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Paper 10
Date: July 12, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC.,
Petitioner,

v.

CONSTELLATION DESIGNS, LLC,
Patent Owner.

IPR2023-00319
Patent 10,693,700 B1

Before MIRIAM L. QUINN, BRENT M. DOUGAL, and MICHAEL T. CYGAN, *Administrative Patent Judges.*

DOUGAL, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Petitioner, LG Electronics Inc., requests that we institute an *inter partes* review challenging the patentability of claims 2, 3, 5, 12, 13, 15, 22, 23, and 25 (the "challenged claims") of U.S. Patent 10,693,700 B1 (Ex. 1001, "the '700 patent"). Paper 3 ("Petition" or "Pet."). Patent Owner, Constellation Designs, LLC, argues that Petitioner's request is deficient and should not be granted. Paper 7 ("Preliminary Response" or "Prelim. Resp.").

Applying the standard set forth in 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we grant the Petition and institute an *inter partes* review.[1]

B. Related Matters

The parties identify the following related district court litigation: *Constellation Designs, LLC v. LG Electronics Inc. et al.*, No. 2:21-cv-00448 (E.D. Tex.). Pet. 81; Paper 5, 1. Patent Owner also identifies the following related *inter partes* reviews: IPR2022-01482, IPR2022-01549, IPR2023-00228, IPR2023-00229, and IPR2023-00320. Paper 5, 1–2.

C. The '700 Patent

The '700 patent is directed to digital communication or transmission systems with "unequally spaced constellations." Ex. 1001, 1:38–44. As background to the technology, "[a] digital communication system is used to transmit digital bits (sequences of 0s and 1s) from one device (a transmitter) to another (a receiver)." Ex. 2001 ¶ 12. Each digital communication system

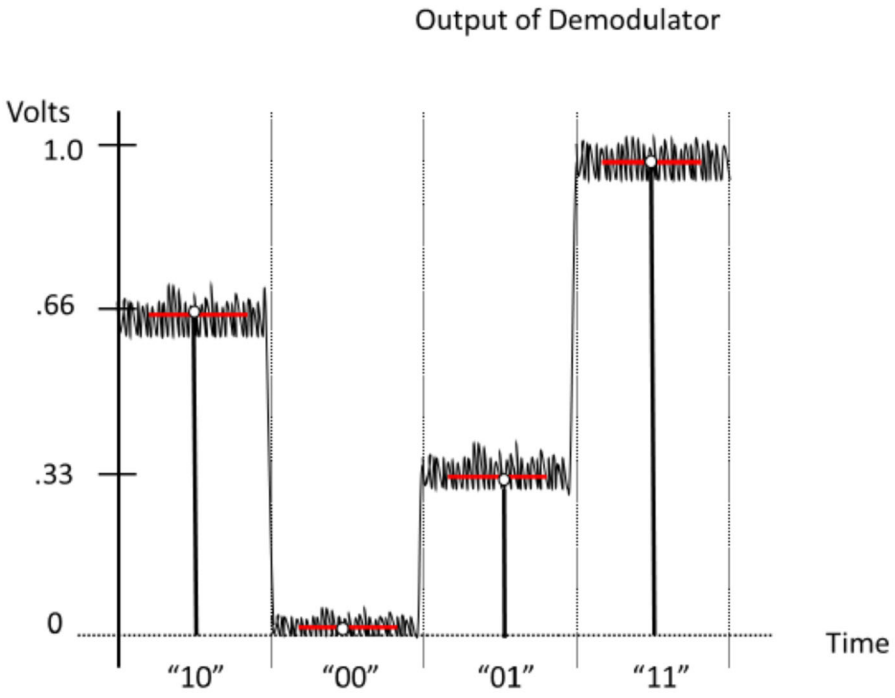
[1] Our findings and conclusions at this stage are preliminary, and thus, no final determinations are made.

has a measurable "capacity," which is the maximum amount of information that the system can reliably send over the channel. *Id.* ¶ 15. The transmitter maps each new bit sequence to constellation points. *Id.* ¶¶ 15, 18. "[A] 'constellation' point is a carrier signal value (such as amplitude and/or phase) that can be used to represent a longer sequence of bits." *Id.* ¶ 12. The receiver in turn attempts to detect symbols that were received, from the transmitter, by mapping a received signal to a constellation. Ex. 1001, 1:44–46. The minimum distance (d_{min}) between constellation points at high signal-to-noise ratios (SNRs) correlates to the capacity of the constellation, and accordingly, many communication systems aim to maximize this value in order to maximize capacity of the system. Ex. 2001 ¶¶ 46–54. This is to decrease the risk that the noise in the signal makes the signal unreadable, i.e. decreases the risk that the system is unable to determine which signal value was intended between two adjacent signal values.

As a simple illustration, Patent Owner's declarant, Dr. Giuseppe Caire, provides the following example of a one-dimensional constellation, with bit values (constellation label) and signal amplitude values (constellation location):

Constellation Label	Constellation Location
"00"	0
"01"	.33
"10"	.66
"11"	1.0

Ex. 2001 ¶ 30. An output based on this constellation, and including an illustration of signal noise, is reproduced below.



Id. ¶ 33. The above figure, provided by Dr. Caire, is a graph of the signal amplitude, in volts, over time. As can be seen above, "a time-dependent continuous waveform is shown in black including noise, the average of the time-dependent continuous waveform is shown in red, the output of the demodulator is shown as discrete time values in black, and the figure is again annotated with the corresponding bit sequence." *Id.* Thus, it can be seen how each bit value (constellation label) corresponds to the signal amplitude value (constellation location) in wave form. The receiver, with information about the constellation, is thus able to determine the bit values communicated from the transmitter.

As mentioned, the '700 patent is directed to digital communication systems with "unequally spaced constellations." Ex. 1001, 1:38–44. Rather than focusing on maintaining a minimum distance (d_{min}) between the signal values of the constellation, the '700 patent attempts to provide "direct optimization of the constellation points of a communication system utilizing

a capacity approaching channel code, [that] can yield different constellations depending on the SNR for which they are optimized" *Id.* at 5:11–16. The '700 patent explains that "capacity optimized constellation at low SNRs are geometrically shaped constellations that can achieve significantly higher performance gains (measured as reduction in minimum required SNR) than constellations that maximize d_{min}." *Id.* at 8:24–29. The '700 patent provides that "a constellation at one code rate can achieve gains that cannot be achieved at another code rate." *Id* at 5:20–21. Dr. Caire provides one example of "a constellation optimized for a code rate of 1/2 provides gains when with a code rate of 1/2, but may not provide the same gains at other code rates, such as 2/3 code rate." Ex. 2001 ¶ 60. Thus, "[i]nstead, when using a code rate of 2/3, a different constellation may be used – a constellation optimized for use at 2/3 code rate." *Id.*

"Capacity measures that can be used in the selection of the location of constellation points include . . . parallel decode (PD) capacity and joint capacity." Ex. 1001, 5:6–8. The "PD capacity of a channel can be viewed in terms of the mutual information between the output bits of the encoder (such as an LDPC encoder) at the transmitter and the likelihoods computed by the demapper at the receiver," and it is "influenced by both the placement of points within the constellation and by the labelling assignments." *Id.* at 6:64–7:3. Joint capacity describes "the achievable capacity between the input of the mapper on the transmit side of the link and the output of the channel (including for example AWGN and Fading channels)." *Id.* at 7:18–21.

D. Illustrative Claim(s)

The challenged claims are all dependent claims and depend, directly or indirectly, from independent claims 1, 11, and 21, respectively. Claim 2 depends from claim 1 and is illustrative:

1. A communication system, comprising:

a receiver capable of receiving signals via a communication channel having a channel signal-to-noise ratio (SNR), wherein the receiver comprises:

a demodulator capable of demodulating a received signal into a demodulated signal;

a demapper, coupled to the demodulator, capable of determining likelihoods using the demodulated signal and a multidimensional symbol constellation selected from a plurality of multidimensional symbol constellations; and

a decoder, coupled to the demapper, capable of using the likelihoods determined by the demapper to provide a sequence of received bits based upon a low density parity check (LDPC) code;

wherein the plurality of multidimensional symbol constellations comprises a plurality of different non-uniform multidimensional symbol constellations having the same number of constellation points, where the constellation points are non-uniformly spaced in each degree of freedom available to the multidimensional symbol constellations;

wherein the receiver is capable of selecting an LDPC code rate and multidimensional symbol constellation pair from a plurality of predetermined LDPC code rate and multidimensional symbol constellation pairs, where each of the plurality of different non-uniform multidimensional symbol constellations is only included in one of the plurality of predetermined LDPC code rate and multidimensional symbol constellation pairs.

2. The communication system of claim 1, wherein:

> the demodulator is capable of using a demodulation scheme that is based on quadrature amplitude modulation (QAM) and the degrees of freedom available to the multidimensional symbol constellations are in phase and quadrature components;
>
> each of the plurality of different non-uniform multidimensional symbol constellations is a sixteen point quadrature amplitude modulated (QAM) symbol constellation; and
>
> the LDPC code rate and multidimensional symbol constellation pairs that include one of the plurality of different non-uniform multidimensional symbol constellations have an LDPC code rate that is equal to or greater than 3/8 and less than or equal to 6/8.

Ex. 1001, 13:43–14:20.

E. Evidence

Petitioner's grounds of unpatentability rely on the following evidence:

Name	Non-Patent Literature	Author	Exhibit
ATSC322	*ATSC Standard: Physical Layer Protocol (A/322)*, 26 Dec. 2018	Advanced Television Systems Committee	1023
ATSC327	*ATSC Recommended Practice: Guidelines for the Physical Layer Protocol (A/327)*, 8 Oct. 2018	Advanced Television Systems Committee	1022

Name	Patent Document	Exhibit
Barsoum or the '777 patent	US Patent 7,978,777 B2 (July 12, 2011)	1015

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 1–2), supported by the declaration of Dr. Bertrand Hochwald (Ex. 1003):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
2, 3, 12, 13, 22, 23	103	Barsoum, ATSC322
5, 15, 25	103	Barsoum, ATSC327

II. ANALYSIS

A. Legal Standards

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). At this preliminary stage, we determine whether the information presented in the Petition shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed combinations of prior art. *See* 35 U.S.C. § 314(a).

A claim is unpatentable as obvious if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We apply these principles to the Petition's challenges.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Id.* at 13, 17. Petitioner asserts that a person of ordinary skill in the art

> would have had at least a Master's degree in an academic area emphasizing electrical engineering or a similar discipline, and at least two years of experience in the field working with, teaching, or researching communication systems including the use of constellations in transmitting signals between devices. [Ex.]1003, ¶[93]. Superior education could compensate for a deficiency in work experience, and *vice-versa*. *Id.*

Pet. 28.

Though Patent Owner makes arguments with reference to "a person of ordinary skill," Patent Owner does not directly address or contest Petitioner's level of skill. *See e.g.*, Prelim. Resp. 3. We are persuaded, on the present record, that Petitioner's proposal is consistent with the problems and solutions in the '700 patent and prior art of record. We adopt Petitioner's definition of the level of skill for the purposes of this Decision.

C. Claim Construction

In *inter partes* review, we construe claims using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2022).

Petitioner asserts that no terms require express construction. Pet. 28. Patent Owner does not argue that terms in the challenged claims should be

construed. We determine that no terms need to be construed at this time. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Analysis of the Challenged Claims

The Petition argues that dependent claims 2, 3, 12, 13, 22, and 23 are obvious over the combination of Barsoum and ATSC322. Pet. 28–67. The Petition argues that dependent claims 5, 15, and 25 are obvious over the combination of Barsoum and ATSC327. *Id.* at 67–79.

The '700 patent states that it is a continuation of the '777 patent (aka Barsoum). Ex. 1001 code (63). Petitioner challenges this claim to priority, arguing that features of the challenged claims do not have written description support in Barsoum. Pet. 2–19. Patent Owner disagrees. Prelim. Resp. 35–58. All three references (Barsoum, ATSC322, ATSC327) relied on by Petitioner are only prior art to the '700 patent if the '700 patent cannot claim priority to Barsoum.

For the reasons expressed below, we determine that Petitioner has established a reasonable likelihood that at least one claim of the '700 patent is unpatentable.

1. Written Description Support

Petitioner argues that claims 2, 3, 12, 13, 22, and 23 include one or more LDPC code rate ranges that do not find written description support in Barsoum. Pet. 4–13. Petitioner also argues that the communication systems in claims 5, 15, and 25 do not find written description support in Barsoum. *Id.* at 13–19.

We address each group of claims separately.

a) Claims 2, 3, 12, 13, 22, and 23

Claims 2, 12, and 22 are each directed towards a QAM-16 constellation having "an LDPC code rate that is equal to or greater than 3/8 and less than or equal to 6/8." Ex. 1001, 14:6–20, 16:6–20, 18:1–14. Claims 3, 13, and 23, depend from claims 2, 12, and 22, respectively, and each of these claims requires QAM-64, QAM-256, and QAM-1024 constellations, where each constellation has an LDPC code rate within a specific range. *Id.* at 14:21–55, 16:21–55, 18:15–50.

Both parties appear to agree that Barsoum does not include explicit QAM examples with LDPC code rate ranges that match the claims. *See e.g.*, Pet. 7–11; Prelim. Resp. 39–40. However, both parties also agree that Barsoum teaches that QAM constellations can be orthogonalized from PAM constellations and that Barsoum teaches specific PAM constellations, including bit rates that can be converted into code rates. *See e.g.*, Pet. 7–11, 45; Prelim. Resp. 39–42. The parties' dispute is centered on whether these disclosures are sufficient to provide written description support for the claimed code rate ranges.

Petitioner argues that Barsoum "do[es] not provide a single statement explaining that the code rate for one dimensional PAM constellations would be the same as a code rate for a multidimensional QAM." Pet. 10. However, Patent Owner argues that the bit rates are the same for related PAM and QAM constellations because Barsoum teaches that "[d]ue to the orthogonality of the in-phase and quadrature components the capacity characteristics [(e.g., bit rate)] of the resulting QAM-64 constellation are identical to that of the PAM-8 constellation on a per-dimension basis.").

Prelim. Resp. 39 (quoting Ex. 1015, 12:33–37). As bit rates and the related code rates are a capacity characteristic, Petitioner's broad assertion that Barsoum is silent on this point is incorrect. Further, Patent Owner's position that the bit rates are the same for related PAM and QAM constellations is supported by declarant testimony which we accept at this stage. *See* Ex. 2001 ¶ 75.

Petitioner also argues that though Barsoum discloses specific code rates it does not disclose any ranges. Pet. 7–9. For example, Petitioner argues that Barsoum's

> constellation design tables of FIGS. 11a and 11b describe a plurality of single dimensional PAM-4 constellations (not QAM constellations) that are each optimized to a ***specific code rate*** resulting in a set of discrete code rates of R = {1/4, 3/8, 1/2, 5/8, 3/4} - i.e., ***one specific code rate for each constellation of the design table respectively***.

Id. at 8 (citing Ex. 1015, 10:35–55, FIGs. 10a–11b; Ex. 1003 ¶ 56). Petitioner argues that if, arguendo, "Figures 10c, 12c, 14c, and 16c show constellation points optimized for parallel decoding capacity over a continuum of (or range of) capacities or code rates, nothing in these figures even prescribes the code rate ranges described in the claims." *Id.* at 11.

Petitioner further explains that with all of these disclosures in Barsoum, there are no '"blaze marks' that would direct a Person Of Ordinary Skill in the Art (POSITA) to find the ***minimum code rate*** of a code rate range . . . [or], the ***maximum code rate*** of the claimed code rate range for a multidimensional ***QAM*** constellation." *Id.* at 10–11 (citing *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1326–27 (Fed. Cir. 2000)).

In response, Patent Owner points to these same disclosures and argues that, the highest and lowest code rates in the tables identify the ranges and

that the locus plots (i.e. Figures 10c, 12c, 14c, and 16c) "show constellation point locations across a ***continuous range*** of code rates that encompasses the code rate values from the design tables." Prelim. Resp. 41. Patent Owner later states that in some ranges, such as in claim 2, it is not the lowest code rate that is important, but rather the first identified code rate that covers an unequally spaced constellation because that was "the object of the invention." *Id.* at 46–47.

Under the present record, we determine that Petitioner has satisfied its burden with respect to a lack of written description support for at least some of the claims. In particular, each of claims 3, 13, and 23 require QAM-16, QAM-64, QAM-256, and QAM-1024 constellations, and the beginning end points of the code rate ranges appear to have been selected for different reasons, without any discussion or support that would apply across the board. For example, Patent Owner argues that for the QAM-16 and QAM-64 constellations the first identified code rate that covers an unequally spaced constellation is important because that was "the object of the invention" and thus establishes the beginning end point. *Id.* at 46–47, 49–50. However, Patent Owner provides no reason why in the QAM-256 constellation the claimed range covers equally and unequally spaced constellations. *See id.* at 52 (locus plot of Figure 14c). Rather, Patent Owner merely asserts that the claimed range is "coextensive with the values in [the table of] Figure 15b." *Id.* at 51. For the QAM-1024 constellations Patent Owner also asserts that the claimed range is "coextensive with the values in [the table of] Figure 17b," and again makes no mention of unequally spaced constellations. *Id.* at 53.

Not only is Patent Owner's logic applied inconsistently across the different types of QAM constellations, but this also results in inconsistency in the logic behind claims 3, 13, and 23 which require all of the different types of QAM constellations. Thus, we preliminarily determine that Petitioner has shown that a person of skill in the art would not understand that the patentee had possession of the claimed invention of claims 3, 13, and 23 at the time of the application, as there does not appear to be a way in Barsoum for determining how to select the beginning end points of the code rate ranges. *See* Pet. 3 (citing *Lizardtech, Inc. v. Earth Res. Mapping Inc.,* 424 F.3d 1336, 1345 (Fed. Cir. 2005)).

Claims 2, 12, and 22 each only require a QAM-16 constellation and do not require the other QAM constellation types. Thus, these claims are not internally inconsistent in how they select the beginning end point of the code rate range. We determine, in view of the current record, the written description support for these claims is a close issue, as is the question of whether the disclosed locus plots, without more, are sufficient to disclose a range, rather than just specific points. As we have determined that claims 3, 13, and 23 have been shown preliminarily to lack written description support, we reserve these questions for trial.

b) Claims 5, 15, and 25

Claim 5 recites:

> The communication system of claim 1, wherein each of the plurality of different non-uniform multidimensional symbol constellations is capable of providing a greater parallel decoding capacity at a specific SNR than the other symbol constellations in the plurality of multidimensional symbol constellations at the same SNR.

Ex. 1001, 14:65–15:3. Claims 15 and 25 are substantially similar. *Id.* at 16:65–17:3, 18:59–64.

Petitioner argues that claims 5, 15, and 25 lack written description support in Barsoum for the "relative relationship between a first group of non-uniform multidimensional symbol constellations to a second group of other symbol constellations when the two groups are operated at the same SNR." Pet. 13–14 (emphasis omitted). Petitioner argues that Barsoum "only describes determining a relative relationship between ***a*** geometrically shaped (i.e., unequally spaced) constellation and a constellation optimized for d_{min}." *Id.* (citing Ex. 1015, 6:14–20, 2:56–63; Ex. 1003 ¶ 73).

Patent Owner disagrees, arguing that the teachings related to optimizing a constellation for capacity at a first SNR also teach that other constellations optimized for a different SNR will not provide the same benefits at the first SNR. Prelim. Resp. 55–56 (citing Ex. 1015, 4:62–5:11, 7:26–29, 8:47–56). We agree. Patent Owner correctly points to the specific examples of Figures 11b, 13b, 15b, and 17b as each showing a plurality of constellations, each optimized for a particular SNR that provide a greater parallel decoding capacity at that specific SNR than the other symbol constellations in the plurality. *Id.* 56–58. More specifically, Figure 13b shows five constellations (i.e. a plurality), each optimized for a particular identified SNR that will perform better at that particular SNR than the other constellations, which have not been optimized at that particular SNR. *Id.* at 57–58.

For these reasons, we preliminarily determine that Petitioner has not shown that claims 5, 15, and 25 lack written description support in Barsoum.

2. 35 U.S.C. § 103

As noted previously, the Petition argues that dependent claims 2, 3, 12, 13, 22, and 23 are obvious over the combination of Barsoum and ATSC322. Pet. 28–67. The Petition argues that dependent claims 5, 15, and 25 are obvious over the combination of Barsoum and ATSC327. *Id.* at 67–79. Apart from the written description support arguments above, Patent Owner does not contest Petitioner's obviousness analysis of the challenged claims. *See generally*, Prelim. Resp. We note that it would seem inconsistent for Patent Owner to argue that Barsoum has written description support for the claims and yet does not teach a feature of the claims. At the same time, Patent Owner also does not address ATSC322 or ATSC327, or Petitioner's reasons to combine the references.

Each of the Petition's grounds relies entirely on Barsoum to teach or suggest each limitation of independent claims 1, 11, and 21, upon which the challenged claims depend. Pet. 39–51, 75. Concerning claims 2, 3, 12, 13, 22, and 23 the Petition relies on ATSC322 for teaching QAM-16, QAM-64, QAM-256, and QAM-1024 constellations with a code rate of 7/15 which is within the claimed ranges for each of the constellations. *See e.g.*, *id.* at 54 (reproducing Ex. 1023, Tables 6.12 and 6.13 at 30–31 which show all four constellations with a code rate of 7/15). Petitioner also provides a number of reasons why one of skill in the art would look to ATSC322, which is a technical standard, for combination with Barsoum. *Id.* at 37–39.

After review, we determine that the Petition preliminarily establishes a reasonable likelihood that claims 3, 13, and 23 are obvious over the combination of Barsoum and ATSC322. We also determine that if Barsoum is prior art to claims 2, 12, and 22, the Petition preliminarily establishes a

reasonable likelihood that claims 2, 12, and 22 are obvious over the combination of Barsoum and ATSC322.

As we have preliminarily determined that Barsoum is not prior art to claims 5, 15, and 25, the Petition does not establish a reasonable likelihood that claims 5, 15, and 25 are obvious over the combination of Barsoum and ATSC327.

E. Discretionary Denial Under 35 U.S.C. § 314

Patent Owner contends the Board should exercise its discretion to deny institution under 35 U.S.C. § 314, in view of *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020). Paper 9 (Patent Owner's Limited Fintiv Submission). Petitioner disagrees. Pet. 79–80. In particular, Petitioner refers to the *Sotera* stipulation filed with the Petition (Ex. 1012) and the June 2022 Office Guidance that states that "***the PTAB will not discretionarily deny institution in view of parallel district court litigation*** where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB" (Pet. 80 (quoting Ex. 1018, 7)).

Together with Patent Owner's Limited Fintiv Submission, Patent Owner submitted evidence of the grounds Petitioner is pursuing in the related district court litigation. *See* Exs. 2020, 2021. These exhibits show that, consistent with the Sotera stipulation, Petitioner is not relying on Barsoum, ATSC322, or ATSC327 to argue for the invalidity of the '700 patent in the related district court litigation. For this reason, and in accordance with the June 2022 Office Guidance, we will not deny institution in view of the parallel district court litigation.

We also note that this Petition was filed the day after a first petition (IPR2023-00228) challenging the '700 patent was filed. However, we do not exercise our discretion to deny based upon multiple petitions because 1) each petition addresses different groups of claims and relies on different prior art; and 2) the present Petition centers on a "dispute about [the] priority date" not present in the other challenge. Consolidated Trial Practice Guide, 59.[2]

III. CONCLUSION

For the foregoing reasons, we have determined that there is a reasonable likelihood that the Petitioner would prevail with respect to at least one claim challenged in the Petition. We, therefore, institute trial as to all challenged claims on all grounds stated in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, *inter partes* review as to 2, 3, 5, 12, 13, 15, 22, 23, and 25 of U.S. Patent 10,693,700 B1 is instituted; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

[2] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

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