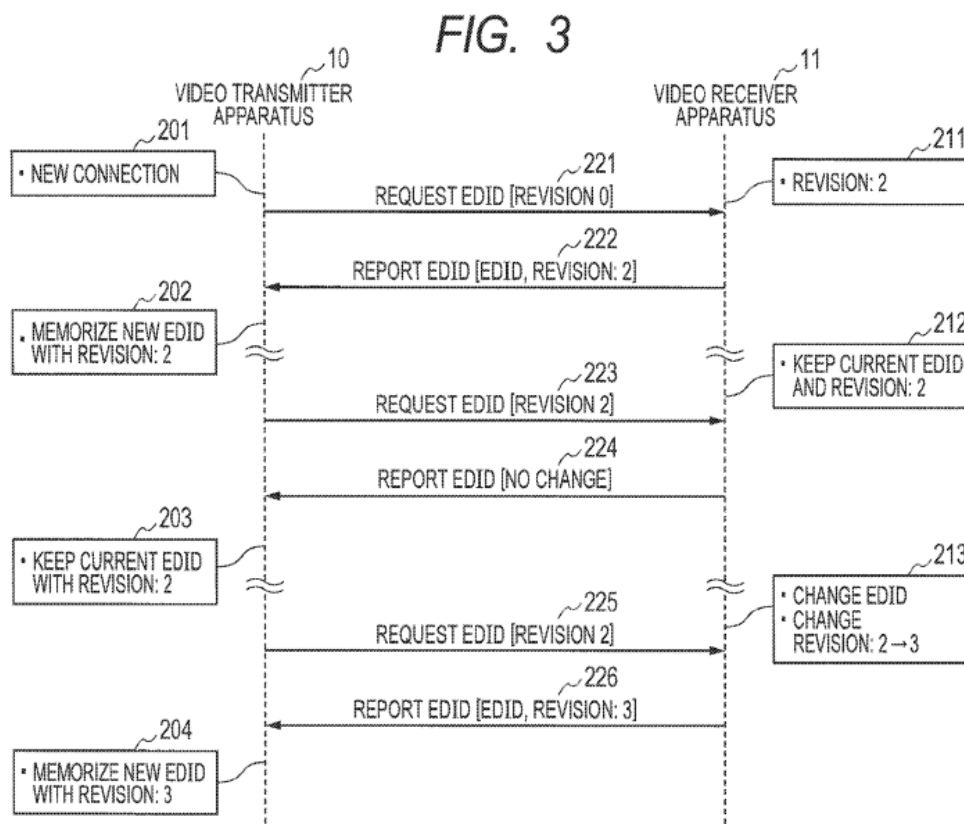
The specification further explains that receiver apparatus information may include EDID indicating the capability and specifications of the video receiver apparatus, such as supported video/audio formats and latency characteristics. *Id.* at 4:25–35. By determining whether receiver apparatus information has changed based on history information, the disclosed system enables efficient communication while avoiding unnecessary retransmission of unchanged information. *Id.* at 3:45–55; 4:1–10.

Figures 1 through 5 illustrate example system configurations and communication flows between the video transmitter apparatus and the video receiver apparatus, including transmission of request messages, reception of receiver apparatus information, memorization of history information, and

comparison of history information to determine whether updated information should be obtained. *Id.* at 3:56–65; 4:1–10.



Id. at Fig. 1.



Id. at Fig. 3.

B. Patent Prosecution History

U.S. Patent Application No. 18/113,545 (“’545 application”), which would ultimately issue as the ’681 Patent, claims priority to Japanese application published on July 3, 2009.

The ’545 application was allowed, and in the Notice of Allowance, dated June 6, 2024, the Examiner noted the following:

The following is an examiner's statement of reasons for allowance: The Prior Art US Pub. 2006/0095638 ("Unger '5638") and further in view of US US Pat. 7,162,499 ("Lees") and Pub. 2006/0129370 ("Unger '9370") fails to disclose, teach, or suggest all of the limitations of the claimed invention. The Prior Art fails to sufficiently teach or suggest that A video transmitting apparatus comprising: wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, while the wireless communication is connected to the display apparatus after a new connection is established with the display apparatus, a first request message and a second request message to the display apparatus; audio/video signal generation circuitry configured to generate an audio/video signal stream; a memory; and control circuitry configured to: transmit a first request messages to the display apparatus together with a first number via the wireless communication circuitry, the first request message together with a first number; receive capability information relating to the display apparatus from the display apparatus via the wireless communication circuitry; store the received capability information relating to the display apparatus in the memory; determine at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus; cause the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream; transmit the generated audio/video signal stream to the display apparatus via the wireless communication circuitry;

and when a predetermined condition is met, transmit a second request message, to the display apparatus via the wireless communication circuitry, the second request message together with a second number[[,]] which is different from the first number, via the wireless communication circuitry, wherein one of the first number transmitted with the first request message to the display apparatus and the second number transmitted with the second request message to the display apparatus is generated by increasing the other of the first number and the second number by an arbitrary number. As such, the specific ordered combination of steps as required by the recited limitations are considered to be non-obvious over the Prior Art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

EX1002 at 101-102.

The prosecution history shows that the Office allowed the claims because the prior art lacked specific claim elements—most notably, the requirement that “one of the first number transmitted with the first request message and the second number transmitted with the second request message is generated by increasing the other of the first number and the second number by an arbitrary number.”

EX1002 at 101–102.

Petitioner's cited references suffer the same deficiencies identified by the Examiner during prosecution. As shown below, none of Petitioner's asserted grounds discloses or suggests “one of the first number transmitted with the first request message and the second number transmitted with the second request

message is generated by increasing the other of the first number and the second number by an arbitrary number”. Instead, Petitioner again relies on internal counters, fixed offsets, timestamps, or protocol-defined fields—exactly the types of disclosures the Examiner found insufficient to meet the claimed limitations.

Accordingly, the prosecution history confirms not only the patentability of the challenged claims, but also that the Petition suffers the very deficiencies the Examiner identified as dispositive in allowing the claims.

C. The Examiner Made No Material Error In Confirming The Priority Date Of the '681 Patent.

In its Opposition to POR's Request for Discretionary Denial, Petitioner alleges that “the examiner materially erred in finding that the '681 patent was entitled to the parent patent's filing date.” Paper No. 10 at 10. Petitioner alleges that the “concept, including the words ‘arbitrary number,’ are nowhere to be found in the parent patent.” *Id.* Petitioner is incorrect.

While the term “arbitrary,” is not in the parent patent, U.S. Patent No. 11,611,718 explicitly discloses the concept of generating a number by increasing another number by an arbitrary number. For example, U.S. Patent No. 11,611,718 discloses the example of generating a number by “replacing the revision value” with a “newer revision value” than what is stored in the memory confirming that the new number is generated based on an arbitrary number *i.e.*, the new revision value that is associated with another device being connected. *See* EX1026, 9:17-

49 (excerpted below) (providing an example of the revision value being increased from 0 to 2) (emphasis added):

In the example shown in FIG. 4, though the video transmitter apparatus 10 executes only the role or function of relaying the communication between the amplifier 12 and the TV 11, but may have a function other than that. For example, the video transmitter apparatus 10 may transmit or report, together with the EDID request message, **the revision value, being replaced by a newer revision value than that the memory portion 103 has therein, in the place of the revision value received from the amplifier 12**, if the revision value that the memory portion 103 thereof has is newer than the revision value received from the amplifier 12 (i.e., a numeral of the revision value that the memory portion 103 has therein is large), when transmitting or reporting the EDID request message attached with the revision value, which is received from the amplifier 12, to the TV 11. An example of that will be shown in a flowchart shown in FIG. 5. If the EDID request message attached **with the revision value “0”** comes or arrives from the amplifier 12, when the revision value that the memory portion 103 of the video transmitter apparatus 10 has **therein is “2”** (condition 251), the CPU 104 of the video transmitter apparatus 10 determines that the revision value that the video transmitter apparatus has therein is new, and **then the EDID request message 247 attached with the revision value “2”** that the memory portion 103 has therein is transmitted to the TV 11 by means of the transmitter/receiver portion 102.

U.S. Patent No. 11,611,718 also describes an example of generating a number by increasing another number by an arbitrary number of 1 (*i.e.*, increasing from 2 to 3) when “a DVD player is newly connected to the TV 11” and then keeping it the same “until the EDID of the video receiver apparatus 11 is changed, again,” which again discloses the concept of increasing by an arbitrary number. *See* EX1026, 7:26-54 (excerpted below) (emphasis added):

Herein, it is assumed that, within the video receiver apparatus 11, the EDID thereof is changed, for example, by change of connecting structure of the equipment to the video receiver apparatus 11 (for example, **a DVD player is newly connected** to the TV 11, etc.), before receiving that message 225. In this case, the **CPU 117 changes the revision value, which is memorized in the memory portion 118 of the video receiver apparatus 11 (*i.e.*, “2” before change of EDID), to “3”, by increasing it by “1”** (condition 213). As a result thereof, the revision value of the video receiver apparatus 11 under that condition differs from the revision value “2” of the EDID requesting message 225 received by the transmitter/receiver portion 111 Hereinafter, within the video receiver apparatus 11 are executed various controls, such as, production of video/audio signals, etc., with using the EDID corresponding to the revision value “3”, which is memorized in the memory portion 103, **until the EDID of the video receiver apparatus 11 is changed, again.**

As an additional example, U.S. Patent No. 11,611,718 discloses that “the revision value is increased, **one by one, and when it reaches to the maximum value** (for example, 255), it is preferable to increase it, sequentially, from ‘1,’ **but jumping 0** indicating no memory.” *Id.* at 7:55-61 (emphasis added).

Thus, U.S. Patent No. 11,611,718 discloses increasing from 0 to 2 when amplifier 12 is connected, increasing from 2 to 3 when a DVD player is connected, and sequentially increasing but jumping “0” during the sequential increase to confirm generating a replacement value by arbitrarily increasing the number depending on the type of device being connected or additional conditions (*e.g.*, reaching maximum value or no memory). These examples confirm that U.S. Patent No. 11,611,718 explicitly discloses the concept of generating a number “by increasing the other of the first number and the second number by an arbitrary number,” as required by claim element [11]. These examples also correspond to the disclosure of, “a numerical value, which is **incremented every time** when EDID is renewed,” (*id.* at 4:16-19) and accounting for different types of devices that can be connected to the video transmitter apparatus 10 to solve “a problem of a transmission delay and/or a transmission capacity within an interface . . . , where the EDID cannot be read out quickly.” *Id.* at 1:42-45.

Accordingly, the examiner did not materially err in confirming that the '681 Patent is entitled to a priority date of July 3, 2009.

D. Summary of Petitioner's Proposed Grounds for Unpatentability.

Petitioner alleges that claims 1-20 of the '681 Patent would have been anticipated or obvious and raises 5 grounds of alleged unpatentability. Pet. at 1. The alleged invalidity grounds are summarized as follows:

Ground	'681 Claims	Type of Challenge	References	Missing Limitations/claims
1	1-2, 7-13, 17-20	§ 102	Funabiki	[1a]/[11a], [11d], [1k]/[11j], [1l]/[11k] and the dependent claims
2	1-3, 7-13, 17-20	§ 102	Guo	[1a]/[11a], [11d], [1k]/[11j], [1l]/[11k] and the dependent claims
3	3, 13	§ 103	Funabiki and Guo	3, 13
4	6, 16	§ 103	Funabiki or Guo, and Fastert	6, 16
5	1-2, 4-5, 7, 11-12, 14-15, 17	§ 103	E-DDC Standard and Fastert	[1h]/[11g], [1i]/[11h], [1j]/[11i], [1k]/[11j], [1l]/[11k] and the dependent claims

The references relied upon by Petitioner are summarized below:

1. Funabiki (EX1004)

Funabiki is entitled “Wireless Communication System For Wirelessly Transmitting Setting Information of Display Unit.” EX1004. Funabiki describes a “wireless communication system including a source device for wirelessly transmitting a video signal, and a sink device for receiving the wirelessly transmitted video signal and displaying the received video signal on a display, the

sink device reads out EDID information from a ROM and wirelessly transmits a wireless data signal including the EDID information to the source device.” See EX1004, Abstract.

2. Guo (EX1005)

Guo is entitled “EDID Pass Through Via Serial Channel.” EX1005. Guo describes techniques “for passing Extended Display Identification Data (EDID) or Enhanced-EDID (E-EDID) in an uncompressed multimedia communication system including a video sink side communicatively coupled to a video source side.” EX1005, Abstract.

3. Fastert (EX1006)

Fastert is entitled “System, method, and apparatus for content delivery format control.” EX1006. Fastert describes “a content delivery system that includes at least one bi-directional distribution system between a generalized content source and a generalized content sink.” EX1006, Abstract.

4. E-DDC Standard (EX1007)

VESA Enhanced Display Data Channel (EDDC) Standard describes a communications channel between an electronic display (e.g., a CRT, LCD, display etc.) and a host system. EX1007 at 1. The channel may be used to carry configuration information to enable ‘plug & play’ and allow optimum use of the display. *Id.*

III. LEVEL OF ORDINARY SKILL

Petitioner relies on Dr. Stevenson's POSITA definition, which identifies the relevant art as "display technology." Pet. at 5; EX2018, ¶ 44. But that phrase implies physical screen engineering—e.g., LCD panels, pixel arrays, and color rendering—while the '681 Patent addresses wireless bandwidth management and efficient exchange of capability information between devices. EX2018, ¶ 44. The relevant art is therefore multimedia communication interfaces and data transmission protocols. EX2018, ¶ 44.

With that clarification regarding the proper field of art, Patent Owner agrees with Petitioner's baseline educational and experience requirements for purposes of this proceeding. EX2018, ¶ 44. A POSITA at the time of invention would have had a Bachelor's degree in electrical engineering, computer engineering, computer science, or a comparable field of study, with at least one year of experience in the field of multimedia communication interfaces and data transmission protocols, or other relevant industry experience. EX2018, ¶ 44. Additional education or experience might substitute for the above requirements.

IV. LEGAL STANDARD

A claim is anticipated under 35 U.S.C. § 102 only if a single prior art reference discloses each and every limitation of the challenged claim, arranged as in the claim. Anticipation is a strict standard, and any missing claim limitation

defeats anticipation. Moreover, inherent disclosure requires that the missing limitation be necessarily present, not merely probable or possible.

In addition, a claim is also not patentable if the differences between the claim and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention. 35 U.S.C. § 103(a). Obviousness requires assessing (1) the “level of ordinary skill in the pertinent art,” (2) the “scope 10 and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)).

It is a petitioner’s burden “to demonstrate both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016) (quotations and citations omitted). However, a petitioner must first show that all of the claimed elements are disclosed in the prior art. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006) (considering motivation to combine

and reasonable expectation of success only “if all the elements of an invention are found in a combination of prior art references”).

V. THE PETITION FAILS TO SHOW ANY CHALLENGED CLAIM IS ANTICIPATED OR RENDERED OBVIOUS BY A PREPONDERANCE OF THE EVIDENCE

A. Ground 1: Petitioner Fails to Establish That Claims 1-3, 7-13, And 17-20 Are Anticipated by Funabiki.

Petitioner has not shown by a preponderance of the evidence that Ground 1 renders claims 1-3, 7-13, and 17-20 unpatentable because Funabiki does not disclose each and every limitation of the challenged claims, as required for anticipation. In particular, Petitioner has not shown that Funabiki teaches at least elements [1a], [1k], and [1l] (and comparable elements of claim 11), as required for each of these claims. EX2018, ¶ 67.

In particular, Petitioner's mapping of the claimed “first number,” “second number,” and the “generated by increasing ... by an arbitrary number” requirement rests on speculation and re-labeling of Funabiki's generic “sequence number” counter functionality. EX2018, ¶ 67. The Petition never identifies where Funabiki discloses the specific requirement regarding the claimed numbers. *Id.* Additionally, because dependent claims 2-3, 7-8, 10, 12-13, 17-18, and 20 depend from claims that Petitioner has not shown to be unpatentable, Petitioner has also failed to show that claims 2-3, 7-8, 10, 12-13, 17-18, and 20 are unpatentable by Funabiki. EX2018, ¶ 67.

1. Funabiki Fails to Disclose Limitation [1a]

Petitioner fails to show that Funabiki discloses limitation [1a]: “wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, **while the wireless communication is connected to the display apparatus after a new connection is established**, a first request message and a second request message to the display apparatus.”

Claim 1 requires that, **after a new connection is established**, the wireless communication circuitry is configured to transmit **both** a first request message **and** a second request message to the display apparatus. EX2018, ¶ 68. This limitation is not satisfied by the disclosure of a single request message transmitted during or after a connection process. *Id.*

Petitioner points to Funabiki's description of transmitting an EDID request after authentication as allegedly satisfying this limitation. Pet. at 8; EX2018, ¶ 69. But Funabiki describes, at most, a single EDID request/response exchange following completion of authentication. *See, e.g.*, EX1004, [0062]–[0063]; Fig. 11; EX2018, ¶ 69. Funabiki does not disclose two distinct request messages transmitted after a new connection is established, as Claim 1 expressly requires. EX2018, ¶ 69.

Indeed, Petitioner never identifies where Funabiki discloses a **first** request message transmitted after connection establishment, and a **second**, separate

request message transmitted after the connection is established. EX2018, ¶ 69. Instead, Petitioner collapses the claimed two-request architecture into a single request message, which is insufficient as a matter of claim scope. *Id.*

Dr. Stevenson's deposition testimony confirms that Petitioner's Ground 1 theory relies on EDID request signals in Funabiki's connection flow rather than on a distinct second request message sent during an already-established connection. EX2019, 16:10-18; 17:18-24; EX2018, ¶ 70. Dr. Stevenson identified an EDID request signal in Funabiki's Figure 11 and described that EDID request as being sent after the authentication process when one of the devices is turned on. *Id.*

This understanding of limitation [1a] is also consistent with the practical role of "while" in the '681 Patent's specification. EX2018, ¶ 71. The specification explains that, after the video transmitter apparatus obtains and stores EDID, the CPU determines optimal video/audio transmission formats based on the stored EDID, controls the signal source to produce the corresponding video/audio signals, and transmits those video/audio signals to the video receiver apparatus. EX1001, 4:40-57; EX2018, ¶ 71. The specification further explains that, while there is video/audio transmission in place ("after a new connection is established with the display apparatus"), the transmitter later may need to confirm whether the stored EDID remains current or any capability changes on the receiving side

may require changing the parameters of the transmission; to do so, it sends an EDID request with a stored revision value (history information), and if the revision values match, the receiver simply reports back “no change” rather than retransmitting the EDID. EX1001, 5:59-6:14; 6:30-7:8; EX2018, ¶ 71. This matters because EDID transmission requires relatively large transmission capacity and may prevent ensuring or maintaining the transmission capacity needed for video/audio signals; by avoiding transmitting the EDID unless there is indeed an EDID change, the disclosed system avoids influence on the ongoing video/audio transmission. EX1001, 6:14-25; EX2018, ¶ 71.

In contrast, the Funabiki process relied on by Petitioner performs the EDID request as part of the wireless connection process itself. EX2018, ¶ 72. In Funabiki's source-side flow, after the source device transmits an authentication request and receives an authentication completion signal, the source transmits a single EDID request signal, receives the EDID response signal, stores the EDID information, completes the connection process, and only then begins AV data transmission. EX1004, [0062]-[0063], Fig. 11; *see also* EX1003, Stevenson Decl., ¶¶ 58-62; EX2018, ¶ 72. Funabiki further describes executing that wireless connection process when the source device is powered on, when the sink display is powered on, when the sink device is connected to source device 2 or 3, or at another such timing. EX1004, [0069]; EX2018, ¶ 72. Thus, the EDID request in

Funabiki is tied to connection establishment or re-establishment only, not to a later second request message sent while an already-established wireless connection remains active to monitor whether EDID has changed. EX2018, ¶ 72. Even if Funabiki's initialization request were considered the claimed "first request message," Funabiki fails to disclose transmitting the required "second request message" during that same active connection session. EX2018, ¶ 72. For this additional reason, Funabiki does not disclose the "while the wireless communication is connected ... after a new connection is established" aspect of limitation [1a]. EX2018, ¶ 72.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Funabiki anticipates limitation [1a].

2. Funabiki Fails to Disclose Limitation [1k]

Petitioner further fails to show that Funabiki discloses limitation [1k]: **"when a predetermined condition is met, transmit, to the display apparatus via the wireless communication circuitry, the second request message together with a second number which is different from the first number."**

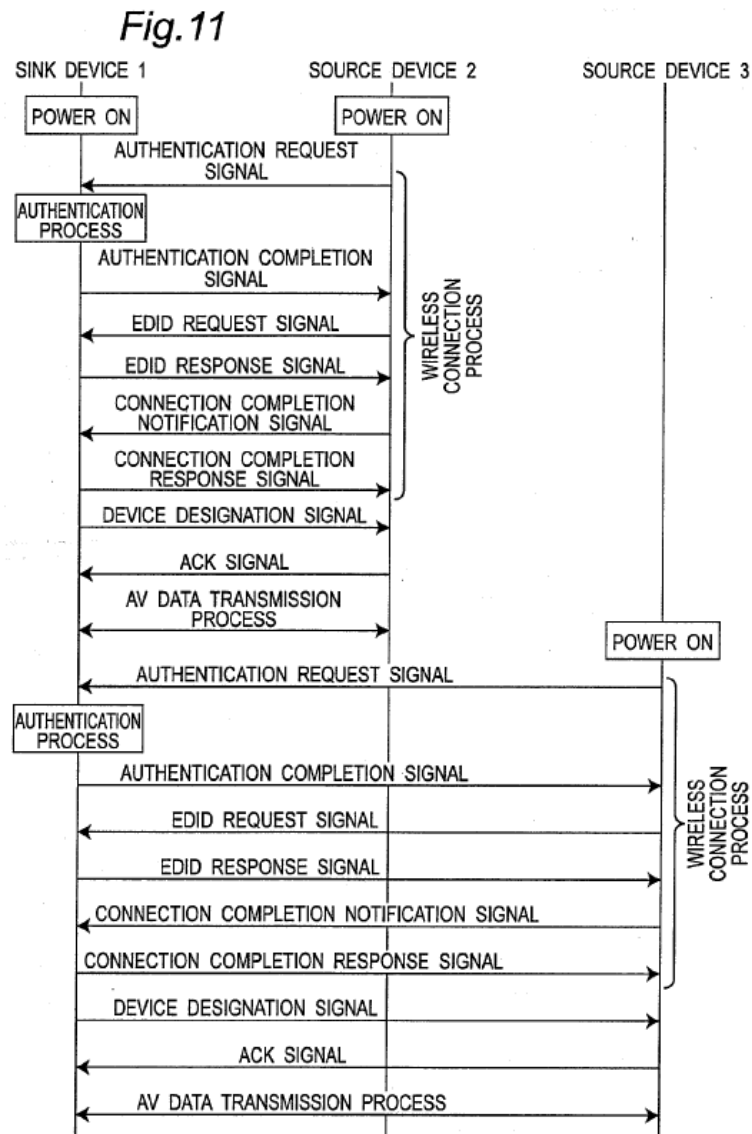
Petitioner identifies completion of authentication as the alleged "predetermined condition" and points to transmission of an EDID request following authentication as the alleged second request message. Pet. at 17-18; EX2018, ¶ 74. That showing is deficient for multiple reasons. EX2018, ¶ 74.

First, claim 1 requires the system to transmit the second message under a predetermined condition after a new connection is already established. EX2018, ¶ 74. Funabiki focuses entirely on the initialization process, such as turning on the device and authenticating. EX2018, ¶ 74. Petitioner essentially alleges that the “predetermined condition” for the second request is the same initialization event that triggered the first request. EX2018, ¶ 74. But the predetermined condition triggering a subsequent request cannot logically be the initial establishment of the connection itself. EX2018, ¶ 74.

Furthermore, without an identified first request message and first number, Petitioner cannot establish that any later number is a “second number which is different from the first number,” as limitation [1k] expressly requires. EX2018, ¶ 75.

Moreover, Funabiki does not disclose **“the second request message together with a second number”** transmitted **“when a predetermined condition is met.”** EX2018, ¶ 76. Figure 11 depicts a single EDID request/response exchange following authentication; it does not disclose a second request message transmitted only after a predetermined condition is met, nor does it disclose that any such message is transmitted together with a second number that is different from a first number. EX2018, ¶ 76. As Figure 11 shows, the sequence ends once the connection is established. EX2018, ¶ 76. There is no

subsequent phase where a predetermined condition could trigger a second request. EX2018, ¶ 76.



EX1004, Fig. 11.

Petitioner's reliance on Funabiki's generic disclosure of a sequence number region does not cure this defect. EX2018, ¶ 77.

The existence of a sequence number does not disclose that: (1) a first request message is transmitted together with a first number, (2) a second request message is transmitted together with a second number, and (3) the second number is different from the first number. EX2018, ¶ 78. Petitioner's argument improperly assumes that the mere existence of a counter necessarily implies that "a predetermined condition is met" to transmit "the second request message together with a second number which is different from the first number," as required by the claim. EX2018, ¶ 78. Petitioner does not identify any portion of Funabiki that necessarily results in such transmissions. Pet. at 17-18; EX2018, ¶ 78.

Dr. Stevenson's deposition testimony further confirms the gap in Funabiki's disclosure. EX2018, ¶ 79. He testified that the alleged second number is a "sequence number associated with this second EDID request signal," but when asked how that second sequence number is determined, he explained only that the device would be operating over time, making multiple requests, with each request having a sequence number; the resulting number would depend on "how many messages are in between." EX2019, 27:13-28:4; EX2018, ¶ 79. That testimony does not identify any disclosure in Funabiki that one request-message number is generated from the other request-message number, nor does it establish that Funabiki's internal counter counts only EDID requests. EX2018, ¶ 79.

Anticipation requires that the claimed limitation be disclosed expressly or inherently, and inherency requires that the missing limitation necessarily and inevitably be present in the prior art. EX2018, ¶ 80. Nothing in Funabiki establishes that the claimed “second request message together with a second number which is different from the first number” is transmitted “when a predetermined condition is met.” EX2018, ¶ 80. Mere possibility or POSITA inference cannot substitute for disclosure. EX2018, ¶ 80. Accordingly, Petitioner has not established anticipation of limitation [1k] by a preponderance of the evidence. EX2018, ¶ 81.

3. Funabiki Fails to Disclose Limitation [1l]

Petitioner fails to show that Funabiki discloses limitation [1l]: “wherein **one of the first number transmitted with the first request message and the second number transmitted with the second request message** is generated by increasing the other of the first number and the second number **by an arbitrary number**” that the Examiner also found missing from the prior art. EX2018, ¶ 82.

Petitioner again relies on Funabiki's disclosure of a counter-based sequence number. Pet. at 19; EX2018, ¶ 82. But that disclosure does not satisfy limitation [1l].

First, Funabiki does not disclose that the second number is generated by increasing the first number, or vice versa. EX2018, ¶ 83. The claim requires “generat[ing] by increasing the other,” number. *Id.* Funabiki does not describe

any such generating by increasing the other. *Id.* It merely describes a sequence number being stored or updated, without tying one transmitted number to another transmitted number to show generating by increasing the other. *Id.*

Second, Funabiki does not disclose that any increase is **by an arbitrary number**, as Claim 1 expressly requires. EX2018, ¶ 84. Petitioner relies on generalized assertions about counters, but Funabiki does not disclose the “generated by increasing the other of the first number and the second number by an arbitrary number” requirement. EX2018, ¶ 84.

In particular, Petitioner's argument reduces this limitation to the assertion that Funabiki uses a counter so that sequence numbers are “incremented,” and that a POSITA would understand counters “increment” numbers. Pet. at 19; *see also* Petitioner's discussion that “subsequent sequence numbers are incremented ... by an amount determined by the internal counter of controller 20.” *Id.*; EX2018, ¶ 85.

But Funabiki's cited disclosure does not satisfy the limitation. The Petition points only to a “sequence number region 803” that “stores a sequence number according to an internal counter of the controller 20.” EX1004, [0058]; EX2018, ¶ 85. That disclosure does not describe—let alone require—generation of a second number by increasing a first number by an arbitrary number. *Id.* It describes storage “according to” an internal counter. *Id.* It does not identify (1) a

first number, (2) a second number, or (3) the required “generated by increasing the other of the first number and the second number by an **arbitrary number.**”

Id.

Dr. Stevenson also acknowledged that his counter theory depends on a fixed increment and intervening messages, not on one request-message number being generated from the other by an arbitrary value. EX2019, 28:24-29:10; 29:15-30:6; EX2018, ¶ 86. He testified that “the counter is incrementing by one,” and that the difference between the alleged first and second sequence numbers depends on the number of messages or counter counts between the two messages. EX2019, 28:24-29:10; 29:15-30:6; EX2018, ¶ 86. That testimony reinforces that Funabiki’s sequence-number theory does not satisfy the claim language: if the counter advances one count at a time, then the sequence rule is fixed; and if several intervening messages create a larger gap, that gap reflects intervening counter counts rather than generation of the later request-message number from the earlier request-message number by an arbitrary amount. EX2018, ¶ 86.

Petitioner also attempts to bridge this gap by asserting, at a high level, that counters increment numbers, and then contending that doing so is “consistent” with the ’681 Patent’s embodiment. EX2018, ¶ 87. But anticipation cannot be proven by arguing “consistency” with the challenged patent’s own disclosure; anticipation requires that the prior art itself disclose the limitation. *Id.* Funabiki

does not state that one of the claimed numbers is generated by increasing the other “by an arbitrary number,” and Petitioner’s functional generalities about counters do not substitute for disclosure of the claim limitation reciting “generating by increasing the other.” Pet. at 19; EX2018, ¶ 87.

The “second number” requirement also cannot be satisfied merely by invoking Funabiki’s use of a sequence number. EX2018, ¶ 88. Petitioner’s logic assumes that a later EDID request, if one existed, would use a later sequence number generated from the prior request’s sequence number. See EX1003, Stevenson Decl., ¶¶ 82-87; EX2018, ¶ 88. But Funabiki says only that the EDID request signal includes a sequence number region that “stores a sequence number according to an internal counter of the controller 20.” EX1004, [0058]; EX2018, ¶ 88. Funabiki does not disclose whether that internal counter counts only EDID requests, whether it advances for other control signals, how it would generate a number for a later initialization request, or whether any such later number would be generated from the number transmitted with a previous request. EX2018, ¶ 88. In fact, Funabiki lacks any disclosure of “generated by increasing the other of the first number and the second number by an arbitrary number.” EX2018, ¶ 88. For example, in Figure 11, the subsequent EDID request comes from a different transmitting device—Source Device 3 instead of Source Device 2. EX2018, ¶ 88. Furthermore, when the receiving device is powered off and then turned back on

to trigger a new authentication process followed by a new EDID request, Funabiki does not explain whether the transmitter uses the first number from the previous session to generate the second number. EX2018, ¶ 88. Thus, even if Funabiki's sequence number were treated as a "number," Funabiki still does not disclose that the alleged second number is generated by increasing the alleged first number, as the claim requires. EX2018, ¶ 88.

This point is important because the claim requires more than a numerical difference between two values; it requires that one of the two transmitted request-message numbers be generated by increasing the other by an arbitrary number. EX2018, ¶ 89. If Petitioner's theory is that Funabiki's sequence numbers are consecutive values calculated by adding one to the previous sequence number, then the alleged increase is not arbitrary—it is fixed by the operation of the sequence. *See* EX1003, Stevenson Decl., ¶¶ 84-87; EX2018, ¶ 89. And if Petitioner instead suggests that an arbitrary jump could be created by skipping intervening packets, that theory still fails because the sequence counter would still increment packet-by-packet; the number in a later EDID request would be a result of the counter's intervening packet count, not a number generated from the number transmitted with the earlier EDID request. EX1004, [0058]; EX2018, ¶ 89. Funabiki therefore does not disclose the "generated by increasing the other of

the first number and the second number by an arbitrary number” requirement. EX2018, ¶ 89.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Funabiki anticipates limitation [11].

4. Petitioner's Inconsistent Claim Construction Positions Reinforce Patent Owner's Position

Patent Owner has analyzed the claims under their plain and ordinary meaning. However, in parallel district court litigation involving the same patent and the same claim language, Petitioner construes this limitation to mean “by adding an arbitrary number to the other of the first number and the second number.” EX2016 at 6.

Regardless of Petitioner's inconsistent claim-construction positions, Petitioner still fails to establish that Funabiki discloses the limitation “by increasing the other of the first number and the second number by an arbitrary number” under any construction. EX2018, ¶ 91. If the Board were to apply Petitioner's alternative construction, Patent Owner's position remains the same: Funabiki fails to disclose the claimed requirement. EX2018, ¶ 91.

Under Petitioner's district court construction, the claim requires that one transmitted number be generated by adding an arbitrary number to another transmitted number. Funabiki does not disclose this. As discussed above, Funabiki merely describes storing, updating, or incrementing a sequence number

according to an internal counter. EX1004, [0058]; EX2018, ¶ 92. It does not disclose generating one transmitted number by adding an arbitrary number to another transmitted number, nor does it tie any transmitted number to another transmitted number through such an addition operation. *Id.*

While Funabiki discloses a generic sequence number, it never identifies a first transmitted number and a second transmitted number that operate together as the claims of the '681 Patent require. EX2018, ¶ 93. Specifically, Funabiki lacks any mechanism where one transmitted number is “generated by increasing the other of the first number and the second number by an **arbitrary number**.” EX2018, ¶ 93.

For these reasons, Petitioner's inconsistent claim-construction positions reinforce Patent Owner's position that Funabiki does not anticipate the challenged claims. EX2018, ¶ 94.

5. Funabiki Fails to Disclose Claims 7-9

Petitioner's mapping of claims 7-9 similarly fails because it treats “EDID information” (a bundle of capability data) as a “number,” without identifying where Funabiki discloses that the claim-required “third number” (and “fourth number”) exists as a number, is distinct from the other claimed numbers, and is generated in the manner required by the claims. Pet. at 20-28; EX2018, ¶ 95. The '681 Patent's specification is clear that these claimed numbers serve as “revision values”—“history numbers” representing the EDID used specifically to check if

the EDID has changed. EX2018, ¶ 95. Therefore, a POSITA would understand that the first, second, third, and fourth numbers must share a consistent fundamental type and cannot be just any number. EX2018, ¶ 95.

Petitioner relies on an incompatible mapping to manufacture its anticipation argument: while Petitioner maps the first and second numbers to sequence counters, it then maps the third and fourth numbers to an EDID that Petitioner previously mapped to “capability information relating to the display apparatus” in relation to, for example, claim element [1f]. Pet. at 20-28; EX2018, ¶ 95. For example, Petitioner points to an “EDID response signal ... containing EDID information 905” and asserts that “EDID information 905 in turn includes numbers, i.e., a third number.” Pet. at 21; EX2018, ¶ 95. But identifying that EDID information contains various fields (such as display settings or resolution data) does not establish that Funabiki discloses the claim-required “third number” or fourth number as a distinct numerical value consistent with the type of the first and second numbers, as opposed to a complex bundle of capability data. EX2018, ¶ 95.

Petitioner further asserts that source device 2 “stores EDID information 905 ... in its DRAM 21.” Pet. at 22; EX2018, ¶ 96. But this again conflates (1) storing EDID data (capability information) with (2) storing a particular claim-defined “number,” without showing that the “third number” is a number meeting

the claim requirements, or that it is the specific third number required by the claim language—i.e., a discrete value of the same fundamental type as the first and second numbers. *See* EX1004, [0061]–[0062]; Fig. 6; Fig. 10; EX2018, ¶ 96.

The deficiencies become clearer in claims 8 and 9. EX2018, ¶ 97. Claim 8 requires the third number to be “changed to a fourth number” by the display apparatus, whereas claim 9 requires the fourth number to be “generated by the display apparatus based on the third number.” EX2018, ¶ 97. For claim 9, Petitioner contends Funabiki discloses “store a fourth number ... the fourth number being generated by the display apparatus based on the third number.” Pet. at 27-28; EX2018, ¶ 97. Petitioner’s cited Funabiki passage discusses overwriting EDID information when maximum data transmission rate changes, including deleting video format information depending on throughput. Pet. at 27-28; EX2018, ¶ 97. While this describes updating or changing capability information, it is not disclosure that a “fourth number” is generated “based on” a “third number.” EX2018, ¶ 97. At most, Funabiki describes updating capability information in view of transmission constraints. EX1004, [0067]; EX2018, ¶ 97. That is not the claim’s “fourth number generated by the display apparatus based on the third number.” EX2018, ¶ 97.

Dr. Stevenson’s deposition also undercuts his reliance on “Sequence Number 903” for Funabiki’s dependent-claim theories. EX2018, ¶ 98. He

testified that, in paragraph 94 of his declaration, the parenthetical reference to “latest Sequence Number 903” should be “scratched out” because that section “just discusses the revised EDID information.” EX2019, 8:7-13; EX2018, ¶ 98.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Funabiki anticipates claims 7-9 or the dependent claims that incorporate the same “third number/fourth number” structure.

6. Funabiki Fails to Disclose Claims 2-3 and 10-13 and 17-20

Petitioner's Ground 1 also challenges claims 2-3, 10-13, and 17-20, but Petitioner's showing relies on cross-references and the same defective “sequence number / EDID information” re-labeling discussed above. Pet. 20-33; EX2018, ¶ 100. Where the challenged dependent claims incorporate the same first-number/second-number requirement (including the “generated by increasing ... by an arbitrary number”), Petitioner does not cure the lack of disclosure in Funabiki. EX2018, ¶ 100.

Accordingly, because Petitioner has not met its burden to establish anticipation of claim 1, and because Petitioner has not independently established the additional requirements of the dependent claims, Petitioner fails to show by a preponderance of the evidence that claims 1-3, 7-13, and 17-20 are anticipated by Funabiki.

B. Ground 2: Petitioner Fails to Establish That Claims 1-3, 7-13, And 17-20 Are Anticipated by Guo.

Petitioner has not shown by a preponderance of the evidence that Ground 2 renders claims 1-3, 7-13, and 17-20 unpatentable because Guo does not disclose each and every limitation of the challenged claims, as required for anticipation. EX2018, ¶ 102. Petitioner has not shown that Guo teaches at least elements [1a], [1k], and [1l] (and comparable elements of claim 11), as required for each of these claims.

Additionally, because dependent claims 2-3, 7-8, 10, 12-13, 17-18, and 20 depend from claims that Petitioner has not shown to be unpatentable, Petitioner has also failed to show that claims 2-3, 7-8, 10, 12-13, 17-18, and 20 are unpatentable by Guo.

1. Guo Fails to Disclose Limitation [1a]

Petitioner fails to show that Guo discloses limitation [1a]: “wireless communication circuitry configured to communicate with a display apparatus, the wireless communication circuitry being configured to transmit, while the wireless communication is connected to the display apparatus after a new connection is established, a first request message and a second request message to the display apparatus.” EX2018, ¶ 103.

Specifically, Petitioner argues that a “second request message” is transmitted when there is a new transition on the HPD signal, such as when “the

video sink device ... is powered on, and/or an HDMI cable is plugged in.” Pet. at 46; EX2018, ¶ 103. That mapping fundamentally contradicts the claim language because Guo does not disclose transmitting both a first request message and a second request message after a new connection is established. EX2018, ¶ 103.

The claim explicitly requires transmitting both the first and second requests “while the wireless communication is connected” following the establishment of a new connection. EX2018, ¶ 104. Petitioner’s mapped triggers for the second request—power cycling the device or physically unplugging and re-plugging an HDMI cable—inherently require terminating the original connection. EX2018, ¶ 104. Therefore, Guo’s second request as identified by Petitioner does not occur “while the wireless communication is connected” under the first connection, but rather as a result of initiating an entirely separate, subsequent connection. EX2018, ¶ 104.

As explained above, this understanding of limitation [1a] is also consistent with the practical role of “while” in the ’681 Patent’s specification. EX2018, ¶ 105. The specification explains that, after the video transmitter apparatus obtains and stores EDID, the CPU determines optimal video/audio transmission formats based on the stored EDID, controls the signal source to produce the corresponding video/audio signals, and transmits those video/audio signals to the video receiver apparatus. EX1001, 4:40-57; EX2018, ¶ 105. The specification further explains

that, while there is video/audio transmission in place (“after a new connection is established with the display apparatus”), the transmitter later may need to confirm whether the stored EDID remains current; to do so, it sends an EDID request with a stored revision value, and if the revision values match, the receiver reports “no change” rather than retransmitting EDID. EX1001, 5:59-6:14; 6:30-7:8; EX2018, ¶ 105. This matters because EDID transmission requires relatively large transmission capacity and may prevent ensuring or maintaining the transmission capacity needed for video/audio signals; by avoiding transmitting the EDID unless there is indeed an EDID change, the disclosed system avoids influence on the ongoing video/audio transmission. EX1001, 6:14-25; EX2018, ¶ 105.

In contrast, the Guo process relied on by Petitioner is an EDID pass-through procedure triggered by initialization-type events, which may also include error recovery. EX2018, ¶ 106. Guo explains that the ASMI 111 reads EDID after detecting a low-to-high HPD transition, which may occur when the ASMI 111 is powered on, the video sink device is powered on, or an HDMI cable is plugged in, including a change of connection from one sink device to another. EX1005, [0126]; *see also* EX1003, Stevenson Decl., ¶¶ 149-153; EX2018, ¶ 106. Guo then sends an EDID AVAILABLE packet, the source-side ASMI sends a REQUEST packet, the sink-side ASMI sends EDID packets, and the source-side ASMI requests the EDID data again only if errors are detected, until all data is received

correctly. EX1005, [0127], Fig. 4b; *see also* EX1003, Stevenson Decl., ¶¶ 173-176; EX2018, ¶ 106. Guo further describes holding HPD low until successful EDID reading is complete as the “normal power on procedure.” EX1005, [0128]; EX2018, ¶ 106. Thus, Guo’s EDID request is tied to power-on/connection-change initialization or retransmission of the same EDID request for error recovery, not to a later first and second request message sent while an already-established wireless connection remains active to monitor whether EDID has changed. EX2018, ¶ 106. For this additional reason, Guo does not disclose the “while the wireless communication is connected ... after a new connection is established” aspect of limitation [1a]. EX2018, ¶ 106.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Guo anticipates limitation [1a].

2. Guo Fails to Disclose Limitation [1k]

Petitioner further fails to show that Guo discloses limitation [1k]: “**when a predetermined condition is met**, transmit, to the display apparatus via the wireless communication circuitry, **the second request message together with a second number which is different from the first number.**”

In addition to relying on the power-on events addressed above in relation to limitation [1a], Petitioner relies on Guo’s discussion of repeating EDID requests when an “error [is] detected” (such as a CRC mismatch), asserting that these various behaviors satisfy the claimed “predetermined condition” and

“second request message.” Pet. at 45-46; EX2018, ¶ 108. That showing is deficient. EX2018, ¶ 108.

Guo merely describes protocol-level error recovery during EDID transmission. EX2018, ¶ 109. Specifically, Guo explains that if a locally computed CRC value does not match a received CRC value, “an error is inferred and the EDID request is repeated.” EX1005, [0126-0127]; EX2018, ¶ 109. This disclosure reflects automatic retransmission dictated by the ASMI protocol, not a predetermined condition evaluated by control circuitry of a video transmitting apparatus as required by claim 1. EX2018, ¶ 109.

Nothing in Guo describes defining, storing, or evaluating a predetermined condition that governs whether a second request message is transmitted. EX2018, ¶ 109. Instead, Guo's retransmission behavior is mandatory protocol logic that applies uniformly whenever an error occurs. EX1005, [0126-0127]; EX2018, ¶ 109. Such protocol-driven retry logic does not satisfy the claim requirement that a predetermined condition be met before transmitting a second request message. EX2018, ¶ 109.

Therefore, Petitioner improperly relies on a network malfunction during the initial EDID download to manufacture this claim limitation. EX2018, ¶ 109. A CRC error does not satisfy the claimed “predetermined condition,” especially when read in the context of the '681 Patent. EX2018, ¶ 109. The specification

teaches that this condition triggers the second request to verify whether a successfully stored EDID has changed while the established connection remains active. EX1001, 5:59-6:13; EX2018, ¶ 109. Guo's error retry, however, occurs precisely because the initial EDID was never successfully received in the first place. EX2018, ¶ 109. If the initial EDID reception in Guo is successful, the device remains silent. EX1005, [0126]-[0127]; EX2018, ¶ 109. Because Guo's error retry is merely an attempt to successfully complete the initial data transfer, rather than a deliberate "second request message" sent to monitor an established connection for capability updates, it fundamentally fails to satisfy this limitation. EX2018, ¶ 109.

Further, Guo does not disclose **"the second request message together with a second number which is different from the first number."** EX2018, ¶ 110. Rather, Guo describes retransmitting the same EDID request packet until transmission succeeds. EX2018, ¶ 110. A conditional retransmission of an identical protocol packet due to an error is not a distinct second request message within the meaning of claim 1. EX2018, ¶ 110.

Petitioner's attempt to characterize protocol retry behavior as a claim-level control decision impermissibly conflates transport-layer error handling with the deliberate control logic recited in the '681 Patent. EX2018, ¶ 110.

Dr. Stevenson's deposition testimony confirms that Petitioner's Guo theory treats generic packet-level fields as the alleged request-message numbers. EX2018, ¶ 111. Dr. Stevenson testified that the first message is an EDID request packet, that the first number is either the packet sequence number or timestamp associated with that request, that the second request message is a subsequent (retried) EDID request packet, and that the subsequent EDID request has its own packet sequence number. EX2019, 30:10-31:5; EX2018, ¶ 111. He further testified that the Guo sequence numbers are determined by "increment[ing]" a counter that keeps track of packet sequence numbers and that the two packet numbers depend on the packets sent in between. EX2019, 31:6-13; EX2018, ¶ 111. That testimony supports Patent Owner's position that Guo discloses transport-level packet fields, not a request-level numbering scheme in which one request-message number is generated by increasing the other. EX2018, ¶ 111.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Guo anticipates limitation [1k].

3. Guo Fails to Disclose Limitation [1l]

Petitioner fails to show that Guo discloses limitation [1l]: "wherein **one of the first number transmitted with the first request message and the second number transmitted with the second request message** is generated by increasing the other of the first number and the second number **by an arbitrary number**" that the Examiner also found missing from the prior art.

Petitioner relies on Guo's disclosure of packet sequence numbers, timestamps, and CRC values as allegedly satisfying the claimed numbering requirement. *See* Pet. at 47-48; EX2018, ¶ 113. That reliance is misplaced.

The fundamental flaw in Petitioner's mapping is causality. EX2018, ¶ 114. The claim explicitly requires "generated by increasing the other of the first number and the second number by an arbitrary number." EX2018, ¶ 114. Neither of Petitioner's proposed values in Guo—timestamps or packet sequence numbers—operates this way. EX2018, ¶ 114. Most importantly, Guo discloses only transport-level packet fields that increment or change according to protocol rules, but does not disclose generation of one request-level number by increasing another request-level number, as required by claim 1. EX1005, [0094]; EX2018, ¶ 114.

Also, Guo's timestamps are derived from a clock and monotonically increase according to system timing. EX1005, [0086-88]; EX2018, ¶ 114. These values are not generated by increasing another number by an arbitrary amount, nor are they associated with first and second request messages as required by the claim. EX2018, ¶ 114.

Petitioner attempts to rely on the '681 Patent's embodiment, which describes incrementing by one, to argue that Guo's increment-by-one scheme satisfies the claim. Pet. at 48; EX2018, ¶ 114. But this improperly imports an

embodiment into the claim. EX2018, ¶ 114. The claim requires that one number “is generated by increasing the other,” which Guo does not disclose. EX2018, ¶ 114.

Furthermore, Petitioner's timestamp theory fails because timestamps are generated by the passage of time, not by the first request message. EX2018, ¶ 115. At deposition, Dr. Stevenson admitted that the timestamp is based on a system clock or timer, and that in a digital system a timer may be represented by a register updated by hardware. EX2019, 31:14-23; 35:3-24; 36:2-12; EX2018, ¶ 115. He also testified that the EDID request is the output formed by putting together timestamp bits, a code, and packet information. EX2019, 36:14-37:5; EX2018, ¶ 115. This testimony confirms that the second timestamp is not generated by increasing the prior EDID-request timestamp; rather, it is a separate transport/timing field independently generated by a hardware clock. EX2018, ¶ 115.

Petitioner's sequence-number theory fails for the exact same reason. EX2018, ¶ 116. Nothing in Guo discloses a request-level numbering scheme in which one request number is generated by increasing another request number by an arbitrary number. EX2018, ¶ 116. At most, Guo discloses transport-level packet numbering and error-detection values that operate independently of any request-message control logic. EX2018, ¶ 116.

The “second number” requirement also cannot be satisfied merely by invoking Guo’s packet sequence numbers or timestamps. EX2018, ¶ 117. Petitioner’s logic assumes that a repeated EDID REQUEST packet would include a later packet sequence number or later timestamp and therefore a second number different from the first. *See* EX1003, Stevenson Decl., ¶¶ 173-180; EX2018, ¶ 117. But Guo’s packet sequence number is a transport-level packet field that is “incremented by one for each packet transmitted at the source,” and its timestamps record the relative time at which control-signal changes take place. EX1005, [0087], [0094]; EX2018, ¶ 117. Those disclosures do not show that the number transmitted with an alleged second EDID request is generated from the number transmitted with an alleged first EDID request. EX2018, ¶ 117. At most, they show independently generated transport fields governed by packet sequencing or timing, not a request-message number generated by increasing another request-message number. *Id.*

This point is important because Guo’s alleged sequence numbers do not satisfy the claimed “generated by increasing the other of the first number and the second number by an arbitrary number” requirement under Petitioner’s theory. EX2018, ¶ 118. Generally speaking, the sequence counter increments for every packet sent over the network (e.g., video, audio, or other data), and therefore the sequence number attached to a subsequent EDID request is entirely dependent on

how many unrelated packets were transmitted in the interim. EX1005, [0094]; EX2018, ¶ 118. The later packet number merely reflects a running tally of the number of intervening packets, not a number generated from the prior EDID-request number. EX2018, ¶ 118. Guo's timestamp theory fails for the same reason: timestamps are derived from an independent hardware clock running between the two requests, not generated from the number transmitted with a prior request message. EX1005, [0087]; EX2018, ¶ 118. Guo therefore does not disclose the required "generated by increasing the other of the first number and the second number by an arbitrary number" limitation. EX2018, ¶ 118.

For these reasons, Petitioner fails to show by a preponderance of the evidence that Guo anticipates limitation [11].

4. Petitioner's Inconsistent Claim Construction Positions Reinforce Patent Owner's Position

Patent Owner has analyzed the claims under their plain and ordinary meaning. However, in parallel district court litigation involving the same patent and the same claim language, Petitioner construes this limitation to mean "by adding an arbitrary number to the other of the first number and the second number." EX2016 at 6.

Regardless of Petitioner's inconsistent claim-construction positions, Petitioner still fails to establish that Guo discloses the limitation "by increasing the other of the first number and the second number by an arbitrary number"

under any construction, including Petitioner's own construction. EX2018, ¶ 120.

If the Board were to apply Petitioner's alternative construction, Patent Owner's position remains the same: Guo fails to disclose the claimed requirement. EX2018, ¶ 120.

Under Petitioner's district-court construction, the claim requires that one transmitted number is generated by adding an arbitrary number to another transmitted number. EX2018, ¶ 121. Guo does not disclose this. EX2018, ¶ 121. As discussed above, Guo merely describes transport-level packet fields, timestamps, or CRC values that increment according to protocol rules or system timing. EX1005, [0094]; EX1005, [0086–88]; EX2018, ¶ 121. As explained above, reading the current state of an independent, globally running clock or packet sequence is not a mathematical addition operation applied to the first transmitted number. EX2018, ¶ 121. Guo does not disclose generating one transmitted number by adding an arbitrary number to another transmitted number, nor does it tie any transmitted number to another transmitted number through such an addition operation. EX2018, ¶ 121.

Petitioner's reliance on generalized statements that counters or timestamps "increment" does not satisfy even its own district-court articulation of the claim language. EX2018, ¶ 122. An internal counter, timestamp, or protocol-defined sequence field that updates independently of the request messages is not

disclosure of adding an arbitrary number to one transmitted number to generate another transmitted number, as the construction requires. EX2018, ¶ 122. While Guo discloses transmitting generic sequence and timing fields, it never identifies a mechanism by which one transmitted number is generated from the other by addition of an arbitrary number. EX2018, ¶ 122.

For these reasons, Petitioner's inconsistent claim-construction positions reinforce Patent Owner's position that Guo does not anticipate the challenged claims.

5. Guo Fails to Disclose Claims 2-8

Claims 2–8 depend from claim 1 and incorporate its limitations. EX2018, ¶ 124. Because Guo does not disclose multiple limitations of claim 1, including at least limitations [1a], [1k], and [1l], it cannot anticipate claims 2–8. EX2018, ¶ 124.

To the extent Petitioner relies on Guo's disclosure of CRC values or EDID data storage to address certain dependent claims, those disclosures do not remedy the absence of the required request-message numbering scheme or the claimed control logic. Pet. at 49-53; EX2018, ¶ 124. Accordingly, Petitioner has not established anticipation of claims 2–8. EX2018, ¶ 124.

Specifically regarding claims 7 and 8, Petitioner introduces a fundamentally flawed theory: Petitioner maps the “third number” to the EDID data payload, and the “fourth number” to a Cyclic Redundancy Check (CRC)

value. EX2018, ¶ 124. First, as explained in relation to Funabiki, a complex EDID capability payload is not the specific “number” as required by the claims. EX2018, ¶ 124. Second, Petitioner argues that the display apparatus “changes” the EDID data into the CRC value. EX2018, ¶ 124. This misrepresents basic networking principles. EX2018, ¶ 124. A CRC algorithm calculates a supplementary error-detection value from a data payload; it does not change the underlying data into a CRC. EX2018, ¶ 124. Guo states that the CRC is transmitted along with the EDID data. EX1005, [0111], [0127]; EX2018, ¶ 124. Calculating and appending a checksum to a payload is not “changing” a third number to a fourth number as claim 8 requires. EX2018, ¶ 124.

6. Guo Fails to Disclose Claims 9-20

Petitioner similarly fails to establish anticipation of claims 9–20. Claims 9 and 11 are independent claims, yet Petitioner provides no meaningful claim-specific analysis for these claims. Instead, Petitioner repeatedly asserts that “Guo discloses this claim element” and incorporates prior sections by reference. Pet. at 53-62.

This conclusory approach is insufficient, particularly where Petitioner's analysis of claim 1 is deficient. EX2018, ¶ 125. Because Guo does not disclose the control circuitry logic, request-message numbering, or number generation requirements recited in claim 1, and Petitioner does not explain how Guo independently satisfies the distinct limitations of claims 9 and 11, anticipation is

not established. EX2018, ¶ 126.

Furthermore, Petitioner's incorporated arguments fail to satisfy the unique "third number" and "fourth number" limitations across these claims. EX2018, ¶ 126. For claims 17 and 18, which require a third number to be "changed to a fourth number," Petitioner's mapping fails for the same reasons discussed for claims 7 and 8: appending a CRC error-check to an EDID payload does not "change" the underlying data into a CRC. EX2018, ¶ 126. Similarly, for independent claim 9 and dependent claim 19, which require the fourth number to be "generated by the display apparatus based on the third number," Petitioner's theories fail for lack of causality. EX2018, ¶ 126. Whether relying on CRC calculations, independent hardware clocks, or global packet tallies, Guo's display apparatus does not perform the claimed mathematical generation of a fourth number based on a third number. EX2018, ¶ 126.

Accordingly, because Petitioner has not met its burden to establish anticipation of claim 1, and because Petitioner has not established the additional requirements of the remaining independent and dependent claims, Petitioner fails to show by a preponderance of the evidence that claims 1-3, 7-13, and 17-20 are anticipated by Guo. EX2018, ¶ 127.

C. Ground 3: Petitioner Fails to Establish That Claims 3 And 13 Would Have Been Obvious Over Funabiki and Guo

Petitioner has not demonstrated by a preponderance of the evidence that

Ground 3 renders claims 3 and 13 unpatentable because the proposed combination of Funabiki and Guo does not disclose, teach, or suggest the limitations of claims 1 and 11 from which claims 3 and 13 depend. EX2018, ¶ 128. As discussed above in Grounds 1 and 2, neither Funabiki nor Guo discloses the request-message sequencing and numbering requirements recited in claim 1, including limitations [1k] and [1l]. EX2018, ¶ 128. Guo does not cure those deficiencies, and Petitioner's combination relies on impermissible hindsight.

1. Petitioner Fails to Show That the Combination Funabiki and Guo Discloses Claim 3

Claim 3 depends from claim 1 and further recites that the predetermined condition is met when identification information for wireless communication received from the display apparatus matches identification information stored in the memory.

Petitioner asserts that Funabiki discloses this limitation because Funabiki describes an authentication process between a sink device and a source device and contends that completion of that authentication process satisfies the claimed predetermined condition. Pet. at 62. That assertion does not withstand scrutiny. EX2018, ¶ 129.

Even assuming *arguendo* that Funabiki discloses a predetermined condition based on authentication completion, Claim 3 still incorporates all limitations of claim 1, including the requirement that, when the predetermined

condition is met, the control circuitry transmits a second request message together with a second number different from the first number, and that one of the first number and the second number is generated by increasing the other by an arbitrary number. EX2018, ¶ 130. Petitioner does not show that Funabiki discloses those limitations. *Id.*

Funabiki describes an authentication completion signal transmitted from the sink device to the source device at the conclusion of an authentication process. Pet. at 62; EX1004, [0058]–[0059]; Figs. 5–8; EX2018, ¶ 131. But an authentication completion signal is not a “second request message,” nor is it transmitted together with a second number as required by claim 1. EX2018, ¶ 131.

Funabiki's authentication completion signal merely indicates that authentication has completed successfully. EX2018, ¶ 131. It does not request anything from the display apparatus, nor does it initiate a request sequence governed by numbered request messages. EX2018, ¶ 131. At most, Funabiki discloses a state transition signal, not a request message transmitted in response to a predetermined condition as required by limitation [1k]. EX2018, ¶ 131.

Petitioner attempts to bridge this gap by proposing to modify Funabiki to include a sequence number in the authentication completion signal, relying on Guo's disclosure of HDCP packet sequence numbers. Pet. at 63; EX2018, ¶ 132.

That proposal is not supported by the prior art. EX2018, ¶ 132.

Guo's disclosure of sequence numbers arises in the context of HDCP packet headers, where sequence numbers are used to ensure proper ordering and synchronization of encrypted packets. EX1005, [0122]; EX2018, ¶ 133. These sequence numbers are protocol-defined and are used for packet ordering within a secure transport channel. EX2018, ¶ 133.

Guo does not disclose using sequence numbers in request messages, does not disclose first and second request messages, and does not disclose generating a second request number by increasing a first request number by an arbitrary number. EX2018, ¶ 133.

Dr. Stevenson's deposition testimony reinforces that Guo's sequence numbers are packet-synchronization fields, not request-message numbers generated in the manner claimed. EX2018, ¶ 134. He testified that Guo's "sequence number" is a "packet sequence number" and part of the packet header information in a packetized communication protocol. EX2019, 18:17-25; EX2018, ¶ 134. He further testified that the sequence number is used so the devices can verify order and match responses to requests, and that Guo uses packet sequence numbers for synchronization of encrypted packets in HDCP over ASMI. EX2019, 18:1-8; 19:22-20:7; EX2018, ¶ 134.

Furthermore, as explained above regarding limitation [11], the fundamental flaw with relying on Guo's sequence numbers is causality. EX2018, ¶ 135. Petitioner's proposed modification would require reengineering Funabiki's authentication signaling to incorporate Guo's HDCP packet sequencing and then further repurposing that continuous global packet counter to serve as the claimed causal request-message numbering scheme. EX2018, ¶ 135. Neither reference teaches or suggests such a modification. EX2018, ¶ 135.

Petitioner asserts that a POSITA would have been motivated to incorporate Guo's HDCP protocol into Funabiki to increase security. Pet. at 63-64; EX2018, ¶ 136. But even if HDCP were incorporated into Funabiki, that incorporation would not result in the claimed behavior. EX2018, ¶ 136.

HDCP sequence numbers ensure packet order and synchronization. EX1005, [0122]; EX2018, ¶ 136. They do not create a system in which a second request message is transmitted when a predetermined condition is met, nor do they generate a second request number by increasing a first request number by an arbitrary number. EX2018, ¶ 136. Security motivation does not supply missing claim limitations. EX2018, ¶ 136.

Dr. Stevenson also did not identify a Funabiki-specific teaching or problem that would support repurposing Guo's packet-sequencing fields as the claimed request-message numbers. EX2018, ¶ 137. When asked whether Funabiki

expressed a need to ensure greater security, Dr. Stevenson answered that he had not reviewed Funabiki with that exact question in mind. EX2019, 22:2-10; EX2018, ¶ 137. When asked whether he recalled the problem Funabiki set out to solve, he answered, “Not off the top of my head,” and after reviewing Funabiki paragraph 5, characterized the problem as part of establishing a communication channel so video can be sent in the right format. EX2019, 23:12-24:5; EX2018, ¶ 137. He also testified that he did not specifically try to ascertain what Funabiki independently invented. EX2019, 24:25-25:9; EX2018, ¶ 137.

Therefore, combining a non-request state-transition signal (Funabiki) with an independent packet synchronization counter (Guo) does not yield the claimed system. EX2018, ¶ 138. A POSITA would not look to a secure transport protocol to convert a simple authentication signal into the deliberate, numbered request-message control sequence required by the claims. EX2018, ¶ 138. Petitioner's rationale uses Guo as a toolbox to retrofit missing claim elements into Funabiki after the fact. EX2018, ¶ 138. That is impermissible hindsight. EX2018, ¶ 138.

Because the Funabiki–Guo combination does not disclose limitations [1k] and [1l], Petitioner fails to show that claim 1 is unpatentable. Claim 3, which depends from claim 1, therefore also cannot be rendered obvious.

For these reasons, Petitioner fails to show by a preponderance of the evidence that claim 3 would have been obvious over Funabiki and Guo.

2. Petitioner Fails to Show That the Combination Funabiki and Guo Discloses Claim 13

Claim 13 depends from claim 11, which itself recites a method version of the same core limitations found in claim 1, including transmitting a second request message together with a second number different from a first number when a predetermined condition is met.

Petitioner's challenge to claim 13 simply incorporates its arguments for claim 3 and asserts that the same Funabiki–Guo combination renders the method obvious. Pet. at 64. That argument fails for the same reasons as claim 3. EX2018, ¶ 140.

Neither Funabiki nor Guo discloses a method in which, upon satisfaction of a predetermined condition, a second request message is transmitted together with a second number generated by increasing a first number by an arbitrary number. EX2018, ¶ 141. As explained above, Funabiki's authentication completion signaling does not constitute a request message, and Guo's HDCP sequence numbers and timestamps are not request numbers and are not arbitrarily generated. EX2018, ¶ 141.

Because Petitioner has not shown that the combination discloses the limitations of independent claim 11, Petitioner likewise fails to show that dependent claim 13 is unpatentable. *Id.*

For these reasons, Petitioner fails to show by a preponderance of the evidence that claim 13 would have been obvious over Funabiki and Guo.

D. Ground 4: Petitioner Fails to Establish That Claims 6 And 16 Would Have Been Obvious Over Funabiki, Guo, and Fastert

Petitioner has not demonstrated by a preponderance of the evidence that Ground 4 renders claims 6 and 16 unpatentable because the proposed combination of Funabiki, Guo, and Fastert does not disclose, teach, or suggest the limitations of claims 1 and 11 from which claims 6 and 16 depend. EX2018, ¶ 143.

1. Petitioner Fails to Show That the Combination Funabiki, Guo, and Fastert Discloses Claim 6

Claim 6 depends from claim 1 and further requires that “the control circuitry is further configured to transmit the first request message with the first number or the second request message with the second number periodically to the display apparatus via the wireless communication circuitry.”

As discussed above with respect to claim 1, Petitioner has not shown that Funabiki and Guo disclose the claimed numbered request-message structure. EX2018, ¶ 144. Petitioner does not contend that Funabiki or Guo alone discloses periodically transmitting the claimed request messages. Pet. at 65; EX2018, ¶ 144.

Instead, Petitioner relies on Fastert to supply the “periodically” limitation. *Id.*; EX2018, ¶ 144. But Fastert does not disclose transmitting the first request

message with the first number or the second request message with the second number periodically, as required by claim 6. EX2018, ¶ 144.

Fastert discloses a content delivery system in which a content source periodically issues transmission capabilities/quality queries to determine whether to adjust content delivery parameters, such as data rate. EX1006, Fig. 3; [0043]–[0046]; EX2018, ¶ 145. These periodic exchanges involve repeating a transmission capabilities/quality query so that the content source can decide whether to reformat content in response to changes in link quality. *Id.*; EX2018, ¶ 145. Fastert does not disclose transmitting different request messages that include different numbers, nor does it disclose alternating between a first request message with a first number and a second request message with a second number. *Id.*; EX2018, ¶ 145.

Petitioner asserts that Fastert's disclosure renders it obvious to "transmit the EDID requests of Funabiki and Guo periodically." Pet. at 66; EX2018, ¶ 146. But Petitioner does not identify any disclosure in Fastert describing the claimed numbered request messages, nor does Petitioner explain how Fastert's periodic transmission capabilities/quality queries correspond to the specific request messages recited in claim 6. *Id.*; EX2018, ¶ 146.

Nor does Petitioner explain how a POSITA would modify Funabiki or Guo to implement the claimed periodic transmission of the first request message with

the first number or the second request message with the second number, as opposed to merely repeating a generic capabilities query. Pet. at 67; EX2018, ¶ 146. Petitioner's argument impermissibly treats Fastert's link-quality polling mechanism as interchangeable with the specific numbered request-message structure recited in claim 6, without support in the cited disclosures. *Id.*; EX2018, ¶ 147.

Finally, Petitioner's assertion that the proposed modification would involve "only routine skill in the art" and would yield "predictable results" is conclusory and unsupported. *Id.*; EX2018, ¶ 148. Because Petitioner has not shown that Fastert discloses or suggests the claimed numbered request messages, Petitioner has not shown that the combination of Funabiki or Guo with Fastert discloses claim 6. EX2018, ¶ 149.

For these reasons, Petitioner fails to show by a preponderance of the evidence that claim 6 would have been obvious over Funabiki, Guo, and Fastert.

2. Petitioner Fails to Show That the Combination Funabiki, Guo, and Fastert Discloses Claim 16

Claim 16 depends from claim 11, which itself recites a method version of the same core limitations found in claim 1. EX2018, ¶ 150. Specifically, claim 16 recites a method corresponding to claim 6 and similarly requires "transmitting the first request message with the first number or the second request message with the second number periodically to the display apparatus via the wireless

communication circuitry.”

Petitioner relies on the same Fastert disclosures and the same reasoning for claim 16 as for claim 6. For the reasons discussed above, Fastert does not disclose periodically transmitting the claimed first or second request messages with corresponding first and second numbers. EX1006, Fig. 3; [0043]–[0046]; EX2018, ¶ 150.

For these reasons, Petitioner fails to show by a preponderance of the evidence that claim 16 would have been obvious over Funabiki, Guo, and Fastert.

E. Ground 5: Petitioner Fails to Establish That Claims 1-2, 4-5, 7, 11-12, 14-15 AND 17 Would Have Been Obvious in View of E-DDC Standard and Fastert

Petitioner fails to show by a preponderance of the evidence that Ground 5 renders claims 1-2, 4-5, 7, 11-12, 14-15, and 17 unpatentable because E-DDC Standard in view of Fastert does not teach each and every element of independent claims 1 and 11 or their asserted dependents. EX2018, ¶ 152. In particular, E-DDC Standard in combination with Fastert does not teach limitations [1h]–[1l] (and comparable limitations of claim 11). EX2018, ¶ 152. Additionally, because dependent claims 2, 4–5, 7, 12, 14–15, and 17 depend from independent claims that Petitioner has not shown to be unpatentable, Petitioner has also failed to show that claims 2, 4–5, 7, 12, 14–15, and 17 are unpatentable over E-DDC Standard in view of Fastert.

1. No Motivation to Combine E-DDC with Fastert

Petitioner fails to establish any motivation for a POSITA to combine E-DDC Standard with Fastert in the manner required by claim 1. EX2018, ¶ 153.

E-DDC Standard is directed to low-level display identification and configuration signaling over a dedicated display data channel between a host and a display device. EX1007, 1; EX2018, ¶ 153. Its purpose is to enable basic display compatibility, not adaptive content delivery or network-based streaming. EX2018, ¶ 153.

By contrast, Fastert is directed to adaptive multimedia content delivery over a networked environment, focusing on content format selection and delivery based on device or transmission capabilities. EX1006, [0040]–[0046]; EX2018, ¶ 153. Fastert operates at a fundamentally different architectural layer and addresses different technical problems than E-DDC. EX2018, ¶ 153.

Petitioner does not explain why a POSITA would have been motivated to modify the tightly specified E-DDC protocol—designed for deterministic, low-latency display configuration—by incorporating Fastert's high-level adaptive streaming framework. EX2018, ¶ 154. Nor does Petitioner explain how Fastert's content-delivery mechanisms would be integrated into E-DDC's rigid request-response structure without fundamentally altering E-DDC's operation. EX2018, ¶ 154.

Moreover, combining Fastert with E-DDC would undermine E-DDC's purpose by introducing unnecessary complexity into a protocol intended for simple, standardized display identification and configuration. EX2018, ¶ 155. Nothing in either reference suggests such a modification, and Petitioner relies only on hindsight to assert compatibility. EX2018, ¶ 155.

Accordingly, Petitioner has not shown by a preponderance of the evidence that a POSITA would have been motivated to combine E-DDC Standard and Fastert, nor that such a combination would have been straightforward or predictable. EX2018, ¶ 156.

2. E-DDC Standard in view of Fastert Fails to Disclose Limitation [1h]

Petitioner fails to show that E-DDC Standard in combination with Fastert discloses limitation [1h]: “determine at least one parameter relating to the audio/video signal stream based on the received capability information relating to the display apparatus.”

Petitioner contends that E-DDC Standard and Fastert disclose “determin[ing] at least one parameter relating to the audio/video signal stream” based on received capability information. Pet. at 78. This contention is unsupported. EX2018, ¶ 157.

E-DDC Standard explains that configuration information (e.g., EDID) is exchanged to enable “plug & play” operation and allow optimum use of the

display. EX1007, 1; EX2018, ¶ 158. E-DDC thus discloses that a host may use EDID information to configure its output to match display capabilities, which Petitioner characterizes as determining parameters relating to an audio/video signal stream. Pet. at 78; EX2018, ¶ 158.

However, E-DDC does not disclose the claimed determination performed by control circuitry of at least one parameter relating to the audio/video signal stream in the manner recited in claim 1. EX2018, ¶ 158. E-DDC describes high-level configuration usage, not the claimed control-logic determination triggered by receipt of capability information via the claimed request-message process. EX2018, ¶ 158.

Petitioner additionally relies on Fastert to supply this limitation. Pet. at 79; EX2018, ¶ 159. But Fastert does not remedy E-DDC's deficiencies. EX2018, ¶ 159.

Fastert describes a content source that may select a content format or adjust content delivery based on transmission or device capabilities. EX1006, [0040]–[0046]; EX2018, ¶ 159. This disclosure relates to adaptive content delivery at an architectural level, not to control circuitry determining audio/video signal stream parameters in response to capability information received via the claimed request-message sequence. EX2018, ¶ 159.

Critically, Fastert does not disclose: (1) the claimed request messages, (2) the numbered requests and responses, or (3) control circuitry performing the claimed determination as part of the recited apparatus. EX2018, ¶ 160.

Petitioner improperly equates Fastert's discussion of content format selection with the claimed determination of audio/video signal stream parameters, without explaining how Fastert satisfies the claim language. EX2018, ¶ 160. Such conclusory substitution is insufficient. EX2018, ¶ 160.

For these reasons, Petitioner fails to show by a preponderance of the evidence that E-DDC Standard in view of Fastert discloses limitation [1h].

3. E-DDC Standard in view of Fastert Fails to Disclose Limitation [1i]

Petitioner fails to show that E-DDC Standard in combination with Fastert discloses limitation [1i]: "cause the audio/video signal generation circuitry to generate the audio/video signal stream based on the determined at least one parameter relating to the audio/video signal stream."

Petitioner asserts that E-DDC and Fastert disclose causing generation of an audio/video signal stream based on the determined parameter. Pet. at 79. Again, Petitioner overstates the disclosures. EX2018, ¶ 162.

E-DDC merely explains that configuration information may be used by a host to transmit audio/video signals compatible with a display. EX1007, 1; EX2018, ¶ 163. It does not disclose a control circuitry that causes audio/video

signal generation circuitry to generate the signal stream based on a parameter determined in the manner recited in claim 1. EX2018, ¶ 163.

Fastert's discussion of content delivery initiation (EX1006 ¶ 40) similarly lacks the claimed structure and ordered relationship between receiving capability information, determining a parameter, and causing generation of the audio/video signal stream. EX2018, ¶ 164. At most, Petitioner identifies high-level functional overlap, which is insufficient to establish obviousness. EX2018, ¶ 164.

For these reasons, Petitioner fails to show by a preponderance of the evidence that E-DDC Standard in view of Fastert discloses limitation [1i].

4. E-DDC Standard in view of Fastert Fails to Disclose Limitation [1j]

Petitioner fails to show that E-DDC Standard in combination with Fastert discloses limitation [1j]: “transmit the generated audio/video signal stream to the display apparatus via the **wireless** communication circuitry.”

Petitioner contends that E-DDC and Fastert disclose transmitting the generated audio/video signal stream to the display apparatus via wireless communication circuitry. Pet. at 80.

This contention fails because E-DDC is a wired standard that describes DDC/E-DDC communication over physical interfaces. EX1007 at 19–20, 28; EX2018, ¶ 166. Petitioner merely points to the E-DDC standard as allegedly transmitting an audio/video signal stream to a display, but never explains how a

wired E-DDC standard would perform that transmission “via the wireless communication circuitry,” as required by the claim. Pet. at 80; EX2018, ¶ 167. Instead, Petitioner relies on a POSITA to combine the teachings of the E-DDC standard with Fastert, which allegedly implements E-DDC. EX2018, ¶ 167. But Fastert’s disclosure of E-DDC is limited to wired communication (EX1006 [0055]), and Fastert nowhere discloses using E-DDC for wireless communication. EX2018, ¶ 167. Even in combination, these references fail to disclose transmission of the generated audio/video signal stream via wireless communication circuitry, as explicitly required by claim 1. EX2018, ¶ 167.

Petitioner’s attempt to gloss over this distinction impermissibly ignores express claim language and would require rewriting the claim to remove the wireless limitation. EX2018, ¶ 167.

For these reasons, Petitioner fails to show by a preponderance of the evidence that E-DDC Standard in view of Fastert discloses limitation [1j].

5. E-DDC Standard in view of Fastert Fails to Disclose Limitation [1k]

Petitioner further fails to show that E-DDC in view of Fastert discloses limitation [1k]: “**when a predetermined condition is met**, transmit, to the display apparatus via the wireless communication circuitry, **the second request message together with a second number which is different from the first number.**”

Petitioner identifies checksum validation and EDID extension detection as the alleged “predetermined condition,” and characterizes a subsequent EDID read as the claimed “second request message.” Pet. at 81-82. That characterization is incorrect. EX2018, ¶ 169.

The E-DDC Standard describes a mandatory, linear EDID read procedure, not a control-logic decision that conditionally triggers transmission of a second request message. EX2018, ¶ 170. After reading the base EDID, the host checks a predefined extension flag, and if the flag is nonzero, reads an extension block at a predefined address. EX1007, 18–20; EX2018, ¶ 170. This behavior is a protocol-required continuation of the same EDID read operation, not a separate control decision that causes transmission of a second request message “when a predetermined condition is met,” as limitation [1k] requires. EX2018, ¶ 170.

Claim 1 requires that, when a predetermined condition is met, the control circuitry transmits a “second request message together with a second number which is different from the first number.” EX2018, ¶ 171. The predetermined condition is part of the claimed control logic governing message transmission, not merely validation or parsing of received data. EX2018, ¶ 171. E-DDC’s checksum checking and extension flag detection merely describe verification and interpretation of received EDID data; they do not disclose a control decision that triggers transmission of a second request message as claimed. EX1007, 18–20;

EX2018, ¶ 171.

Nor does the E-DDC Standard disclose transmitting a second request message together with a second number via a wireless communication circuitry. EX2018, ¶ 172. The start addresses identified by Petitioner (e.g., 00h and 80h) are protocol-defined addresses, not numbers generated or transmitted by control circuitry in response to a predetermined condition. Pet. at 82; EX2018, ¶ 172.

Fastert likewise does not disclose this limitation. EX2018, ¶ 172. Fastert discusses obtaining updated EDID information but does not disclose a predetermined condition that triggers a second request message with a second number generated and transmitted in the claimed manner. EX1006, [0040]–[0041]; EX2018, ¶ 172.

For these reasons, Petitioner fails to show by a preponderance of the evidence that E-DDC Standard in view of Fastert discloses limitation [1k].

6. E-DDC Standard in view of Fastert Fails to Disclose Limitation [1l]

Petitioner fails to show that E-DDC in view of Fastert discloses limitation [1l]: “wherein **one of the first number transmitted with the first request message and the second number transmitted with the second request message** is generated by increasing the other of the first number and the second number **by an arbitrary number.**”

Petitioner asserts that E-DDC discloses generating the second number by incrementing a word offset (e.g., 80h). Pet. at 82-83. This argument again mischaracterizes the claim. EX2018, ¶ 174.

Claim 1 requires that one number “is generated by increasing the other.” EX2018, ¶ 175. This requirement concerns how the claimed numbers are generated by increasing the other, not merely the presence of predefined protocol fields. EX2018, ¶ 175. E-DDC's predefined start addresses (e.g., 00h, 80h) are fixed values dictated by the standard and do not disclose generation of one request-level number by increasing another request-level number, as required by the claim. EX1007, 20; EX2018, ¶ 175. Neither E-DDC nor Fastert discloses the claimed generation, and Petitioner offers no explanation reconciling its position with the claim language. EX2018, ¶ 175.

For these reasons, Petitioner fails to show by a preponderance of the evidence that E-DDC Standard in view of Fastert discloses limitation [11].

7. Petitioner's Inconsistent Claim Construction Positions Reinforce Patent Owner's Position

Even setting aside Petitioner's inconsistent claim-construction positions, Petitioner still fails to establish that E-DDC in view of Fastert discloses the limitation “by increasing the other of the first number and the second number by an arbitrary number” under any construction. EX2018, ¶ 177.

In parallel district court litigation involving the same patent and the same claim language, Petitioner construes this limitation to mean “by adding an arbitrary number to the other of the first number and the second number.” EX2016 at 6; EX2018, ¶ 177. Even under this articulated construction, E-DDC in view of Fastert fails to disclose the claimed requirement. EX2018, ¶ 177.

Under Petitioner's district-court construction, the claim requires that one transmitted number is generated by adding an arbitrary number to another transmitted number. EX2018, ¶ 178. E-DDC does not disclose this. EX2018, ¶ 178. As discussed above, E-DDC merely specifies predefined start addresses or offsets dictated by the standard (e.g., 00h, 80h). EX1007 at 18–20; EX2018, ¶ 178. It does not disclose generating one transmitted number by adding an arbitrary number to another transmitted number, nor does it tie any transmitted number to another transmitted number through such an addition operation. EX2018, ¶ 178.

Fastert does not cure this deficiency. EX2018, ¶ 178. Fastert discusses obtaining EDID information using E-DDC but does not disclose generating one transmitted number by adding an arbitrary number to another transmitted number. EX1006, [0040]–[0041]; EX2018, ¶ 178. Neither reference identifies (1) a first transmitted number, (2) a second transmitted number, or (3) a mechanism by which one transmitted number is generated from the other by addition of an

arbitrary amount. EX2018, ¶ 179.

Petitioner's reliance on generalized statements that protocol-defined offsets or address values "increment" does not satisfy even its own district-court articulation of the claim language. EX2018, ¶ 179. A protocol-defined offset or predefined address is not disclosure of adding an arbitrary number to one transmitted number to generate another transmitted number, as the construction requires. EX2018, ¶ 179.

Accordingly, Petitioner's inconsistent claim-construction positions reinforce Patent Owner's position that E-DDC Standard in view of Fastert does not render the challenged claims unpatentable. EX2018, ¶ 180.

For at least the foregoing reasons, Petitioner fails to show by a preponderance of the evidence that limitations [1h], [1i], [1j], [1k], and [1l]—and the comparable limitations of claim 11—would have been rendered obvious in view of E-DDC Standard and Fastert. EX2018, ¶ 181. Because claims 2, 4–5, 7, 12, 14–15, and 17 depend from claims 1 and 11, Petitioner has not met its burden for those claims either.

VI. CONCLUSION

For at least the foregoing reasons, the Board should confirm the patentability of all challenged claims.

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Case IPR2025-01310
Patent No. 12,160,681
Patent Owner's Response

CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of June 2026, a copy of the attached
PATENT OWNER'S RESPONSE was served by electronic mail to the
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CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Response and complies with the type-volume limitation of 37 CFR § 42.24(a). The word count application of the word processing program used to prepare this Patent Owner's Response indicates that the Response contains 13,991 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

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