

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY CORPORATION,

Petitioner

v.

OPTIMUM IMAGING TECHNOLOGIES LLC,

Patent Owner

Case IPR2024-00924

Patent No. 7,612,805

PATENT OWNER PRELIMINARY RESPONSE

Mail Stop PATENT BOARD
Patent Trial and Appeal Board
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

<u>PATENT OWNER'S LIST OF EXHIBITS</u>	
EX. 2001	RESERVED
EX. 2002	Global Dossier Patent Family for U.S. Pub. No. 20050280877 (Watanabe), accessed at https://globaldossier.uspto.gov/result/publication/US/20050280877/118382 on August 9, 2024
EX. 2003	Extract from the Register of European Patents for EP1608140 (Watanabe foreign counterpart), accessed at https://register.epo.org/application?number=EP05253548&Ing=en&tab=doclist on August 13, 2024
EX. 2004	RESERVED
EX. 2005	Written submission in preparation to/during oral proceedings, submitted during prosecution of EP1608140 on April 5, 2011
EX. 2006	RESERVED
EX. 2007	RESERVED
EX. 2008	RESERVED
EX. 2009	RESERVED
EX. 2010	RESERVED
EX. 2011	RESERVED
EX. 2012	U.S. Patent No. 8,451,339 (“the ’339 Patent”)
EX. 2013	RESERVED

EX. 2014	RESERVED
EX. 2015	Email from Petitioner's counsel to Patent Owner's counsel, dated September 4, 2024

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I. INTRODUCTION

Patent Owner respectfully submits this Patent Owner Preliminary Response (“POPR”) to request the Board deny institution. Petitioner challenges claims 1-3, 9, 18-20, and 24 of Patent No. 7,612,805 (“the ‘805 Patent”). Petition at 2.

Petitioner’s arguments fail for at least three reasons.

First, the Board previously found the merits of Watanabe and Watanabe + Russ do not justify institution. The same is true here.

Second, the Watanabe reference has many deficiencies and does not meet the limitations of the challenged claims. Petitioner also relies on the combination of Takane and Watanabe which fails for at least the same reasons.

Third, the proposed combinations are replete with hindsight bias. Petitioner fails to meet its burden to establish obviousness.

Additionally, Patent Owner requests the Board reject Petitioner’s belated stipulation as it relates to the *Fintiv* analysis in order to serve the interests of fairness and efficiency.¹

¹ See *Apple Inc. v. Fintiv Inc.*, IPR2020-00019, Paper 11 (PTAB March 20, 2020)(precedential)(“*Fintiv*”).

II. THE '805 PATENT CLAIMS NOVEL AND NON-OBVIOUS SYSTEMS AND METHODS FOR CORRECTING ABERRATIONS IN A DIGITAL CAMERA

The '805 Patent claims systems and methods that perform in-camera aberration correction using novel and non-obvious combinations of hardware and software. EX. 1001 at Abstract (“A system is disclosed for the automated correction of optical and digital aberrations in a digital imaging system.”)

“Though every major advance in photography has solved an important problem, there are still remaining photographic problems to be solved in order to meet the goals of *optimizing optical imaging quality* while *increasing simplicity and efficiency* and *lowering cost*.” EX. 1001 at 3:13-17 (emphasis added).

“The present system dramatically improves image quality. This digital imaging system eliminates, or minimizes, post-production processes. In addition, the system presents substantial cost savings as well as time savings relative to existing digital imaging systems because of the automation of integrated in-camera optical and digital corrections of aberrations.” EX. 1001 at 7:13-20.

To achieve the advantages described in the specification, the independent claims of the '805 Patent recite, *inter alia*, “a digital camera mechanism”, “system software”, “a microprocessor”, “a digital signal processor”, and “a database management system.”

As claimed, the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations. The aberrations are corrected using, *inter alia*, the digital signal processor. Thus, the system can identify the specific aberrations and the specific solution for each aberration.

As explained in the '805 Patent, “[t]his in-camera corrective feature provides a powerful tool to rapidly manipulate an image without using post-production editing software tools.” EX. 1001 at 16:8-11.

The '805 Patent includes 32 claims. Exemplary independent claim 9 is set forth below:

Claim 9	
9[pre]	A digital imaging system for image filtration comprising:
9[a]	a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system and a memory storage sub-system;
9[b]	wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor;

9[c]	wherein the microprocessor is used to provide digital and optical data to the digital signal processor;
9[d]	wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations;
9[e]	wherein the system software forwards the data from the digital sensor to the digital processor;
9[f]	wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations;
9[g]	wherein the lens type is a zoom lens;
9[h]	wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps;
9[i]	wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of data files; and
9[j]	wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

**A. THE BOARD PREVIOUSLY DENIED INSTITUTION OF
RELATED IPRS INVOLVING OVERLAPPING PRIOR ART
REFERENCES**

The '805 Patent and U.S. Patent No. 8,451,339 ("the '339 Patent," EX. 2012) issued from related continuation applications and claim priority to the same provisional application, No. 60/807,065 filed July 11, 2006.

A different petitioner, Canon Inc., challenged the '805 and '339 Patents in IPR2020-01321 and IPR2020-01322 (the "Canon IPRs"). EX1030; EX. 1032. Canon Inc. also relied on testimony from the same expert as this petitioner, Dr. Laub.

The '805 Patent was challenged in IPR2020-01321 based on the following obviousness grounds:

- Niikawa
- Niikawa + Kawanishi
- Niikawa + **Russ**
- **Watanabe**
- **Watanabe + Russ**

The Board denied institution finding that the merits did not outweigh the other *Fintiv* factors favoring denial. EX. 1033 at 11.

The '339 Patent was challenged in IPR2020-01322 based on the following obviousness grounds:

- Niikawa
- Niikawa + Kita
- Niikawa + Kishida

- **Watanabe**
- **Watanabe + Kita**

The Board denied institution finding that the merits did not outweigh the other *Fintiv* factors favoring denial. EX. 1031 at 11.

The rationale for relying on Watanabe as a primary reference was substantially the same in IPR2020-01321 and IPR2020-01322 as well as in this IPR.

The rationale for relying on Russ as a secondary reference was substantially the same in IPR2020-01321 as in this IPR.

As done in the prior Canon IPRs, the Board should deny institution in this IPR. At minimum, Ground 1 based on Watanabe and Ground 2 based on Watanabe + Russ do not justify institution.²

In this paper, Patent Owner will briefly address all grounds to show that instituting this IPR would not be an efficient use of the Board's time and resources. *Chevron Oronite Co. LLC v. Infineum USA L.P.*, IPR2018-00923, Paper 9 (PTAB Nov. 7, 2018)(informative)(insufficient number of proposed grounds/challenges to

² In IPR2020-01321, Canon Inc. alleged obviousness of claims 19 and 24 based on Watanabe and alleged obviousness of claims 1-3 and 18-20 based on Watanabe + Russ. EX. 1033 at 3. The merits in that case did not justify institution.

claims meet reasonable likelihood standard); *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 (PTAB Jan. 24, 2019)(informative)(same). The merits of Grounds 1-4 are weak and do not meet the institution standard. Even if the Board disagrees with some of Patent Owner's arguments, there is an insufficient number of grounds that meet the institution standard. Therefore, institution would not be efficient. *See SAS Inst. Inc.*, 138 S. Ct. 1348, 1354 (2018)(concluding that the Board must address every claim the petitioner has challenged and rejecting the practice of "partial institution").

B. PERSON OF ORDINARY SKILL IN THE ART ("POSA") WAS PREVIOUSLY DEFINED BY THE DISTRICT COURT

Petitioner proposes a POSA would have had "a bachelor's degree in electrical engineering, physics, or a related field, with at least two years of industry experience and/or research, both concerning digital camera system design and image processing." Petition at 5.

The district court found that a POSA would have had "an electrical engineering degree and three years of relevant experience." EX. 1027 at 6.

Patent Owner submits that the district court's definition of a POSA should be adopted for purposes of institution. Patent Owner reserves all rights regarding the correct definition of a POSA.

Petitioner’s expert, Dr. Laub, does not meet the definition of a POSA, at least because Dr. Laub does not have a degree in electrical engineering. *See* EX. 1004 at 6. As such, Dr. Laub is not qualified to offer expert testimony from the perspective of a skilled artisan. *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1376-1377 (Fed. Cir. 2022)(“To offer expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill in the art. Without that skill, the witness’ opinions are neither relevant nor reliable.”); *see also id.* at 1377 (“[T]o be qualified to offer expert testimony on issues from the vantage point of an ordinarily skilled artisan in a patent case, an expert must at a minimum possess ordinary skill in the art.”).

C. CLAIM CONSTRUCTION WAS PREVIOUSLY PERFORMED BY THE DISTRICT COURT

Petitioner identifies one phrase and two terms in the petition for construction. Petition at 6-7.

1. “wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations”

This phrase in the ‘805 Patent was previously construed by the district court.

In the ‘805 and ‘339 Patents, the district court construed the phrases “identify[ing] specific optical aberrations” and “identify at least one optical

aberration” to each carry its plain meaning. EX. 1027 at 13. The district court determined that the claim language is clear on its face. *See also* EX. 1027 at 11 (“The parties do not seem to dispute that the underlying phrase ‘identifying specific optical aberrations’ would be clear and unambiguous to one of ordinary skill”).

Like the district court, the Board should use the plain meaning of this phrase in the ’805 Patent for purposes of institution. Patent Owner reserves all rights regarding the correct construction of this phrase.

Based on the below arguments, the Board need not construe this phrase for purposes of institution. Patent Owner expressly reserves all rights as to all grounds if this IPR is instituted.

2. “*using*”

This term was previously construed by the district court and found not indefinite. EX. 1027 at 37-39. Like the district court, the Board should use the plain meaning of this term in the ’805 Patent for purposes of institution. Patent Owner reserves all rights regarding the correct construction of this term.

For example, the defendant had argued that this term was indefinite because “the specification describes only embodiments where the ASIC and the DSP carry out aberration correction independently of one another, and has no description of

using both components together for such a correction”. EX. 1027 at 37-38. The district court rejected the defendant’s argument. EX. 1027 at 38.

Based on the below arguments in this POPR, the Board need not construe this phrase for purposes of institution. Patent Owner expressly reserves all rights as to all grounds if this IPR is instituted.

3. “succession”

This term appears in the ‘805 Patent as referring to “a succession of steps” and “a succession of data files.” The phrase “succession of data files” was found not indefinite by the district court. EX. 1027 at 48-50. Like the district court, the Board should use the plain meaning of this term in the ‘805 Patent for purposes of institution. Patent Owner reserves all rights regarding the correct construction of this term.

Based on the below arguments in this POPR, the Board need not construe this phrase for purposes of institution. Patent Owner expressly reserves all rights as to all grounds if this IPR is instituted.

III. THE GROUNDS ARE WEAK³

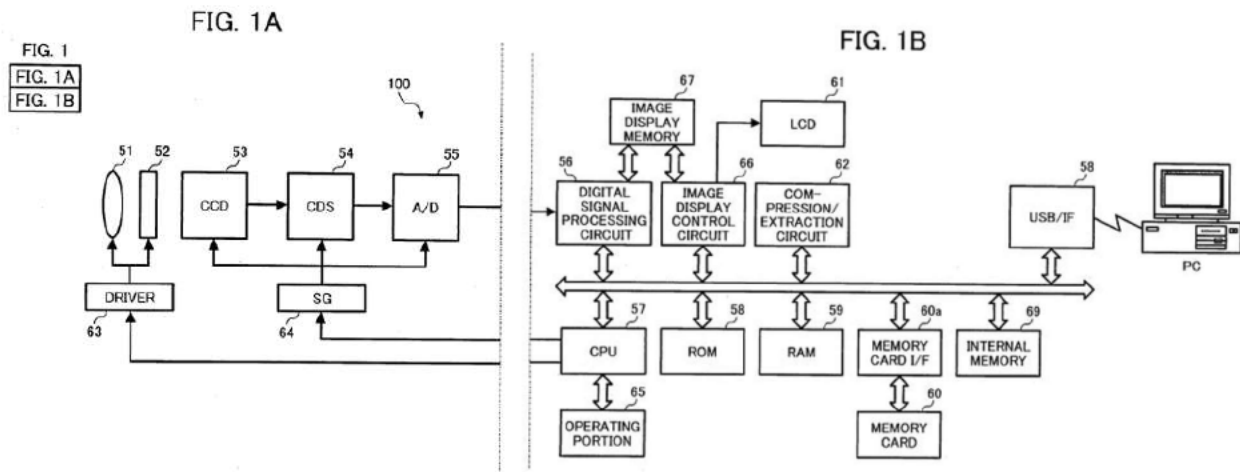
A. GROUND 1: WATANABE FAILS

Ground	Reference(s)	Claim(s)
1	Watanabe	9 and 24

1. *Watanabe discloses two embodiments that use different process information*

a. The relied-upon first embodiment of Watanabe

Petitioner relies on the first embodiment of Watanabe that is related to a “digital still camera.” EX. 1005 at [0040] and [0042]. With respect to FIGS. 1A-1B, reproduced below, Watanabe discloses a digital still camera 100:



See also EX. 1005, [0035].

³ Patent Owner briefly addresses all grounds in this paper, but reserves all rights to fully address all arguments and all grounds if this IPR is instituted.

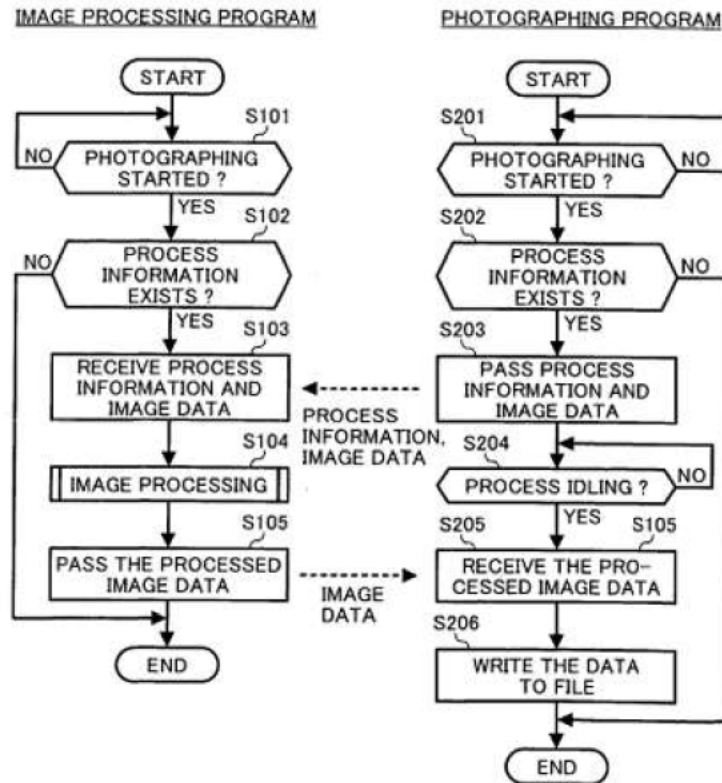
Operating portion 65 includes buttons for selecting a function by the operator, *e.g.*, a release button used at the time of photographing. EX. 1005 at [0041].

ROM 58 stores a control program that includes an “imaging processing program” and a “photographing program.” EX. 1005 at [0042].⁴ The CPU 57 executes both programs. EX. 1005 at [0060].

FIG. 4 (below) shows the steps performed by the “imaging processing program” versus the “photographing program.”

⁴ CPU 57 “controls operation of each part of the digital still camera... by way of an photographing program.” EX. 1005 at [00042]. CPU 57 “processes image data by way of an image processing program.” *Id.*

FIG. 4

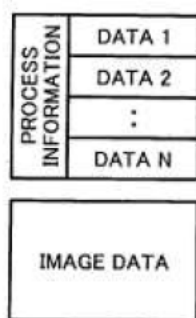


When the release button is pushed (S101 and S201), and when process information exists (S102 and S202), the image data is produced and transferred together with the process information from the photographing program to the image processing program (S103 and S203). EX. 1005 at [0058] and [0061]. The image processing program executes an image process on the image data in accordance with the process information (S104). EX. 1005 at [0062].

The processed image data is then transferred from the image processing program to the photographing program (S105). EX. 1005 at [0062]. The processed image data is then recorded (S206). EX. 1005 at [0063].

With respect to FIG. 2, reproduced below, Watanabe explains that “various data (data 1-data N) are added to image data as process information.” EX. 1005 at [0046]. For example, information of a lens type, a focusing point, and a zoom position may correspond to data 1, data 2, and data 3, respectively. EX. 1005 at [0047]; FIG. 3.

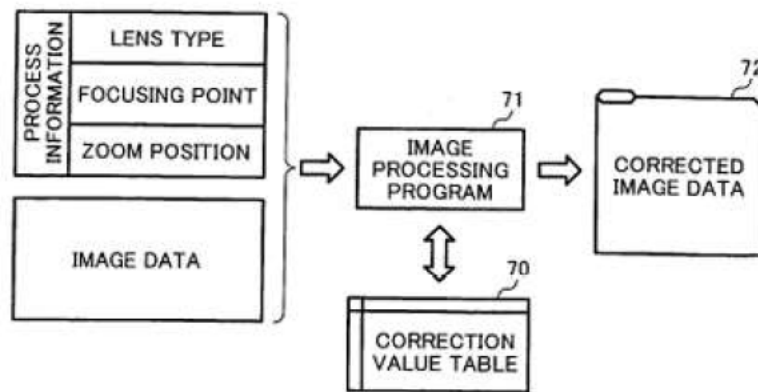
FIG. 2



With respect to FIG. 3, reproduced below, Watanabe discloses tables 70 with correction values, prepared in advance, for each lens type. EX. 1005 at [0047]. The CPU 57 determines a table according to lens type (data 1) and then determines the correction values according to the focusing point (data 2) and zoom position (data

3). EX. 1005 at [0047]. Thus, the image process performed by the image processing program, discussed above with respect to FIG. 4, step 104, is selected based on data 1-data 3. EX. 1005 at [0047].

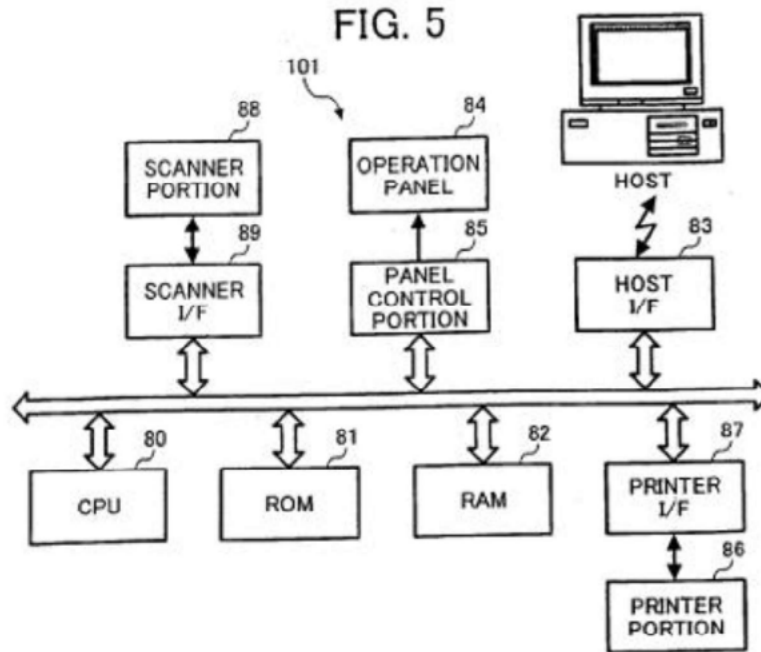
FIG. 3



b. The second embodiment of Watanabe

In context of Watanabe, the patentee expressly distinguished the process information of the first and second embodiments; the patentee expressly distinguished identifying a correction versus identifying an aberration. Watanabe teaches identification of corrections should be used with a look-up table (in the relied-upon first embodiment), while identification of aberrations should not use a look-up table (in the second embodiment).

The second embodiment of Watanabe relates to a multifunction printer 101 as the image recording apparatus. EX. 1005 at [0067]; FIG. 5.⁵

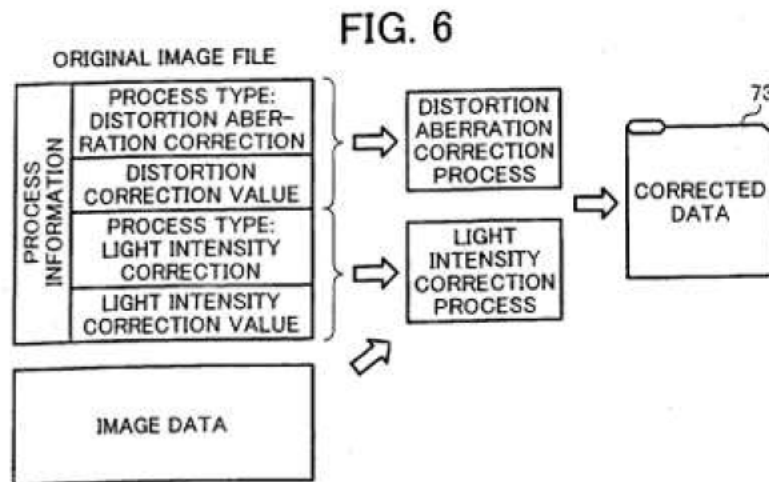


Like in the first embodiment, Watanabe discloses that in the second embodiment, “the CPU 80 executes a distortion aberration correction process and a peripheral light intensity correction process according to the image correction processing program 71.” EX. 1005 at [0070]. In both embodiments, the CPU executes the aberration correction process.

⁵ As discussed herein, the second embodiment of Watanabe does not disclose at least the use of a digital signal processor, a database, or a database management system as claimed in the '805 Patent.

Like in the first embodiment, Watanabe discloses that in the second embodiment, process information is added to image data. EX. 1005 at [0070].

However, the process information in the second embodiment is different from the process information in the first embodiment. In the second embodiment, “the process information is relative to a process type of distortion aberration correction, a correction value concerning distortion aberration, a process type of peripheral light intensity correction, and a correction value concerning peripheral light intensity.” EX. 1005 at [0070]; FIG. 6.



The EPO prosecution history makes clear that in the second embodiment, the process information includes values that “represent an aberration directly (i.e.,

the ‘information of distortion aberration’).” EX. 2005 at 2.⁶ The patentee distinguished this type of process information from data referring to “capture conditions” such as focusing point (subject distance) and zoom position (focal length). EX. 2005 at 2. The patentee therefore distinguished the process information of the second embodiment from the process information of the first embodiment. The patentee explicitly refers to differences in these two approaches which can be seen by comparing FIGS. 3 and 6 and FIGS. 11 and 13 of Watanabe. EX. 2005 at 3.

The patentee explicitly stated that the process information of the second embodiment avoids the use of a look-up table. EX. 2005 at 3. The patentee stated that with the process information of the second embodiment (*i.e.*, the “information of distortion aberration”), that “it is no longer necessary to refer to a look-up table in order to carry out the image processing using the process information.” EX. 2005 at 3. In contrast, the process information of the first embodiment (*e.g.*, focusing point, zoom position) does use a look-up table.

⁶ As shown by Global Dossier, Watanabe has a related foreign counterpart publication, EP1608140. EX. 2002; EX. 2003.

2. Petitioner fails to meet its burden with respect to the “digital signal processor”

Petitioner fails to establish that Watanabe discloses or renders obvious the limitations of claims 9 and 24 regarding the digital signal processor.

Limitation 9[b] recites “wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor.” Limitations 24[b] and 24[i] recite similar language. Petitioner relies on Watanabe’s circuit 56. Petition at 17-18 and 28.

Limitation 9[f] recites “wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations.” Petitioner relies on Watanabe’s circuit 56. Petition at 22-23.

Petitioner appears to agree that the ’805 Patent describes correcting aberrations using “in-camera digital filtration.” Petition at 3 (citing EX. 1001 at 7:21-28; 8:3-8). However, Petitioner fails to establish that Watanabe’s circuit 56 discloses or renders obvious the functionality of the claimed “digital signal processor”.

Petitioner argues that Watanabe’s circuit 56 corrects optical image aberrations by applying corrections from the database. *E.g.*, Petition at 22.

Petitioner is incorrect at least because Watanabe does not disclose circuit 56 executing aberration correction.

In contrast, Watanabe expressly discloses that “CPU 57 executes... a correction process on image data...” EX. 1005 at [0042]. Watanabe also discloses that CPU 57 “processes image data by way of an image processing program.” EX. 1005 at [0042]. Watanabe further discloses that “CPU 57 executes the image processing program” including step 104 for “image processing” shown in FIG. 4. EX. 1005 at [0060]; *see also* FIG. 3 (image processing program 71 accessing correction value table 70). **Therefore, a POSA reading Watanabe would understand it is the CPU 57 that executes aberration correction, not circuit 56.** Watanabe relies heavily on CPU 57 which has more functionality and in turn, requires more processing power, than circuit 56. Watanabe’s heavy dependence on the CPU 57 is contrary to the claimed inventions of the ’805 Patent that efficiently distribute the workload by using the digital signal processor for specific functions.

Watanabe does not disclose that circuit 56 corrects an aberration by applying digital filtration, or that circuit 56 corrects an aberration using the correction values in tables 70. *Contra* Petition at 22. Petitioner misinterprets Watanabe’s one-sentence disclosure that “the digital signal processing circuit 56 sorts out the image data inputted from the A/D converter 55 into color-difference data and brightness data, and executes various process, correction and a data process for image

compressing/extracting.” EX. 1005 at [0038]; Petition at 22. However, this sentence does not disclose that circuit 56 performs aberration correction to image data based on the process information. Nor does this sentence disclose that circuit 56 obtains correction values from tables 70. As discussed below, regardless of whatever “correction” may be performed by Watanabe’s circuit 56, there is no disclosure that circuit 56 performs the functions of the claimed “digital signal processor” in the ’805 Patent.

A POSA would understand that the output from the A/D converter will be subject to certain digital “corrections” including, for example, gamma correction.⁷ A POSA would understand that brightness is not perceived by humans in a linear manner and so gamma correction can be used to correct a pixel’s numerical value and luminance value according to a mathematical curve. Without gamma correction, the image can appear too dark or washed out. These digital

⁷ This understanding is consistent with, *e.g.*, Takane’s disclosure of signal processing circuit 50 which processes the data, *e.g.*, white balance adjustment, gamma correction, sharpness correction, and converts the RGB data into a YC signal, *prior to* further processing by distortion correction circuits 56/58. EX. 1009 at [0044]. Signal processing circuit 50 of Takane does not perform optical image aberration correction as claimed in the ‘805 Patent.

“corrections” are distinct from the optical image aberration correction as claimed in the ’805 Patent.

3. Petitioner fails to meet its burden with respect to “database”

Petitioner fails to establish that Watanabe discloses tables 70 correspond to a “database” as required by claims 9 and 24.

Watanabe describes that tables 70 are prepared in advance. EX. 1005 at [0047]. Watanabe does not describe whether tables 70 are stored or hardcoded, or otherwise manipulatable, updatable, etc. Watanabe’s disclosure of tables 70 does not correspond to the claimed “database” of the ’805 Patent.

In contrast to Watanabe, the ’805 Patent describes:

- “In the process, the camera identifies a specific lens and refers to a database that matches the lens type with the specific aberrations” EX. 1001 at 10:49-51.
- “The dynamics of correcting multiple simultaneous aberrations may be complex, but since the number and type of aberrations are constrained to a specific lens type, a centralized database may be accessed with specific corrections for each respective aberration.” EX. 1001 at 12:32-37.
- “[S]oftware files are periodically downloaded to the camera in order to update the camera settings and the database system.” EX. 1001 at 28:44-46.
- For example, “as the camera manufacturer provides new lenses for the camera, it becomes necessary to load new updated settings to accommodate corrections for the new lenses.” EX. 1001 at 28:46-49.
- As another example, “as the camera requires new software updates with improved algorithms to further optimize the corrective functions of both the

optical and digital mechanisms, the camera will automatically accept these.” EX. 1001 at 28:49-52.

The '805 Patent explains that the updatable database is a “particularly important” feature to both the manufacturer and the user. EX. 1001 at 28:53-56 (“This feature is particularly important to both manufacturer and user because the ability to update software capability periodically will protect a user from needing to upgrade major hardware such as with a lens replacement.”) There is no disclosure in Watanabe that the tables 70 are updatable.

4. Petitioner fails to meet its burden with respect to “database management system”

Petitioner fails to establish that Watanabe’s control program is a “database management system” as required by claims 9 and 24.

Though absent from the petition, Petitioner’s expert opined that a database management system is “software used to create, store, retrieve, change, manipulate, sort, format and print... information in a database.” EX. 1003 at ¶172.⁸ However, Petitioner and its expert fail to establish that Watanabe’s control program

⁸ Patent Owner reserves all rights regarding the correct construction of the phrase “database management system.”

creates, stores, changes, manipulates, sorts, formats, or prints information in tables 70.

Petitioner points to Watanabe's "control program," but fails to distinguish the "imaging processing program" from the "photographing program" of Watanabe's control program. As discussed above, it is S104 of the image processing program that performs "image processing." EX. 1005 at FIG. 4; *see also* FIG. 3 (image processing program 71 accessing correction value table 70). There is no disclosure that the image processing program corresponds to the claimed database management system.⁹

With respect to the image processing program, Watanabe's use of a lookup table is a simple operation that does not require a database management system as claimed.

⁹ There is also no disclosure that the photographing program corresponds to the claimed database management system.

5. *Petitioner fails to meet its burden with respect to “an application specific integrated circuit”*

Petitioner fails to establish that Watanabe renders obvious “an application specific integrated circuit” as required by claims 9 and 24.¹⁰ Petitioner’s analysis is not sufficiently clear.

First, in the analysis of limitation 9[a], Petitioner does not clearly identify the component of Watanabe that allegedly corresponds to the claimed “application specific integrated circuit” (ASIC). Petition at 10-14. It is not clear if Petitioner is relying on the disclosure of Watanabe or suggesting to add a separate ASIC to Watanabe’s system. *See id.*

Moreover, in the analysis of limitation 9[b], Petitioner argues that Watanabe meets using the ASIC and the DSP for the claimed function, but Petitioner does not identify the alleged ASIC of Watanabe or cite any disclosure of Watanabe for support. Petition at 18. Then, Petitioner argues “[t]o the extent an ASIC is not taught by Watanabe digital filtration disclosure, a POSITA would recognize the benefit of modifying Watanabe for the DSP to employ an ASIC for labor intensive, repetitive image processing tasks such as digital filtration”. Petition at 18.

¹⁰ Petitioner’s analysis of claim 24 relies on the analysis of claim 9 and fails for the same reasons. Petition at 28.

However, Petitioner does not explain how the modified system of Watanabe would function.¹¹

Second, it is not clear if Petitioner is suggesting to combine Watanabe's CPU 57 and circuit 56 in an integrated system-on-chip (SoC). Petition at 14; EX. 1003 at ¶¶149-162. Petitioner would be incorrect at least because a POSA would not have been motivated to combine these two components of Watanabe as an SoC.

Watanabe discloses CPU 57 and circuit 56 as separate and discrete components. EX. 1005, [0035], FIG. 1B. A POSA would understand that a SoC is usually designed for a very specific purpose. However, Watanabe's CPU 57 and circuit 56 serve different purposes and perform multiple different functions.

Watanabe discloses that CPU 57 "controls operation of each part of the digital still camera... by way of an photographing program." EX. 1005 at [0042]. Therefore, it would *not* have been obvious to implement CPU 57 and circuit 56 as an SoC. The CPU 57 does not only control circuit 56. CPU 57 processes and executes programs stored in ROM and RAM. *Id.* at [0039]. CPU 57 also controls each part of the system according to the photographing program. *Id.* at [0059]. The

¹¹ Additionally, Petitioner's argument to add an ASIC to perform digital filtration contradicts Petitioner's analysis of, for example, limitation 9[f] which relies on Watanabe's circuit 56.

overall efficiency of the camera would be reduced as a CPU would still be required to control other functions within the camera. There would be slower communication and less efficient memory sharing between CPU 57 and the other camera components. Therefore, a POSA would not be motivated to combine Watanabe's CPU 57 and circuit 56 as an SoC.

B. GROUND 2: WATANABE + RUSS FAILS

Ground	Reference(s)	Claim(s)
2	Watanabe + Russ	1-3 and 18-20

1. Petitioner fails to meet its burden with respect to the independent claims

Petitioner fails to meet its burden with respect to independent claims 9 and 24 in Ground 1. For at least the same reasons, Petitioner fails to meet its burden with respect to independent claims 1 and 18 in Ground 2. Petitioner does not suggest that Russ cures the deficiencies of Watanabe in Ground 1 and therefore, Ground 2 fails as well.

2. Petitioner fails to establish that Watanabe and Russ are properly combinable

Petitioner argues that “Russ describes known image processing techniques for image correction, including applying filters, neighborhood averaging and ranking, rank leveling, and the Fourier transform.” Petition at 31. Petitioner further

argues that “[a] POSITA would be motivated to use a fast Fourier transform because it was widely known to be a powerful and efficient tool in image processing” Petition at 32.

Petitioner ignores that Russ teaches the use of an external computer to perform image processing, including the use of a fast Fourier transform. For example, Russ teaches:

- “All the image processing and the creation of the resulting figures included in this book were performed on an Apple Macintosh® computer.” EX. 1054 at Acknowledgments.
- “When the first space probe pictures were obtained and the need for this type of correction was first appreciated, it required lengthy computations on moderate sized computers to apply them. It is now possible to implement such corrections on desktop machines in times measured in seconds, so that they can be practically applied to routine imaging needs.” EX. 1054 at 131.
- “With digital cameras, as discussed in Chapter 1, the normal procedure is to acquire a single image using an appropriate exposure time, and then transfer the digitized values to the computer” EX. 1054 at 138.
- “[I]t is much easier (and more controllable) to use a computer to perform the transform and to apply any desired masks.” EX. 1054 at 288.
- “It is also easier to perform measurements on the frequency-domain representation using the computer.” EX. 1054 at 288.
- “Considering the speed with which a spatial-domain image can be recorded, the frequency transform calculated, and interactive or automatic measurement performed, the computer is generally the tool of choice.” EX. 1054 at 288.

The cited portions of Russ do not teach in-camera aberration correction as claimed in the '805 Patent. Russ instead teaches the use of an external computer. Russ further teaches that the use of an external computer is easier and more controllable, making a computer the tool of choice. EX. 1054 at 288.

A POSA reading Russ would not be motivated to incorporate Russ' teachings into a camera. Moreover, Petitioner fails to establish that Watanabe's system could implement the functionality discussed in the cited portions of Russ.

3. Petitioner is using hindsight bias in its proposed combination

Petitioner fails to explain *how* the techniques taught by Russ actually work or *why* a POSA would have been motivated to implement the specific teachings in Watanabe's system to meet the claim limitations. "[A] clear, evidence supported account of the contemplated workings of the combination is a prerequisite" to concluding "that a relevant skilled artisan would have been motivated to make the combination and reasonably expect success in doing so." *Personal Web Techs., LLC v. Apple*, 848 F.3d 987, 994 (Fed. Cir. 2017).

Russ is a general image processing text with nearly 700 pages of generic discussion regarding image processing. Petitioner is using hindsight bias in its proposed Watanabe combination. *See, e.g., TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016) ("Although the *KSR* test is flexible, the Board must

still be careful not to allow hindsight reconstruction of references ... without any explanation as to how or why the references would be combined to produce the claimed invention.”); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552 (Fed. Cir. 1983) (“The result is that the claims were used as a frame, and individual, naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention. At no point did the [Petitioner], explain why that mosaic would have been obvious to one skilled in the art.”).

Finally, as noted above, Dr. Laub does not qualify as a POSA. Petitioner fails to establish that it would have been within the ordinary skill of a POSA to combine the references or that a POSA would have a reasonable expectation of success in doing so.

4. Petitioner’s proposed combination fails

Limitations 1[i] and 1[j] recite the digital signal processor “applies a fast Fourier transform” and “modifies the data file”. Limitations 18[h] and 18[i] recite similar limitations.

Petitioner argues that “[a] POSITA would find it obvious to use a fast Fourier transform to satisfy special effects function, such as smoothing or sharpening, noise reduction, deblurring, or enhancement, in order to enhance an image.” Petition at 37. However, Petitioner does not explain why or how a POSA

would have incorporated Russ' teachings into Watanabe's circuit 56 specifically. Petitioner argues that Watanabe's circuit 56 corresponds to the claimed alleged digital signal processor.

There is no teaching in Russ or Watanabe that would motivate a POSA to incorporate Russ' teachings into Watanabe's circuit 56. In fact, a POSA would not be motivated to do so at least because of the processing power required for FFT.¹²

Petitioner fails to establish why or how a POSA would have incorporated Russ' teachings into Watanabe's system in general or Watanabe's circuit 56 specifically. Petitioner fails to establish that doing so was within the ordinary skill of a POSA. There is no evidence that the necessary modifications would have been routine.

¹² Additionally, Petitioner's arguments regarding an ASIC contradict any belated argument by Petitioner for incorporating Russ' teachings into Watanabe's circuit 56. For example, Petitioner argues that "[a] POSITA understood that ASICs relieved other processing elements of an image processing system of labor-intensive image processing tasks and were faster and consumed less power for repetitive tasks" (Petition at 12) while Russ explains that, for sharpening, "[t]he entire process is iterative and highly computer-intensive." EX. 1054 at 324.

Moreover, Russ does not suggest using the fast Fourier transform algorithm (which is a way of efficiently calculating a Fourier transform) to transform a data file in order to satisfy a user specified special effects function as recited in the claims of the '805 Patent. And Watanabe does not disclose a user specified special effects function. *Contra* Petition at 35.

C. GROUND 3: TAKANE + WATANABE FAILS

Ground	Reference(s)	Claim(s)
3	Takane + Watanabe	9 and 24

Patent Owner expressly incorporates the arguments as to the disclosure of Watanabe in Ground 1 herein.

Takane discloses the signal processing circuit 50 inputs digital image data from the A/D converter, processes the data, e.g., white balance adjustment, gamma correction, sharpness correction, and converts the RGB data into a YC signal. EX. 1009 at [0044]. The output of circuit 50 is connected to the dynamic image signal processing circuit 52 and the still image signal processing circuit 54. EX. 1009 at [0044]-[0045]. The signal processing circuit 52/54 converts the gradation such that the image size becomes a predetermined image size set in advance. EX. 1009 at [0047]. Then, the data is input to the first distortion correction circuit 56 or the second distortion correction circuit 58. EX. 1009 at [0053].

Takane expressly distinguishes the first distortion correction circuit 56 and the second distortion correction circuit 58.

The first distortion correction circuit 56 can carry out processing at a low correction accuracy. EX. 1009 at Abstract, [0061], [0115]. The first distortion correction 56 carries out processing when the release button 18A is depressed halfway for a “preview display.” EX. 1009 at [0091]; *see also* EX. 1009 at [0117].

“The correction accuracy is intentionally lowered, and the processing time can be shortened and the circuit structure of the first distortion correction circuit 56 can be made simple.” EX. 1009 at [0061]. For example, in the described embodiment, “only the distortion in the horizontal direction is corrected at the first distortion correction circuit 56.” EX. 1009 at [0062]; *see also* EX. 1009 at [0080] (“Correction of the optical distortion is carried out at the relatively low correction accuracy of only horizontal direction correction, by the first distortion correction circuit 56.”); *see also* EX. 1009 at [0102](“...correction processing is carried out by the first distortion correction circuit 56 such that the optical distortion in the horizontal direction is corrected.”).

The second distortion correction circuit 58 can carry out processing at a high correction accuracy. EX. 1009 at Abstract. The second distortion correction 58 carries out processing when the release button 18A is fully depressed at the time of “actual photographing.” EX. 1009 at [0092], [0117].

The parameters stored in the second distortion correction circuit 58 give priority to the quality of each image and provide a high correction accuracy. EX. 1009 at [0063]. Unlike the first distortion circuit 56, the second distortion circuit 58 will correct optical distortion in both the horizontal and vertical directions. EX. 1009 at [0094].

1. Petitioner fails to meet its burden with respect to the proposed combination

The proposed combination would change Takane's principle of operation. As discussed further below, Takane teaches storing correction parameters in circuits 56 and 58 and does not use a separate table as disclosed in Watanabe.

As noted by Petitioner, Takane explains that correction parameters are set in advance and ***stored in the correction circuits 56/58 themselves***. Petition at 45; *see also* EX. 1003 at ¶347 ("Takane stores correction parameters 'in advance' in first distortion correction circuit 56 based on the lens and focal length").

A POSA would not be motivated to combine Takane with Watanabe, which uses correction values in tables 70. This would be inefficient and change Takane's principle of operation.

Takane expressly teaches away from prior art that uses a table of correction amounts that require a large storage capacity, which reduces the work region and increases costs. EX. 1009 at [0007]. Takane also distinguishes prior art that stores

the correction parameters (the coefficients of the polynomial) in a separate table.

EX. 1009 at [0008]. Takane instead teaches storing the correction parameters in the correction circuits 56/58.

Overall, Petitioner fails to address that modifying Takane's system to function as proposed would require more processing power, more memory space, increase costs, and be highly inefficient. A POSA would not be motivated to make the proposed modifications. Petitioner is applying hindsight bias using the claims of the '805 Patent as a roadmap.

2. Petitioner fails to meet its burden with respect to a "database" and a "database management system"

Petitioner relies on Watanabe for a "database" and a "database management system." Petition at 47. For at least the same reasons discussed above in sections III.A.3 and III.A.4, Petitioner fails to meet its burden in Ground 3.

Petitioner argues that a POSA would have been motivated to modify the teachings of Takane by storing Watanabe's correction parameters for each image size, lens, focal length, and zoom position in Takane's ROM 22. Petition at 47. Petitioner argues that Takane as modified would use Watanabe's teachings to retrieve parameters from the database and load them into the distortion correction circuits. Petition at 48. Petitioner is using hindsight bias. Petitioner's proposed modification changes Takane's principle of operation.

First, a POSA would not be motivated to store correction parameters in the external ROM 22 as opposed to in the correction circuits 56/58. Takane's ROM 22 is described as an **external** ROM. EX. 1009 at FIG. 1. The external ROM 22 may, for example, store bitmap data to be superposed on the subject and displayed on the LCD 16. EX. 1009 at [0070]-[0071]. The OSD (on screen display) 62 function displays various types of menus, mode mark, date, etc. such that they may be superposed on the subject and displayed on the LCD 16. *Id.*

Instead of using the external ROM 22, Takane explains that correction parameters are set in advance and stored in the correction circuits themselves. EX. 1009 at [0054] ("Parameters expressing a polynomial... are stored in advance in each of the first distortion correction circuit 56 and the second distortion circuit 58..."). Petitioner admits that Takane discloses storing correction parameters in the first distortion correction circuit 56 and second distortion correction circuit 58. Petition at 45 (citing Takane at [0054]); *see also* EX. 1003 at ¶347.

Petitioner argues a POSA would be motivated to use external ROM 22 for "simplified and streamlined access." Petition at 47. However, Takane's correction parameters are already stored in circuits 56 and 58 and moving the correction parameters to an external ROM would not provide simplified and streamlined access for circuits 56 and 58.

Second, a POSA reading Takane would not be motivated to add additional correction parameters for processing by the first distortion correction circuit 56, the alleged digital signal processor. *E.g.*, Petition at 59. Takane's first distortion correction circuit 56 purposefully uses fewer parameters and provides lower accuracy. Takane explains that "at the first distortion correction circuit 56, the image size which is the object of correction is fixed, and the number of parameters which must be held is lower than in a case in which a plurality of image sizes are objects of processing." EX. 1009 at [0059]. Petitioner's expert similarly testified that the first distortion correction circuit 56 "corrects at lower accuracy, to be used only for low-quality video in cameras with low processing capability." IPR2024-00923, EX. 1003 at ¶385. Therefore, a POSA would not be motivated to increase corrections at Takane's first distortion correction circuit 56.

Third, Petitioner does not explain how correction values stored in tables 70 of Watanabe could be used with Takane. Watanabe makes clear that the process information (lens type, focusing point, zoom position) is used to determine a table and then a correction value. Petitioner does not explain the different functionality of the "imaging processing program" and the "photographing program" of Watanabe, where it is the "photographing program" that appends the process information to the image data and it is the "imaging processing program" that performs imaging processing. *See, e.g.*, EX. 1005 at FIG. 4.

Takane does not disclose separate imaging processing versus photographing programs, the transfer of process information, or the reference to tables for correction values. Instead, Takane simply stores correction parameters in Takane's correction circuits.

Fourth, even if the correction parameters were stored in external ROM 22 instead of circuit 56, Takane does not disclose a database management system. Accessing the correction parameters would be a simple lookup operation. Additionally, there is nothing to suggest that the correction parameters would be, for example, updatable.

In view of the above, the teachings of Takane and Watanabe are not properly combinable, and Petitioner fails to meet its burden.

3. Petitioner fails to meet its burden with respect to “an application specific integrated circuit”

Petitioner fails to establish that Takane + Watanabe renders obvious “an application specific integrated circuit” as required by claims 9 and 24.¹³

First, in the analysis of limitation 9[a], Petitioner does not clearly identify the component of Takane that allegedly corresponds to the claims “application

¹³ Petitioner's analysis of claim 24 relies on the analysis of claim 9 and fails for the same reasons. Petition at 63.

specific integrated circuit” (ASIC). Petition at 51-52. It is not clear if Petitioner is relying on the disclosure of Takane or suggesting to add a separate ASIC to the proposed combination of Takane + Watanabe. *See id.*

Moreover, in the analysis of limitation 9[b], Petitioner does not identify any ASIC or alleged functionality of an ASIC in the proposed combination. Petition at 53-54. Then, Petitioner argues “[t]o the extent an ASIC is not taught by Takane’s general processing disclosure, a POSITA would recognize the benefit of modifying Takane for the DSP to employ an ASIC for labor intensive, repetitive image processing tasks such as digital filtration”. Petition at 54. However, Petitioner does not explain how the modified system of Takane + Watanabe would function.¹⁴

¹⁴ Additionally, Petitioner’s argument to add an ASIC to perform digital filtration contradicts Petitioner’s analysis of, for example, limitation 9[f] which relies on Takane’s first distortion correction circuit 56.

D. GROUND 4: TAKANE + WATANABE + RUSS FAILS

Ground	Reference(s)	Claim(s)
4	Takane + Watanabe + Russ	1-3 and 18-20

1. Petitioner fails to meet its burden with respect to the independent claims

Petitioner fails to meet its burden with respect to the independent claims 9 and 24 in Ground 3. For at least the same reasons, Petitioner fails to meet its burden with respect to independent claims 1 and 18 in Ground 4. Petitioner does not suggest that Russ cures the deficiencies discussed above.

2. Petitioner fails to establish that the references are properly combinable

Patent Owner expressly incorporates the arguments as to the combination of Watanabe + Russ in Ground 2 herein.

Petitioner entirely fails to address the proposed combination of Takane + Watanabe + Russ in Ground 4. Petition at 65-73. For example, Petitioner provides no motivation to combine in the petition. *See id.*¹⁵ Petitioner fails to establish that it

¹⁵ Petitioner only cites to the expert declaration, EX. 1003 at ¶¶377-382. Petition at 65. There is no explanation of this evidence which would amount to improper incorporation by reference. *Cisco Sys., Inc. v. C-Cation Techs., LLC*, IPR2014-

would have been within the ordinary skill of a POSA to combine the references or that a POSA would have a reasonable expectation of success in doing so.

Petitioner is using hindsight bias. Petitioner fails to explain *how* the techniques in each reference actually work or *why* a POSA would have been motivated to implement the specific teachings in a specific way in the proposed combinations.

Additionally, as noted above, Dr. Laub does not qualify as a POSA.

3. Petitioner's proposed combination fails

Petitioner does not address the components of Takane in its analysis of limitations 1[i] and 1[j] in Ground 4.¹⁶ However, Petitioner relies on Takane's circuit 56 as the alleged digital signal processor. *E.g.*, Petition at 59. Petitioner therefore fails to meet its burden in Ground 4.

Petitioner does not explain why or how a POSA would have incorporated Russ' teachings into Takane's circuit 56. There is no teaching in Russ, Takane, or

00454, Paper 12 (PTAB Aug. 29, 2014)(informative). Incorporation would also cause the petition to exceed the permissible word count.

¹⁶ Petitioner relies on its analysis of claim 1 for its analysis of claim 18 in Ground 4. Petition at 71-73.

Watanabe that would have motivated a POSA to arrive at the claims of the '805 Patent.

It is additionally noted that Petitioner's analysis of limitations 1[i] and 1[j] in Ground 4 appears to be substantially similar to Petitioner's analysis of these limitations in Ground 2. Patent Owner therefore incorporates its responsive arguments regarding Ground 2 herein.

IV. PETITIONER'S BELATED STIPULATION THWARTS THE POLICY OBJECTIVES OF THE VIDAL MEMORANDUM

The Board should not allow petitioners to file belated stipulations in order to negate the *Fintiv* analysis. This practice causes prejudice to patent owners.

Petitioner filed four petitions against Patent Owner in IPR2024-00923, IPR2024-00924, IPR2024-00925, and IPR2024-01046. Paper 7 at 2. None of these petitions included a stipulation regarding the parallel district court proceeding.

Petitioner emailed a Sotera-style stipulation on September 4, 2024. EX. 2015.¹⁷ This stipulation was made after the filing of the POPR in IPR2024-00923 on August 29, 2024 and close to the imminent filing of the POPRs in IPR2024-00924 and IPR2024-00925.

Petitioner's belated stipulation goes against the interests of fairness and efficiency. Petitioner has not offered any explanation as to why this stipulation was not submitted with the petitions or, at minimum, prior to the filing of the POPR in IPR2024-00923. Petitioner is causing prejudice to Patent Owner at least because Patent Owner has expended resources based on a position taken in the petition and now Petitioner has changed that position.

Mindful of the precedential *NXP* decision¹⁸ which requires a stipulation to be filed before an institution decision, the Board should not invite gamesmanship

¹⁷ Based on current law/policy, Patent Owner understands that a Sotera-style stipulation precludes discretionary denial under *Fintiv*. Vidal Memorandum at 7. See Director Vidal, Memorandum, 'Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation' dated June 21, 2022 ("Vidal Memorandum").

¹⁸ *NXP USA, Inc. v. Impinj, Inc.*, IPR2021-0156, Paper 13 (PTAB September 7, 2022)(precedential)("NXP").

or otherwise encourage petitioners to delay making stipulations, particularly after the petitioner has had the opportunity to review the preliminary arguments in a POPR.¹⁹ Aside from financial resources, patent owners will be forced to waste significant word count addressing the *Fintiv* analysis in a POPR, while petitioners are allowed to simply make a stipulation after the filing of the POPR.²⁰ Under the current law/policy, there is no incentive for petitioners to make a stipulation at or around the time of filing the petition.

Allowing petitioners to make a belated stipulation thwarts the policy objectives outlined in the Vidal Memorandum, including to “limit unnecessary and counterproductive litigation costs” and to minimize “inefficiency and gamesmanship in AIA Proceedings”. Vidal Memorandum at 1. Here, Petitioner’s belated stipulation is contrary to these policy objectives and causes prejudice to Patent Owner.

Director Vidal also stated that the use of stipulations “avoids inconsistent outcomes between the PTAB and the district court and allows the PTAB to review

¹⁹ Patent Owner notes that IPR2024-00923 involves the same primary prior art references at issue here.

²⁰ The Board declined authorization for supplemental briefing regarding the timing of Petitioner’s stipulation and prejudice to Patent Owner in IPR2024-00923.

grounds that the parallel district court litigation will not resolve”. Vidal Memorandum at 7-8. However, that is not true here. Petitioner’s belated stipulation does not prevent the other defendants in related district court proceedings involving these same patents from pursuing the same invalidity challenges in district court. Therefore, Petitioner’s belated stipulation does not mitigate concerns of duplicative efforts and conflicting decisions.

If the Board were to reject Petitioner’s belated stipulation, the Board would understand that the *Fintiv* factors overwhelmingly favor denial of institution.²¹ The parallel litigation involving the same parties and overlapping claims will resolve the issues presented here and institution should be denied to avoid conflicting decisions and a waste of the Board’s resources.

V. **CONCLUSION**

For at least the reasons set forth herein, Patent Owner respectfully requests that institution be denied.

²¹ If there is an intervening change in law/policy, Patent Owner expressly requests authorization for supplemental briefing to address the *Fintiv* factors in detail.

Respectfully submitted,

Date: September 20, 2024

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CERTIFICATE OF COMPLIANCE

This Patent Owner Preliminary Response (“POPR”) consists of 8,162 words, which is no more than 14,000 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certifies the PATENT OWNER PRELIMINARY RESPONSE and all exhibits thereto were served on the undersigned date via email, as authorized by Petitioner, at the following email addresses:

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