UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PELOTON INTERACTIVE, INC.,
Petitioner,

v.

NEC CORPORATION,
Patent Owner.

Case No. IPR2023-01241

Patent No. 9,769,427

SUPPLEMENTAL DECLARATION OF JEREMY R. COOPERSTOCK, PH.D. IN SUPPORT OF PATENT OWNER RESPONSE

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I, Jeremy R. Cooperstock, declare as follows:

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters contained herein.

2. I understand that Peloton Interactive, Inc. ("Petitioner" or "Peloton") submitted a petition ("Petition") for *inter partes* review, challenging claims 10-13, 19, 21, 23, and 33 ("Challenged Claims") of U.S. Patent No. 9,769,427 ("'427 Patent"). I have been asked by counsel for Patent Owner, NEC Corporation ("Patent Owner" or "NEC") to provide technical opinions in connection with the *inter partes* review. I am being compensated for my time at my standard consulting rate. My compensation is not dependent in any way upon the outcome of this matter.

3. I submit this declaration in support of Patent Owner's Response. I have previously submitted a declaration in support of Patent Owner's Preliminary Response (submitted on November 9, 2023). *See generally* Declaration of Jeremy R. Cooperstock, PhD, In Support of Patent Owner Preliminary Response, Ex 2001 ("Declaration"). My current declaration supplements my previous declaration. My previous declaration, at Paragraph 6, contains a typo – it should state that "I have been employed at McGill University since November 1997," not 2017. While I do not believe that any of my opinions in the present supplement conflict with those set out in my initial declaration, if there is a conflict, the opinions set forth in this supplemental declaration represent my current opinions regarding any issues to

which I opine. I reserve the right to further supplement my opinions, should I be requested to provide additional analysis in connection with the patentability of the Challenged Claims.

I. CLAIM CONSTRUCTION

A. "the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection"

4. I understand that the Patent Trial and Appeal Board ("Board") in its decision to institution *inter partes* review ("IPR") of the Challenged Claims of the '427 Patent specifically "invite[d] the parties to elaborate at trial on their positions as to the meaning of this terms."

5. Peloton argues that, since the "specification does not elaborate further" on what is mean by "a process to guarantee a communication bandwidth" it should be read to cover "a standard process performed by SIP servers using SIP messages." *See* Petition for *Inter Partes* Review of U.S. Patent No. 9,769,427, Paper 1, IPR2023-01240 at 10 ("Petition"). However, this misunderstands both the specification of the '427 Patent as well as the capabilities of the SIP Standard.

6. Peloton's proposal, which also fails to specify *what* standard process it allegedly covers, ignores a key portion of the claim language, specifying that the server "*executes* a process for guaranteeing a communication bandwidth." By Peloton's argument, this would mean that this process is *executed* by "SIP servers

using SIP messages." This is not possible. SIP messages, according to the SIP Standard and as understood by a POSITA, can not and do not execute any function.[1]

7. As such, Peloton's contention that this claim should be construed to mean "a standard process performed by SIP servers using SIP messages" is incorrect – a POSITA would understand that the SIP Standard, as a signaling protocol, cannot execute any processes on its own. Peloton, however, does not propose any other protocols that actually execute this process. Peloton's petition relies *only* on the SIP Standard as teaching this, *see* Petition at 47 ("SIP Standard teaches that 'the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection."), and thus its Petition must fail.

8. This is further clarified within the '427 Patent itself, which excludes the SIP Standard (and SIP messages) from executing a bandwidth guarantee process. The specification shows that the overall "bandwidth guarantee process" as executed separately from the SIP messages transmitted otherwise, executed instead within the "transport functions part 80" – which is accurate since SIP messages themselves are

[1] I understand that Peloton's own expert, Dr. Clifford Reader has admitted that SIP messages cannot execute any processes, *see* Deposition Transcript of Dr. Clifford Reader (Ex 2029) at 75:7-8 ("So the SIP message can't execute anything"), and on this point I agree with him.

incapable of executing any process. While SIP messages may be involved in the overall connection process, they are excluded from the bandwidth guarantee process.

9. Looking to column 15 of the '427 Patent, it explains that

> the service control functions part 40 transmits, to the core IMS part 30, a bandwidth guarantee *instruction* containing communication bandwidth information indicating the determined communication bandwidth, and the received media delivery specification information and play-list information (step C503). The bandwidth guarantee *instruction* is transmitted as an OK message of a SIP message.

'427 Patent (Ex 1001) at 15:21-28 (emphasis added). The *instruction* to execute a bandwidth guarantee process is sent via a SIP message.

10. But the '427 Patent then goes on to explain that

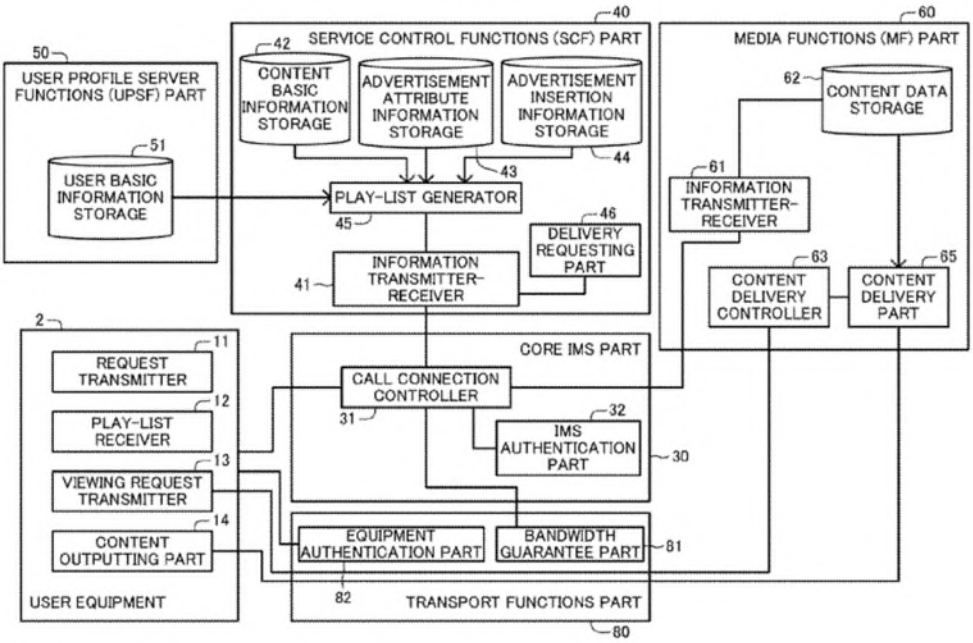
> [u]pon receiving the bandwidth guarantee instruction, the core IMS part 30 transmits, to the transport functions part 80, the received communication bandwidth information and communication channel specification information . . . . Thus, the transport functions part 80 executes a process to guarantee the communication bandwidth represented by the received communication bandwidth information on the communication channel specified by the received communication channel specification information (bandwidth guarantee process).

Id. at 15:29-40. The patent then finally describes that "[u]pon completing the bandwidth guarantee process, the core IMS part 30 transmits a transmission preparation completion notification to the user equipment 2 (step B502) . . . . The transmission preparation completion notification is transmitted as an OK message

of a SIP message." *Id.* at 15:41-48. So while the '427 Patent describes *instructing* the start of the "bandwidth guarantee process" and in turn signaling *completion* of this process using SIP messages, the latter, specifically as an "OK message of a SIP message," it makes clear that the actual "process for guaranteeing a bandwidth" is *not* performed by SIP messages.

11. This is further supported throughout the specification, in particular in Figure 2, reproduced below. This figure shows a "bandwidth guarantee part 81" located within the "transport functions part 80." This shows that the "bandwidth guarantee process" is performed by one or more "transport functions" (and is explicitly recited as doing so within the specification itself, *see* '427 Patent at 15:35-38 ("the transport functions part 80 executes a process to guarantee the communication bandwidth")).

Fig.2



12. As I noted in my initial declaration, the SIP Standard "cannot, and does not, provide *any kind of network resource reservation capabilities.*" Declaration, Ex 2001 ¶ 84 (citing *SIP: Session Initiation Protocol* (RFC 32611) (the "SIP Standard") (Ex 1004) at 10) (emphasis added). The reason why it cannot perform such functions is because the SIP Standard is an application layer protocol whose messages (i.e. messages formatted according to the SIP Standard) are transmitted by the transport layer, which in turn relies on transport protocols. However, the SIP Standard itself is not a transport protocol. This is made clear in the SIP Standard itself, which specifies that SIP "runs on top of several different transport protocols" (Ex 1004 at 1) the messages themselves do not operate as a transport protocol.[2] Since the SIP Standard itself is not a transport function, it necessarily cannot perform the operations of this "transport functions part 80." In the Open Systems Interconnection (OSI) model of data communications, the transport layer (Layer 4) is responsible for "transparent transfer of data between end systems", with which the commonly known transport protocols of the User Datagram Protocol (UDP), the Transmission Control Protocol (TCP) are associated, and that implement such functions as connection establishment, message delivery, error detection and correction, and flow

[2] I understand that Peloton's expert has also admitted that SIP is not a transport protocol. *See* Deposition Transcript of Dr. Clifford Reader (Ex 2029) at 98:18-19 ("[T]he SIP, when it says, 'on top of,' it means it is a layer above the transport protocols").

control. The application layer (Layer 7), the highest layer of the model, is concerned with "the semantics of the application, and is where the SIP Standard is typically considered to reside. *See* Ex 2024. The "transport functions part 80" as described in the '427 Patent, provides specific functionality related to the bandwidth guarantee process and equipment authentication process. Such functionality is distinct from the role of the transport layer functions in the OSI model to which the SIP Standard refers, and a POSITA would understand that the SIP Standard could not be utilized to execute the functions of the transport functions part 80 as used in the '427 Patent.

13. Based on the above, Peloton's proposed "construction" of (or at least, interpretation of) this claim term runs contrary to the explicit disclosure of the '427 Patent as well as the functionality of the relied upon reference, and thus should fail. As explained further below, since Peloton relies upon *only* the SIP Standard as disclosing this functionality, each of its grounds of invalidity must also fail, since its own expert admitted, and a POSITA would understand, the SIP Standard cannot perform or teach the function upon which Peloton relies.

II. PRIOR ART

A. The Invention of the '427 Patent Pre-Dates Ueda

14. I understand that Peloton relies upon U.S. Publication No. 2009/0094321 ("Ueda") under pre-AIA 35 U.S.C. § 102(e) to assert that Ueda is prior art to the

'427 Patent. Petition at 13. This assertion is based on Ueda's U.S. filing date of September 19, 2008. *See* Ueda (Ex 1003) at 1.

15. I have been informed by counsel and understand that, under pre-AIA 35 U.S.C. § 102(e), a patent owner/applicant, may "swear behind" or pre-date certain references by showing that the inventors had possession of the invention prior to the earliest U.S. filing date of the challenged reference. In this situation, a patent owner may swear behind an earlier *filed* reference by showing that the date of invention of the patent is prior to that filing date.

16. Here, based upon information provided to me by Patent Owner, I believe that the '427 Patent is entitled to a date of invention of August 6, 2008, before the filing date of Ueda. As such, I do not believe that Ueda is valid prior art for the purpose of the present Petition, and each of Peloton's grounds of invalidity (all of which rely upon Ueda) must fail.

17. Attached and relied upon is Exhibit 2013, which I understand is a certified translation of Exhibit 2012, which purports to be a presentation put together by one of the inventors of the '427 Patent, Kunihiro Taniguchi. I understand that substantively these two presentations contain identical content, but Exhibit 2013 is a translation into English from the native Japanese of Exhibit 2012.

18. Based upon my review, I prepared the below summary table, which compares each of the claim elements along with their identification in Exhibit 2013. I reserve

the right to provide further explanation and expand upon the below positions based upon new information and further evaluation.

Text	Relevant slides (Ex 2013)
10. A content delivery system comprising an application server system and one or more connection control servers,	3, 9, 18
the one or more connection control servers comprising a sixth receiver for receiving equipment specification information transmitted by user equipment and establishing connection between the application server system and the user equipment based on the received equipment specification information,	3, 9, 12, 21
the application server system comprising:	3, 9
a fourth transmitter for transmitting content data representing content to the user equipment with which connection is established by the sixth receiver;	3, 9, 10, 11, 13, 19
a controller for controlling a service provided by the fourth transmitter; and	3, 9
a second memory for storing profile information of a user of the user equipment,	3, 9
the fourth transmitter comprising a memory for storing sub content data representing sub content and main content data representing main content,	3, 9, 18
the controller comprising:	3, 9, 10, 11

a first receiver for receiving a content delivery request containing main content identification information for identifying the main content and transmitted by the user equipment, via the sixth receiver; and	3, 9, 12, 21
an processor for selecting the stored sub content data based on selection information containing attribute information representing an attribute of the sub content and preliminarily stored by the user profile server functions part, the controller or the one or more connection control servers; and	9
a first transmitter for transmitting selected sub content specification information for specifying the selected sub content data via the sixth receiver to the user equipment which has transmitted the content delivery request, wherein the first transmitter is configured to, at a same time that the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection, transmit the play-list information via the sixth receiver to the user equipment which has transmitted the content delivery request, the play-list information being information containing the main content identification information contained in the content delivery request and the selected sub content specification information, and the play-list information being information containing information indicating a sequence in which the main content	9-14, 16, 17, 19, 20, 22, 23, 25, 26

identified by the main content identification information and the sub content specified by the selected sub content specification information are output,	
wherein the user equipment comprises a second receiver for receiving main content data and sub content data transmitted by the application server system and outputting, based on the received main content data and sub content data, viewing content in which sub content represented by the sub content data is inserted in main content represented by the main content data.	10, 11, 13-15, 19, 28

19. Even to the extent that any of the features of the Challenged Claim 10 are not found to be explicit within Exhibit 2012, I understand that not all features need to be literally recited, but only those features relying upon Ueda, the reference which is being pre-dated, need to be shown. As set forth above, Exhibit 2012 shows that the inventor had possession of at least those elements of the claim for which Ueda is relied upon, by August 6, 2008. I reserve the right to supplement my opinions regarding the above table, either to insert or remove certain elements or slide references.

20. Based upon my review of the remaining independent claims of the '427 Patent, which are challenged in this petition, claims 19, 21, 23, and 33, it is my opinion that Exhibit 2013 discloses each of the features of these claims as well, or, to the extent that these elements are not explicitly disclosed, these features would be

within the knowledge of a POSITA at the time of invention of the ‘427 Patent, for the reasons set forth above with respect to independent claim 10.

21. In addition, dependent claims 11, 12, and 13 contain elements that are either already set forth in Exhibit 2013 or that would have otherwise been obvious to a POSITA at the time of invention of the ’427 Patent. The below exemplary table sets forth each of these claims, and its corresponding disclosure within Exhibit 2013 or, alternatively, obvious in view of the knowledge of a POSITA. I reserve the right to supplement this table based upon further investigation or analysis.

Claim	Source
11	Ex 2013 at 18, 19, 22, 25. Knowledge of a POSITA.
12	Ex 2013 at Ex 2013 at 10, 11, 13, 14, 15, 18, 19, 22, 25, 28. Knowledge of a POSITA.
13	Ex 2013 at 10, 13, 16, 19, 22, and 25. Knowledge of a POSITA.

22. I have also reviewed a certified translation (Ex 2021) of the Japanese priority document for the ‘427 Patent, Japan Patent Application No. 2008-294270 (“JP’270 Application”), which I understand was filed on November 11, 2008. Based upon my review, it is my opinion that the JP’270 Application contains substantially all the subject matter disclosed in the ‘427 Patent specification.

III. VALIDITY OF THE '427 PATENT

A. Claims 10-13, 19, 21, 23, and 33 Are Not Obvious in View of Ueda Combined with the SIP Standard and the SDP Standard (Ground 1)

23. My opening declaration sets forth my opinion regarding the combination of Ueda (Ex 1003), the SIP Standard (Ex 1004) and the SDP Standard (Ex 1005). I provide this supplement to further explain how Peloton's proposed construction and reliance on the SIP Standard is incompatible with its proposed combination to invalidate the Challenged Claims under Ground 1 of its Petition.

1. *['427 Claim 10] SIP Standard does not teach "the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection" (claim element [10j-1])*

24. Peloton's proposed "construction" of the term "the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection" to mean "a standard process performed by SIP servers using SIP messages" necessarily dooms its proposed read of this claim element, since the SIP standard, by definition and admission of its expert, *cannot* execute any process. Since Peloton relies upon the SIP Standard for each of its Grounds of invalidity (and this element is present in each of the Challenged Claims), Peloton fails to identify any reference that performs this element of the Challenged Claims.

25. The Board, in its decision instituting the Petition, noted that they "do not understand Peloton to be arguing that the SIP messages, themselves, constitute the recited 'process for guaranteeing a communication bandwidth.'" Decision Instituting, Paper 16 at 41. But that is incorrect. Peloton's proposed construction *explicitly* states that "a process to guarantee a communication bandwidth" is "a standard process performed *by SIP servers using SIP messages*." Petition at 10. This is repeated in Dr. Reader's Declaration. *See* Reader Declaration (Ex 1008) at 24 ("The specification does not elaborate any further on what is meant by 'a process to guarantee a communication bandwidth,' indicating that the patent applicant was treating this process as a standard process *performed by SIP servers using SIP messages*.") (emphasis added). In my opinion, there is no reasonable interpretation of Peloton's argument as indicating anything *other than* SIP servers "executing a process to guarantee a communication bandwidth" using SIP messages.

26. This is backed up by Peloton's substantive arguments in the Petition regarding this claim element. Peloton relies upon the use of SIP INVITE messages and their associated responses, in particular the 200 (OK) message and "6xx response" as the "process for guaranteeing a communication bandwidth for transmitting content data by checking that the bandwidth specified in the session description defined by the media does not exceed the available bandwidth." Petition at 48-49; Reader Declaration (Ex 1008) ¶ 189.

27. But Peloton's argument is incorrect. These messages according to the SIP Standard do not actually execute anything – they are merely a signaling language that the receiver of the message may choose to use or not. The SIP Standard itself, and the messages sent according to it, *do not* mandate a particular result. Dr. Reader concludes that, based on these messages "a session initiation request *is* canceled if the proxy servers receive a 606 Not Acceptable Response with the Warning 370 reason code." Reader Declaration (Ex 1008) ¶ 213 (emphasis added). This is incorrect. The request need not be cancelled simply because the SIP message indicates that bandwidth is not sufficient – the receiver need take no action based upon these SIP messages. Put another way, the SIP Standard does not require any particular action to take in response to any of the 606 or 370 messages, nor does it provide any further type of "network resource reservation capabilities" and so, cannot mandate a particular bandwidth be guaranteed at the time of connection. SIP Standard (Ex 1004) at 10. Dr. Reader points to no source to support his claim that "a session request is cancelled," *see* Reader Declaration ¶ 189, because no such source exists – the SIP Standard certainly does not mandate that a session request be cancelled, as that will ultimately depend on implementation choices and the requirements of the application or service making use of SIP – the SIP Standard alone does not perform or decide such actions.

28. While it may be possible that an application or service uses this SIP message to determine whether or not a connection should be established, neither Peloton nor its expert identify this application or service, or explicitly rely upon it for any ground of invalidity. Nor does Peloton or its expert rely upon the knowledge of a POSITA for this or any ground to fill the significant hole in its argument. As Peloton's expert has admitted, the SIP Standard does not "execute" any process, and in fact, the SIP messages cannot execute a process of guaranteeing a bandwidth, *see* Ex 2029 at 75:9-13 ("Q: The SIP message won't be executing the bandwidth guarantee process? A: No. A communication message is not something that executes; processes execute things, not messages that are sent between processes."). Since the claim language explicitly requires "one or more connection control servers executes a process for guaranteeing a communication bandwidth" and since Peloton's position is that the SIP messages themselves execute this process, *see* Petition at 10, Peloton's position is incompatible with the requirements of the claim, and thus must fail.

29. The Board appears to give Peloton the benefit of the doubt with respect to this element, finding "Peloton's argument reasonable at this stage that this broad, functional language encompasses simply checking that the required bandwidth is acceptable," Paper 16 at 41. However, the Board does not actually resolve the issue of the SIP Standard's inability to actually *execute* any process, let alone a process for guaranteeing a bandwidth. Rather, the '427 Patent is clear – the bandwidth

guarantee process is performed by the "transport functions part 80" – which utilizes transport protocols and other mechanisms separate from the SIP messages that may initiate the process and that may transmit the results. '427 Patent at 15:29-40; Fig. 2; *see also id.* at 13:59-64 ("[T]he core IMS part 30 executes a bandwidth reservation process as preparation for guaranteeing a communication bandwidth."). Since Peloton does not identify an appropriate transport function that *does* execute this process (and in fact, cannot do so, since their own construction limits this term to "SIP servers using SIP messages"), its argument contains a glaring hole that cannot be filled with the references it has presented.

30. If it is true, as the Board notes, the "606 Not Acceptable" or "200 OK" SIP messages "reflect the *result* of executing that [bandwidth guarantee] process," Paper 16 at 41, then by definition, those same messages are not what are actually executing the process.

2. ['427 Claim 10] SIP Standard in view of SDP Standard does not teach "at a same time that the one or more connection control servers executes a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection" (claim element [10j-2]

31. As I explain in my initial report, it is my opinion that Peloton has not shown that the combination of Ueda, the SIP Standard, and the SDP Standard discloses the feature of "at a same time that the one or more connection control servers executes

a process for guaranteeing a communication bandwidth required for transmitting content data as a process for establishing the connection." *See* Ex 2001 ¶¶ 93-101.

32. On further investigation, it is also my opinion that Peloton's argument fails to put forth sufficient reasoning as to *why* a POSITA would be motivated to combine the references in the proposed way to arrive at the features of the Challenged Claims. The claims are very specific that the play-list information contains a plurality of information including: "information containing the main content identification information . . . and the selected sub content information" and "information indicating a sequence in which the main content . . . and the sub content . . . are output." Petitioner relies upon Ueda as disclosing a "Playlist file 402," *see* Pet. at 48, 59 already – however, its justification for this combination is simply that "it would have been obvious . . . to insert Ueda's playlist into. . .or in an SPD description" *Id.* at 56-57. But I disagree.

33. There is no reason given within the Petition as to *why* a POSITA would be motivated to modify the SDP message in this way in order to achieve the system according to the claim, though. The Petition is replete with examples of what a POSITA could have done, *see, e.g.*, Pet. at 52-55 but it fails to identify why a POSITA would specifically modify these messages to include the playlist of Ueda – it was certainly not common practice at the time to include a playlist within any of the fields of a SIP or SDP message – this is, in part, the very invention of the '427

Patent, to utilize such messages to incorporate "play-list information" during the overall connection process (which also includes a bandwidth guarantee process carried out by separate components).

34. Instead, Peloton simply appears to pick and choose disparate features of its respective references (e.g., the purported play-list of Ueda, the headers of an SDP message) and, upon looking at the disclosure of the '427 Patent regarding transmission of play-list information, attempts to reason that a POSITA *could have* done this.[3] But within the references relied upon by Peloton, no such motivation or explanation to include a full play-list (or play-list information according to the claims) exists. This is made obvious by Petitioner's attempt to very broadly identify any and all of the various fields of a SIP/SDP message. Peloton identifies no motivation or reason, at the time of invention of the '427 Patent, that a POSITA would have to import an entirely new list of play-list information into these fields, beyond the merest justification that Petitioner puts forth that (faced with a need to include play-list information, as described by the '427 Patent) they *could have* done so.

[3] I understand that this is essentially the concept of "hindsight bias" by which the Patent Office (or in this case a Petitioner) uses teachings within the patent itself to provide a post hoc justification for combining references in a certain way. I also understand that this is improper – the justification to combine references must be taught within the references itself.

35. As noted previously, Ueda already contemplates provision of play-list information – there would be no need to modify SIP and SDP messages (neither of which are contemplated by Ueda at all) to include such a play-list, which would result in a major change to the content of these messages.

CONCLUSION

36. For the reasons set forth herein, I am of the opinion that all of the Challenged Claims are not unpatentable.

I hereby declare under penalty of perjury under the laws of the United States of America that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under 18 U.S.C. § 1001. I attest to having a final and complete copy of this declaration before me at the time I add my signature.

Jeremy R. Cooperstock

May 1, 2024
Date