

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOSHIBA SAMSUNG STORAGE
TECHNOLOGY KOREA CORPORATION,
Petitioner,

v.

LG ELECTRONICS, INCORPORATED,
Patent Owner.

Case IPR2014-00204
Patent 6,477,126

Before KARL D. EASTHOM, RAMA G. ELLURU, and
DAVID C. MCKONE, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner filed a corrected Petition (Paper 4, “Pet.”) requesting an *inter partes* review of claims 1–4, 6–11, and 13–19 of U.S. Patent No. 6,477,126 (Ex. 1001, “the ’126 patent”) pursuant to 35 U.S.C. §§ 311–319. *See* Pet. 1. Patent Owner filed a Preliminary Response (Paper 7, “Prelim. Resp.”) opposing institution of a review. *See* Prelim. Resp. 1.

In an Institution Decision (Paper 9, “Inst. Dec.”), an *inter partes* review of claims 1, 2, 6–11, and 13–19 was instituted, but not of claims 3 and 4. Inst. Dec. 2. After the Institution Decision, Patent Owner filed a Response (Paper 18, “PO Resp.”) and a contingent Motion to Amend Claims (Paper 17, “Mot. Amend.”). In response, Petitioner filed a Reply (Paper 19, “Pet. Reply”) and an Opposition to the Motion to Amend (Paper 20, “Pet. Opp.”). Patent Owner then filed a Reply to Petitioner’s Opposition. Paper 21 (“PO Reply”). The parties presented arguments at an oral hearing. Paper 30 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine Petitioner has shown by a preponderance of the evidence that challenged claims 1, 2, 6–11, and 13–19 are unpatentable.

A. *Related Matters*

Petitioner indicates that the ’126 patent was asserted against it in *LG Electronics, Inc. v. Toshiba Samsung Storage Technology Corp.*, Case No. 1:12-cv-01063 (D. Del.). Pet. 1.

B. The '126 Patent

The '126 patent attempts to address degradation in optical recording media, such as CDs and DVDs, which occurs after repeated recording or playing. *See* Ex. 1001, col. 1, ll. 11–22. Such degradation results in errors. *Id.* The '126 patent explains that, conventionally, data is written to a user area on an optical disc, but when a defect occurs in the user area, data is written to a spare area that is separate from the user area. *See id.* at col. 1, ll. 35–39.

The '126 patent describes two modes of operation for formatting an optical recording medium. *See id.* at col. 4, ll. 14–37.

Figure 5 of the '126 patent is set forth below:

FIG. 5

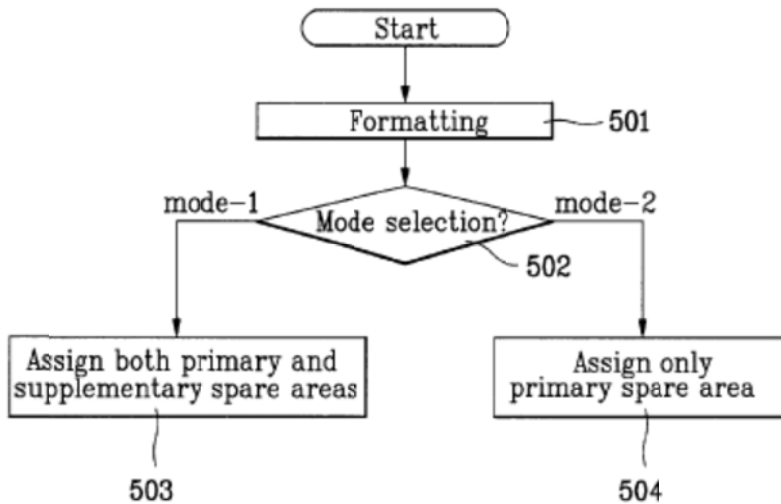


Figure 5 illustrates a flow chart showing a method of assigning the spare area(s) of an optical recording medium. According to the disclosed

method, a manufacturer or user can select one of two modes when formatting a disc. *See id.* at col. 4, ll. 44–48. According to Figure 5, in the first mode (mode-1), two spare areas (i.e., a primary spare area (PSA) and a supplementary spare area (SSA)) are assigned during formatting. *See id.* at col. 4, ll. 48–51 (referring to step 503). In a second mode (mode-2), a primary spare area is assigned during formatting, and a supplementary spare area may be assigned, if needed, during use of the disc in a recording or reproduction operation. *See id.* at col. 4, ll. 51–55 (referring to step 504).

Figure 6 is set forth below:

FIG. 6

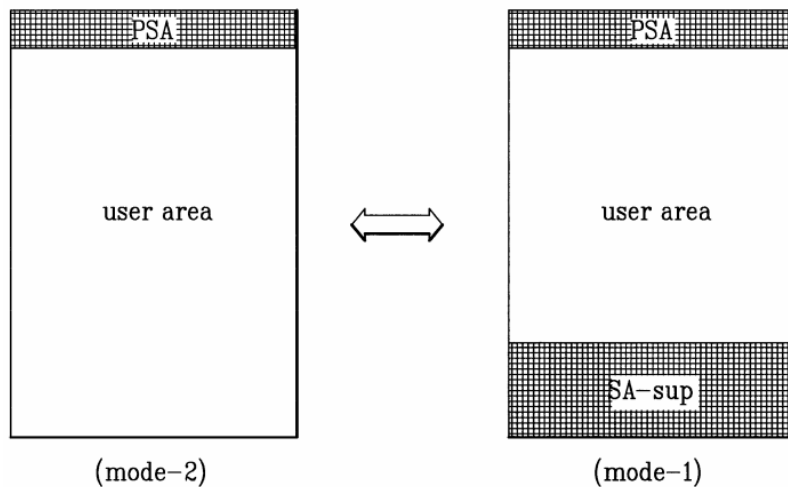


Figure 6 illustrates examples of first and second modes of assigning spare areas during formatting. As depicted, the size of the PSA in each mode is equal, providing a stated benefit of allowing convenient mode conversion. *See Ex. 1001, col. 2, ll. 47–54, col. 3, ll. 15–43.* As the arrow in Figure 6 signifies, “the present invention allows a conversion between the

first and second mode for further convenience of a user.” Ex. 1001, col. 5, ll. 1–3.

As Figure 6 illustrates, the first mode involves assigning both a PSA and a SSA (designated “SA-sup”), and the second mode involves assigning a primary space area (“PSA”). *Id.* at col. 4, ll. 56–67. According to Figure 6, the PSA is assigned to the top of the data area (near the inner rings of a disc), and the SSA is assigned at the bottom of the data area (at the outer rings of a disc). *Id.* at col. 4, ll. 24–26, 48–54.

C. Illustrative Claim

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method of assigning a spare area of an optical recording medium having a data area, the method comprising:
 - providing a first mode in which both a primary spare area and a supplementary spare area are assigned;
 - providing a second mode in which a primary spare area is assigned; and
 - assigning the spare area according to one of either the first mode or the second mode when the optical recording medium is formatted.

Id. at col. 5, ll. 53–62.

Claim 15, reproduced below, recites a product-by-process, wherein the process steps track those of claim 1 verbatim:

15. An optical recording medium having a data area in which a spare area is assigned by:
 - providing a first mode in which both a primary spare area and a supplementary spare area are assigned;

providing a second mode in which a primary spare area is assigned; and

assigning the spare area according to one of either the first mode or the second mode when the optical recording medium is formatted.

D. Instituted Grounds of Unpatentability

Reference(s)	Basis	Claims Challenged
Kawano ¹	§ 102	1, 7, 8, 15, and 19
Kawano and Ohata ²	§ 103	2
Kawano and Ozaki ³	§ 103	6 and 18
Kawano and Kulakowski ⁴	§ 103	9 and 16
Kawano, Ohata, and Kulakowski	§ 103	10, 11, 13, 14, and 17

E. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable constructions in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, No. 2014-1301, 2015 WL 448667, at *4–8 (Fed. Cir. Feb. 4, 2015). Under the broadest reasonable

¹ Japanese Patent App. Pub. No. H8-329610, Dec. 13, 1996 (Ex. 1004; cert. Eng. trans. Ex. 1003) (“Kawano”).

² Japanese Patent App. Pub. No. H10-21552, Jan. 23, 1998 (Ex. 1006; cert. Eng. trans. Ex. 1005) (“Ohata”).

³ Japanese Patent App. Pub. No. H6-96525 (Apr. 8, 1994) (Ex. 1008; cert. Eng. trans. Ex. 1007) (“Ozaki”).

⁴ US Patent No. 5,548,572, Aug. 20, 1996 (Ex. 1009) (“Kulakowski”).

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construction standard, claim terms are presumed to be given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may rebut that presumption by providing a definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Stated differently, a “claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

Neither party asserts that the ’126 patent ascribes a special lexicographic meaning to a claim term. Accordingly, all terms have been given their ordinary and customary meaning in the context of the ’126 patent disclosure. The parties’ arguments center on the construction of the following three claim terms or phrases:

1. “*supplementary spare area*” (SSA)

Independent claims 1 and 15 each recite “providing a first mode in which both a primary spare area and a supplementary spare area are assigned.” Patent Owner maintains that the “broadest reasonable construction in view of the specification of the ’126 patent, ‘supplementary spare area’ means ‘spare area that is separate from the primary spare area.’” PO Resp. 16.

Petitioner does not dispute Patent Owner’s construction; however, Petitioner and Patent Owner disagree over the meaning of that construction. Specifically, Petitioner maintains that “separate” means distinct, but not necessarily “spaced apart.” Pet. Reply 11; Pet. Opp. 12. Patent Owner’s arguments imply that “separate” requires “spaced apart” areas. For example, Patent Owner describes Ohata’s primary and secondary replacement areas as being merely “adjacent” (PO Resp. 40), and argues that Petitioner’s interpretation of “separate” is “overly broad and unreasonable” (PO Reply 5).

Figure 4A of the ’126 patent Specification, “an example of . . . the invention” (Ex. 1001, col. 3, l. 48), shows one contiguous area at the top, and despite the label “PSA” in Figure 4A, implies that spare areas are located at the top of Figure 4A and need not be spaced apart. *See id.* at col. 4, ll. 20–27 (referring to “the total spare area” of 145MB, with a “primary spare area” and “secondary spare area”); *id.* at col. 4, ll. 29–33 (“[T]he primary and supplementary spare areas of the first mode may be assigned . . . as shown in FIGS. 4(a) and 4(b)”); *compare* Fig. 4A (spare areas totaling 145MB), *with* Fig. 4B (spaced apart areas totaling 145MB).⁵ Patent Owner’s construction effectively would limit the claims to the embodiment

⁵ Figure 4A, representing an embodiment of the invention, appears to be similar in material respects (e.g., including the label “PSA”) to Figure 3A (“Background Art”). According to Patent Owner, Figure 3A “show[s] a conventional first mode/enlarged 145MB spare area *including distinct but not spaced apart 26MB and 119 MB portions.*” PO Reply 5 (emphasis added).

of Figure 4B. Generally, under a broadest reasonable construction, claims are not limited to disclosed embodiments. Therefore, a “separate” spare area includes a distinct spare area that is contiguous to, or spaced from, the primary spare area.

Based on the foregoing discussion, in light of the ’126 patent Specification and the claim language, a “supplementary spare area” is a “distinct spare area that is spaced from, or adjacent to, the primary spare area.”

2. *“a first mode in which both a primary spare area and a supplementary spare area are assigned” and “a second mode in which a primary spare area is assigned”*

Independent claims 1 and 15 each recite “a first mode in which both a primary spare area and a supplementary spare area are assigned” and “a second mode in which a primary spare area is assigned.” Patent Owner maintains that the broadest reasonable construction of “a first mode in which both a primary spare area and a supplementary spare area are assigned” is “a formatting mode that assigns a spare area having a first size that is larger than a second size and including both a primary spare area and a supplementary spare area.” Prelim. Resp. 13–16; PO Resp. 16. Patent Owner further argues that the broadest reasonable construction of “a second mode in which a primary spare area is assigned” is “a formatting mode that assigns a spare area having the second size, which is smaller than the first size, and including only a primary spare area.” PO Resp. 16. Patent Owner relies on its declarant, Dr. Masud Mansuripur (*id.* at 2 & n.1 (citing Ex. 2002 ¶ 39), 12–13 (citing Ex. 2002 ¶¶ 48, 50)), and also on testimony by

Petitioner's declarant, Dr. Lambertus Hesselink (PO Resp. 2 (citing Dr. Hesselink's deposition testimony, Ex. 2003, 31:6–12, 33:6–7, 33:11–13, 40:23–41:8, 44:1–2)). Patent Owner characterizes the testimony of each declarant as showing that the first and second modes described in the '126 patent Specification relate to relative sizes of the user areas. *See* PO Resp. 2–5, 12–13.

Essentially, Patent Owner maintains that because embodiments disclosed in the '126 patent include the feature that the total size of the spare area according to the first mode (i.e., the combined primary and supplementary spare areas—PSA plus SSA) is larger than size of the spare area assigned according to the second mode (SSA), the claims must be interpreted as incorporating the relative size feature. *See* PO Resp. 1–5, 11–31.

Petitioner argues that claim 1 does not recite or require the proffered size limitation. *See* Pet. Reply 3–5. Petitioner asserts that Patent Owner does not allege that the inventors of the '126 patent acted as lexicographers in defining any claim terms, including the first mode and second mode. *Id.* at 4.

Patent Owner maintains that not reading a size limitation into the claimed first mode would be “inconsistent with the specification.” PO Resp. 30. Patent Owner explains that Figure 4A represents an example of the first mode of the invention, and that the Board, in its Institution Decision, incorrectly found that Figure 4A represents the second mode of the invention. *See* PO Resp. 24–26 (citing Inst. Dec. 4–6). The '120 patent

Specification supports Patent Owner’s characterization of Figure 4A, because it refers to Figure 4A as “an example of assignment of the spare area in a *first mode* according to the present invention.” Ex. 1001, col. 3, ll. 48–49 (emphasis added).

Nonetheless, the Institution Decision does not cite or rely upon Figure 4A in the claim construction at issue here. Rather, the panel accepted Patent Owner’s argument that embodiments in the ’126 patent Specification, including Figure 6, employ a first mode with a larger spare area than a second mode. *See* Inst. Dec. 10–11 (citing Ex. 1001, Fig. 6). The central thrust in the Institution Decision and this Decision is that the disclosed examples in the ’126 patent Specification do not serve to limit the claims in the manner proposed by Patent Owner. *See id.*

Figure 4A, upon which Patent Owner relies, merely represents “an example” (Ex. 1001, col. 3, l. 48) that does not limit the claims. According further to the ’120 patent Specification, Figure 4B “shows an example in which primary spare areas of two modes are assigned to have the same size according to the present invention.” *Id.* at col. 3, ll. 51–53. As Petitioner argues, Patent Owner does not use the disclosed example of “two modes . . . assigned to have the same size” PSA to limit claim 1, or other disclosed examples, yet arbitrarily chooses the disclosed example of a larger second mode spare area as compared to the first mode spare area to limit the claims. *See* Pet. Reply 4–5 (listing other disclosed examples that Patent Owner “ignored” as claim limitations, including a “4.7 GB” example).

Moreover, the '120 patent Specification explains that “[f]or *purposes of explanation*, a disc with a size of 120 mm (hereinafter ‘*the disc*’) will be used to explain the present invention. *However, the present invention is not limited to this example.*” Ex. 1001, col. 4, ll. 3–6 (emphases added). In the next paragraph, using “the disc” to explain the invention further, the Specification states that “[*t*]he disc will be considered to be in a first mode when the initial user area is less than 4.7 GB and in a second mode when the initial user area is equal to 4.7 GB.” *Id.* at col. 4, ll. 11–13 (emphasis added).

Patent Owner focuses on this latter sentence as defining the first mode spare area to be larger than the second mode spare area. *See* PO Resp. 25 (citing Ex. 2002 ¶ 66). Patent Owner also maintains that the examples illustrated in Figures 4A and 4B exemplify the size relationship. *Id.* Petitioner responds that the reliance on the sentence is “telling,” because “Patent Owner and its expert . . . fail to read the relative initial user area sizes [(i.e., 4.7 GB)] into the claims.” Pet. Reply 4.

Patent Owner further explains that, as depicted in Figure 6, the disclosed examples show that the user area size (e.g., less than 4.7 GB in the first mode as depicted in Figures 4A and 4B) inherently (based on a finite size of “the disc”) dictates the spare area size. Therefore, according to Patent Owner, the first mode spare area (PSA plus SSA) must be larger than the second mode spare area—because the first mode user area is smaller than the second mode user area. PO Resp. 25–27; Ex. 1001, Fig. 6. Patent

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Owner's declarant, Dr. Mansuripur, provides a similar analysis.

See Ex. 2002 ¶¶ 59–71.

Patent Owner and Dr. Mansuripur merely show that examples in the '126 patent Specification describe a first mode having a larger spare area size as compared to the second mode spare area size. However, they do not address the clear disclaimer in the Specification (as quoted above), that “the disc” “hereinafter” represents a mere example for discussion purposes and “*the present invention is not limited to this [disc] example.*” *See* Ex. 1001, col. 4, ll. 5–6 (emphasis added).

An example upon which Patent Owner does not rely, Figure 5 (reproduced above), “is a flow chart . . . according to the present invention.” *Id.* at col. 3, ll. 53–55. Figure 5 depicts “mode-1” and “mode-2” without any depiction of relative spare area size or user size. *See* Ex. 1001, Fig. 5; *see also* col. 4, ll. 44–55 (discussing Figure 5). This description is consistent with not reading a size limitation into the first mode or the second mode.

Finally, the '126 patent Specification states that assigning a supplementary spare area (SSA) occurs not only in the first mode (*see* Figure 6), but also in the second mode: “if the second mode is selected when formatting a disc . . . a supplementary spare area may be assigned as necessary when recording or playing back data from a disc.” Ex. 1001, col. 4, ll. 61–65; *see also id.* at col. 5, ll. 36–39 (assigning the SSA and PSA simultaneously in the first mode, while in the second mode, the SSA is “assigned as required”).

By allowing for the assignment of a SSA and a PSA in the second mode, by broadly disclosing the invention according to Figure 5, and by expressly stating that the disc example relied upon does not limit the invention, the Specification does not define clearly a claim limitation requiring the size of the spare area of the first mode to be larger than the size of the spare area of the second mode.

Based on the foregoing discussion, in light of the '126 patent Specification and the claim language, a "first mode" is one "in which both a primary spare area and a supplementary spare area are assigned," and a second mode is one "in which a primary spare area is assigned."

3. "*formatted*"

Claim 1 requires assigning spare areas according to one of the modes "when the optical recording medium is formatted." Neither party proposes an express construction of the term "formatted." Petitioner maintains that claim 1 does not specify when the recording medium must be "formatted," that assignments of the primary and supplementary PSA and SSA in mode 1 need not be simultaneous, and that "formatted" in claim 1 does not require "initialization" or "initial formatting." Pet. Reply 10. In addressing the prior art challenges, Patent Owner implies that formatting occurs during an initial step: "The disk formatting or initialization [in Ohata], which determines the initial setting and provides the primary replacement area, occurs *before* the replacement area processing, which increases the initially provided replacement area by newly providing the secondary replacement area if the disk has been removed from its cartridge." PO Resp. 44. In the

context of Ohata, Patent Owner also maintains that “Petitioner’s expert admit[s] that ‘replacement area processing would typically happen after the disk has been formatted.’” PO Resp. 43 (citing Ex. 2003, 113:2–13, 129:13–16, 19–21; Ex. 2002 ¶ 94 (similar proposition)).

Patent Owner’s position about what occurs in Ohata does not address squarely what “formatting” means in the context of the ’126 patent. *See* Pet. Reply 10–11. The ’126 patent Specification, and claim 1, do not distinguish clearly between formatting, initial formatting, converting, or adding spare areas at any time. For example, Figure 6 (reproduced above) represents a type of formatting that involves a conversion and reversion process between the two modes. *See* Ex. 1001, col. 5, ll. 5–44, col. 4, ll. 53–55, Fig. 6. In other words, Figure 6 of the ’126 patent Specification specifically describes mode conversion, after any initial formatting, as a type of formatting. *See* Ex. 1001, col. 5, ll. 7–8 (equating “formatting as shown in Fig. 6” as “this conversion”).

Further with respect to Figure 6, “a *selection between the modes* can be made through mode *conversion* when the disc is *formatted*.” *Id.* at col. 5, ll. 38–39 (emphases added). This conversion or re-conversion (formatting) involves adding and canceling a SSA. *See id.* at col. 5, ll. 8–9 (canceling), 17–19 (“reverse process of a conversion”). After the creation of a SSA, during mode conversion, the “supplementary spare area [SSA] can be simply canceled *through a formatting* as show in Fig. 6.” *Id.* at col. 5, ll. 7–8 (emphasis added). In addition, “[o]nce converted, the supplementary spare

area may be *assigned again* as necessary when the primary spare area becomes full.” *Id.* at col. 5, ll. 14–16 (emphasis added).

Although one example in the background section of the ’126 patent Specification refers to “formatting” in terms of “initializing and re-initializing,” *id.* at col. 1, ll. 53–54, as explained, an SSA for the second mode can be “assigned” at any time (i.e., after any initializing or re-initializing): “[I]f the second mode is selected when formatting a disc . . . a supplementary spare area may be assigned as necessary when recording or playing back data from a disc.” Ex. 1001, col. 4, ll. 61–65; *see also* col. 5, ll. 36–39 (assigning the SSA and PSA simultaneously in the first mode, while in the second mode, the SSA is “assigned as required”).

Therefore, based on the foregoing discussion, the ’126 patent Specification blurs any distinction between initializing, re-initializing, assigning, converting, and formatting, thereby indicating that formatting generally involves modifications or changes to an optical medium, including, but not limited to, additions or cancelations of spare areas. Also, the transition represented by the arrow in Figures 4A and 4B simply represents shifting the location of the secondary spare area (i.e., 119MB out of 145MB) from the top to the bottom of the disc. Ex. 1001, col. 4, ll. 14–27; Figs. 4A, 4B.

During the oral hearing, Patent Owner verified that, with respect to the disclosure at column 5, lines 54–55, of the ’126 patent Specification, which adds a SSA “as necessary” (i.e., at any time), “recording/reproduction refers to formatting”:

JUDGE EASTHOM: I have one more question about . . . column 4, . . . lines 54 and 55, it says you're going to add a supplementary spare area . . . assigned later as needed during a recording/reproduction operation.

Now, are you saying that that's the conversion process that that's referring to, and so that recording/reproduction refers to formatting?

...

MR. LIEBERMAN: The answer is yes.

Tr. 66:6–66:18.

In other words, Patent Owner agrees that altering the optical medium at any time, for example, during “recording/reproduction,” which occurs after initial formatting, amounts to formatting. Based on the foregoing discussion, in light of the '126 patent Specification, and the record arguments, “formatted” means a change in the structure of an optical medium by altering, assigning, canceling, shifting, or adding spare areas or other similar areas.

II. ANALYSIS

A. Anticipation by Kawano

Considering the record, Petitioner shows, by a preponderance of evidence, that Kawano anticipates claims 1, 7, 8, 15, and 19. *See* Pet. 11–20. Petitioner provides explanations and claim charts to support the showing. *Id.* Kawano generally describes rewriting a format of an optical disc, from a format having two separate spare areas 13 to a format having a single spare area 13. *See* Ex. 1003, Abstract, ¶¶ 2, 16, Fig. 5.

Kawano's Figure 5 is set forth below:

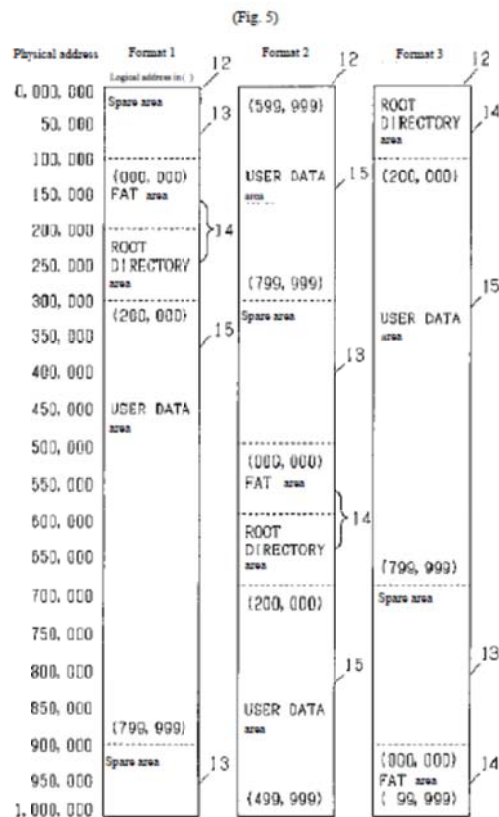


Figure 5 of Kawano above shows three format arrangements with spare areas 13. *See id.* ¶ 16. As illustrated in Kawano's Figure 5, "[i]n format 1, the two spare areas 13 are 0 – 99,999 and 9,000,00 – 1,000,000" and "in format 2, . . . the spare area is started from 300,000." *Id.*

Petitioner asserts that Kawano's Format 1 in Figure 5 discloses "providing a first mode in which both a primary spare area and a supplementary spare area are assigned," as recited in claim 1. Pet. 11–14. According to Petitioner, Kawano's Format 1, which includes spare area 0–99,999, shown at the top of format 1 in Figure 5, corresponds to the recited

primary spare area in the first mode. *Id.* at 13. Petitioner contends that spare area 9,000,00–1,000,000 in Kawano’s Format 1, shown at the bottom of Figure 5, corresponds to the recited supplementary spare area in the first mode. *Id.*

Petitioner explains that Kawano’s Format 2 in Figure 5 discloses “providing a second mode in which a primary spare area is assigned,” as recited in claim 1. Pet. 15. As noted by Petitioner, Kawano’s Format 2 in Figure 5 only includes one spare area, which, according to Petitioner, discloses the recited second mode in which a primary spare area is assigned. *Id.* Petitioner also shows that Kawano discloses “assigning the spare area according to one of either the first mode or the second mode when the optical recording medium is formatted,” as recited in claim 1. *See id.* at 16 (citing Ex. 1003 ¶ 16).

In response, Patent Owner contends that Kawano does not disclose “providing a first mode in which both a primary spare area and a supplementary spare area are assigned,” as recited in claim 1. Patent Owner, relying on Dr. Mansuripur, argues that Kawano describes shifting the location of the spare areas and that the sizes of the spare areas remain constant between modes, so that Kawano does not describe making the combined spare area in Format 1 larger than the spare area in Format 2. *See PO Resp.* 33–37 (citing Ex. 2002 ¶¶ 75, 77, 82, 84). This position reduces to the claim construction argument addressed above—i.e., the contention that claim 1 requires the size of the total spare area of the first mode (PSA plus SSA) to be larger than the size of the total spare area (PSA)

of the second mode. For example, Patent Owner asserts that shifting of the spare areas in Kawano proves that Kawano's combined spare areas 13 in Format 1 each "has the *same size* (i.e., 200,000 address units) as the spare area assigned in 'Format 2' of Fig. 5 of Kawano." PO Resp. 37; *accord* Ex. 2002 ¶ 74 (declaring that "the spare area 13 [of Kawano] is not supplemented/made larger").

As set forth in the claim construction discussion above (Section I.E.2–3), claim 1 does not require a relative size limitation between the two recited modes, and the recited term "formatted" does not preclude shifting of spare areas. Patent Owner also asserts that spare area 13 of Kawano "wraps around from the bottom to the top of the format." PO Resp. 37. Patent Owner's point regarding "wrap[] around" is not clear, but perhaps it refers to logically (as opposed to physically) contiguous PSA and SSA areas.⁶ Nevertheless, even if claim 1 requires spaced apart PSA and SSA areas under the narrower claim construction outlined above, Kawano's two spare areas 13 in Figure 5, Format 1, are located physically at spaced apart disc areas, as set forth above. *See supra* note 6; Ex. 1003, Fig. 5; Ex. 2002

⁶ Addressing its proposed amendments, Patent Owner also asserts that "each of Formats 1–3 of Fig. 5 of Kawano would have a PSA and an SSA that are distinct but not necessarily spaced apart." PO Reply 5. To the extent that Patent Owner asserts that Format 1 of Figure 5 of Kawano does not disclose physically spaced apart areas 13, we find to the contrary. Figure 5 shows spaced apart areas 13 in Format 1, a label on Figure 5 refers to "[p]hysical address[es]," and this particular embodiment represents shifting spare areas 13 to different physical addresses between Formats 1–3 to create uniform usage areas on a recording medium. Ex. 1003, Fig. 5, Abstract, ¶ 16.

¶¶ 77–78 (Patent Owner’s declarant describing different physical addresses for spare areas 13 in Format 1). In other words, Kawano’s Format 1 of Figure 5 is similar to Figure 6 of the ’126 patent Specification—both indicate physically spaced apart spare areas. Because Kawano shows two physically separated spare areas 13 in Format 1, under either party’s proposed construction of “supplementary spare area,” Kawano discloses assigned primary and supplementary spare areas in a first mode as required by claim 1.

Accordingly, Patent Owner’s arguments are not persuasive. In summary, as Kawano’s Figure 5 shows, Format 1 includes two spare areas 13, primary and supplementary spare areas, and Format 2 includes a primary spare area 13, as the disputed elements in claim 1 essentially require. *See* Ex. 1003 ¶ 16 (indicating “spare areas” (plural) for format 1 and “spare area” (singular) for format 2).

Patent Owner relies on its arguments for claim 1 and does not present separate patentability arguments for claims 7, 8, 15, and 19. PO Resp. 37–38. Although Patent Owner groups claims 1, 7, 8, 15, and 19 together, and claim 15, a product-by-process claim, falls with claim 1 for the reasons discussed above, claim 15 is broader than claim 1. Therefore, in addition to, or as an alternative to, those reasons, one or the other formatting modes as depicted in Kawano’s Figure 5 reads on the method of producing a product as recited by claim 15. In other words, reciting a choice between two modes in process steps to produce the product recited in claim 15 only requires a

product that either has a PSA and a SSA, as disclosed in Kawano's Format 1, or merely a PSA, as disclosed in Kawano's Formats 2 or 3.

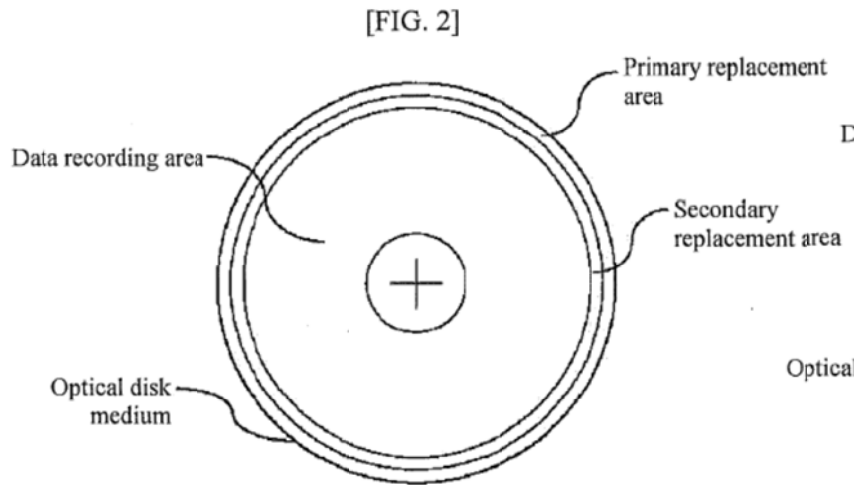
Based on the foregoing discussion and the record, including the Petition, and Patent Owner's arguments and evidence, Petitioner shows by a preponderance of evidence that Kawano anticipates claims 1, 7, 8, 15, and 19.

B. Obviousness over Kawano and Ohata

Considering Patent Owner's arguments and evidence, Petitioner shows, by a preponderance of evidence, that claim 2 would have been obvious over Kawano and Ohata. *See* Pet. 21–28. Claim 2 depends from claim 1 and adds the limitation “wherein sizes of the primary spare area [PSA] of the first and second modes are equivalent.” As discussed above, Figure 6 of the '126 patent depicts an embodiment wherein the size of the PSA in each of the two modes is equal.

Ohata describes techniques for ensuring an adequate replacement area for optical discs that potentially might be removed from a cartridge and thereafter degraded by contamination (human fingerprints or dirt, etc.). *See* Ex. 1005, Abstract. This additional replacement area compensates for defective areas caused by such contamination. *See id.*

Figure 2 of Ohata is set forth below:



Ohata's Figure 2 shows a data recording area, a primary replacement area, and a secondary replacement area in a disc.

Ohata describes a "primary replacement area" as provided "during disk formatting, and is the area used for disks which have never been removed from the cartridge." *See id.* ¶ 24, Figs. 2, 8. Ohata also describes a "secondary replacement area" that is used along with the primary replacement area for discs that have been removed from the cartridge. *See id.* ¶ 24, Fig. 2.

According to Petitioner, during "replacement area processing," Ohata adds the secondary replacement area to a disc that has been removed from a cartridge and, prior to that, already had primary replacement areas assigned during disc formatting. Pet. 22–23 (citing Ex. 1005 ¶ 24). Petitioner reasons that the primary replacement area size in Ohata's disk necessarily is equivalent in discs that remain in cartridges or later are removed therefrom and have a secondary replacement area added thereto. *See id.*

Therefore, in view of Ohata's teaching, Petitioner reasons that it would have been obvious to modify Kawano to have equal primary replacement areas in two modes. Petitioner further reasons that a simple size modification in Kawano would decrease the complexity of switching between modes, and would yield a predictable result of equally sized primary spare areas. *See* Pet. 24–25. Petitioner supports these contentions with testimony by Dr. Hesselink. *Id.* (citing Ex. 1010 ¶¶ 32–33).

Patent Owner, relying on Dr. Mansuripur's testimony, essentially agrees with Petitioner's characterization of Ohata's disclosure. *See* PO Resp. 38–40 (citing Ex. 2002 ¶¶ 86–87). Patent Owner emphasizes that Ohata only provides the secondary replacement area “some time *after* formatting/initialization,” *id.* at 39, in response to a determination that “the disk has been removed from the cartridge,” *id.* at 42. Patent Owner also points out that the primary replacement area in Ohata “has already been assigned during an initial formatting/initialization of the disk.” *See id.* (citing Ex. 1005 ¶ 20).

Countering Petitioner's assertion of simplicity, Patent Owner maintains that modifying Kawano in the manner proposed would increase complexity and “fundamentally change[]” Kawano's “principle of operation,” “from a simple shift [of spare areas between two modes] to something much more complex and undefined.” PO Resp. 46 (citing Ex. 2002 ¶ 98). According to Patent Owner, under Petitioner's proposed modification of Kawano, “the operation of Kawano would be greatly

complicated because it could no longer rely on a simple change of an offset value to switch between formats.” *Id.* at 47 (citing Ex. 2002 ¶ 100).

Patent Owner also points out that Ohata’s primary and replacement spare areas are “adjacent” to one another, or “contiguous,” similar to the embodiment represented in prior art Figure 3A of the ’126 patent Specification. PO Resp. 40. Patent Owner also maintains that reducing the primary spare area in Kawano’s second mode would “result in loss of spare area information when reformatting from ‘Format 1’ to ‘Format 2.’” *Id.* at 48. Finally, Patent Owner maintains that Ohata teaches away from assigning equal primary spare areas during formatting of a disk, because Ohata teaches that assigning a secondary spare area (to create a larger total replacement area) reduces recording area, which would be wasteful for users who use the disk without removing it from the cartridge. *Id.* at 49.

Addressing the formatting/initialization argument, Petitioner asserts that the proposed ground seeks to modify the formatting steps of Kawano based on the equal spare area teachings in Ohata. Petitioner further explains that

it is undisputed that Ohata discloses two disc formats, one in which both a PSA and an SSA are assigned (Fig. 2) and a second in which just a PSA is assigned, where the PSAs in both formats are equal in size. . . . The specifics of how Ohata formats its disks with the disclosed spare area assignments are not specifically relied upon and therefore are irrelevant.

Pet. Reply 10.

Petitioner’s showing and response are persuasive. Ordinarily skilled artisans would not have viewed the equal primary spare area teachings in

Ohata as limited to initial formatting steps. For example, creating various sizes for spare areas at any time was within the skill level of ordinary artisans, as inspection of the relative spare area sizes shown in the background art, Figures 3A and 3B of the '126 patent Specification, implies. *See Ex. 1001, Figs. 3A, 3B.*

Further addressing the formatting/initialization argument, Petitioner also points out that claims 1 and 2 do not specify when the optical medium must be “formatted,” that assignments of the PSA and SSA in mode 1 need not be simultaneous, and that “formatted” in claim 1 does not require “initialization” or “initial formatting.” Pet. Reply 10. Petitioner reasons that Ohata’s replacement area formatting is similar to disk alterations as disclosed in the '126 patent Specification. *See id.* at 10–11 (arguing that the SSA “can be simply canceled through a formatting as show in Fig. 6” (quoting Ex. 1001, col. 5, ll. 7–8)). The record supports Petitioner. As discussed above in the claim construction of “formatted” (Section I.E.3), formatting, as described in the '126 patent Specification, and as Patent Owner conceded during the oral hearing, involves altering the spare area locations or sizes in an optical media. As discussed further above, the '126 patent Specification essentially describes formatting as including converting or re-converting between modes, or adding, canceling, or shifting, spare areas, at any time, including by adding a SSA for a second mode during playback, recording, or as otherwise necessary. *See supra* Section I.E.3; Tr. 66:6–66:18.

Regarding the shifting and teaching away arguments, Petitioner presents an annotated version of Kawano's Figure 5, modified to include equal primary spare areas in formats 1, 2, and 3 that retain the shifting principle, while "resulting in even better wear performance with no overlap of the high use management areas." Pet. Reply. 12 (producing annotated version of Kawano's Fig. 5, right-hand side, showing equal sized spare (PSA) areas 13). Petitioner's proposed and annotated modification involves reducing the total spare area 13 in formats 2 and 3, thereby preserving the recording area, in line with Ohata's teaching to preserve such area in at least one format or condition. *See id.* Therefore, Petitioner's presentation establishes persuasively that Ohata does not teach away from Petitioner's proposed ground regarding claim 2. In addition, as Petitioner argues, keeping the sizes of the PSA equal across the modes reduces complexity by allowing the same information to be placed in each equally sized area. *See id.*

Given a fixed disc size, trading recording size for spare area size would have represented an obvious trade-off of providing either recording area or "adequate replacement sectors to compensate for defective sectors occurring due to severe fouling caused by human fingerprints or dirt." Ex. 1005, Abstract. Although, as Patent Owner contends, Ohata describes this fouling as occurring "when the disk is removed from the cartridge" (*id.*), Kawano's optical recording mediums do not specifically involve cartridges. Ohata does not teach away from providing replacement areas generally in disks that are fouled (i.e., fouled without a cartridge), while maintaining the

same size primary spare area. Based on the combined teachings, the record shows that it would have been obvious to add a replacement spare area at any time as a trade-off between data recovery and recording area, including when a manufacturer or user predicts fouling may occur on a cartridge-less optical recording medium, maintaining the original size of a primary spare area, in order to overcome “severe fouling caused by human fingerprints or dirt.” *See id.*

Regarding Patent Owner’s assertion that Ohata’s primary and replacement spare areas are “adjacent” to one another, or “contiguous,” and similar to prior art Figure 3A of the ’126 patent (PO Resp. 40), Petitioner asserts that claim 2 does not require a spaced apart PSA and SSA (Pet. Reply 11). Petitioner also relies on Kawano, as explained above in connection with claim 1, which shows spaced apart spare areas 13. *See* Pet. 12 (Format 1 showing spaced apart PSA 13 and SSA 13).

Petitioner’s argument has merit. Under a broader claim construction as outlined above, claim 2 does not require the supplementary and primary spare areas necessarily to be spaced apart from one another. Moreover, even under the narrower claim construction, Kawano teaches spaced apart primary and supplementary spare areas 13 in Format 1. *See* Ex. 1003, Fig. 5; *supra* note 6. Ohata suggests equal-sized primary spare areas regardless of any spacing relationship to a supplementary spare area. Petitioner’s rationale that a simple size modification would decrease the complexity of switching between modes and yield predictable results of equal sizes also

applies regardless of such spacing. *See* Pet. 24–25 (citing Ex. 1010 ¶¶ 32–33); Pet. Reply 10–13.

Petitioner concludes by “not[ing] there are only three possibilities for the first mode PSA size relative to the second mode PSA size: equal, greater, or less. Choosing one knowing another is an obvious design choice with very predictable results.” Pet. Reply 13. Petitioner’s showing persuasively supports the conclusion. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”). Keeping the PSA the same size across two modes, while adding a SSA to overcome fouling, represents a simple and predictable manufacturing choice.

Based on the foregoing discussion, Petitioner shows by a preponderance of evidence that modifying the primary spare area sizes of Kawano to be equal in first and second modes, as set forth in claim 2, would have been obvious. Note that Petitioner’s analysis of claim 2 also shows that the combination of Kawano and Ohata renders obvious a size limitation wherein the total spare area of the first mode is larger than the second mode spare area: By making the PSA in each mode equal, Petitioner’s annotated version of Figure 5 from Kawano shows that the total size of the spare area, PSA 13 plus SSA 13 in Format 1 (the first mode), is larger than PSA 13 in Formats 2 and 3 (the second mode). *See* Pet. Reply 12.

Petitioner's articulated reasoning is supported by rational underpinnings. *See KSR*, 550 U.S. at 416 (to be nonobvious, a patent claim to "a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result"). Accordingly, Petitioner shows by a preponderance of evidence that the combination of Kawano and Ohata renders claim 2 obvious.

C. Obviousness over Kawano and Ozaki

Considering Patent Owner's arguments and evidence, Petitioner shows by a preponderance of evidence that claims 6 and 18 would have been obvious over Kawano and Ozaki. *See Pet.* 29–33. Claims 6 and 18, which depend from independent claims 1 and 15, respectively, recite "the primary spare area in the first and second mode is assigned at the top of the data area of the optical recording medium." Petitioner asserts that the additional limitations recited in claims 6 and 18 are described by Ozaki. *See id.*

As noted by Petitioner, Ozaki describes a magnetic disc divided into tracks having a concentric shape in which alternative track 20b includes tracks of the innermost circumference of the disc, as compared with normal usage area 20a. Ex. 1007, Abstract, ¶ 6, Fig. 5; *Pet.* 29–33. Ozaki indicates that an alternative track is used "when a bad track occurs." Ex. 1007 ¶ 45.

Ozaki's Figure 5 is set forth below:

[Fig. 5]

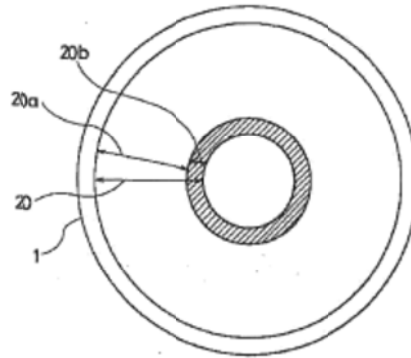


Figure 5 shows an example of alternative tracks 20b in a conventional magnetic disc. *See* Ex. 1007 ¶ 6. According to Ozaki, “alternative track 20b is disposed at several tracks of the innermost circumference with respect to a normal usage area 20a among the total usable track area 20 on a magnetic recording medium 1.” *Id.*

The parties agree that “the top of the data area of the optical recording medium,” in the context of an optical disc as the optical recording medium, encompasses the inner rings of the disc where data is written, including data that is written to a spare area. *See* Inst. Dec. 11–13. Patent Owner does not dispute that Ozaki’s alternative track 20b is at the top of the data area. *See* PO Resp. 50–55.

Petitioner contends that a person of ordinary skill in the art would have modified Kawano based on Ozaki’s teachings by placing both primary spare areas 13 (of Kawano’s first and second modes) at the inner disc rings—at the top of the data area. *See* Pet. 31. According to Petitioner and

Dr. Hesselink (Ex. 1010), an ordinarily skilled artisan would have combined Kawano and Ozaki to place spare data areas in tracks with the lowest reliability, thereby allowing data to be placed in higher reliability areas. *See* Pet. 32–33 (citing Ex. 1010 ¶¶ 42–44). Ozaki corroborates Dr. Hesselink, who quotes Ozaki’s teaching that the innermost tracks are where the “linear recording density is highest (reliability is lowest).” Ex. 1010 ¶ 42 (quoting Ex. 1007 ¶ 6).

Patent Owner, relying on Dr. Mansuripur, responds by noting that PSA 13 in Kawano’s “Format 1” is at the top of the data area, but PSA 13 in “Format 2” is not at the top of the data area, as claims 6 and 18 require. *See* PO Resp. 51 (citing Ex. 2002 ¶ 108). Addressing the proposed modification, similar to arguments regarding claim 2, Patent Owner asserts that the modification would change the principle of operation of Kawano, because it would preclude the integral shifting, between modes, of spare areas 13 and management areas 14 into infrequently used data areas 15, which Kawano exemplifies in relation to Figure 5. *See id.* at 52–53.

In its Reply, Petitioner responds that Kawano teaches three different modes. According to Petitioner, modifying Format 3 to allow a shift relative to Formats 1 and 2, and modifying the primary areas of Formats 1 and 2 to be at the top of the data area (i.e., without a relative shift between those two formats), satisfies claims 6 and 18. *See* Pet. Reply 13–14. Therefore, providing for the shift according to Format 3 would correspond to, and not change, the alleged principle of operation of Kawano that Patent Owner

alleges. *See id.* Petitioner supplies an annotated version of Kawano’s Figure 5 to explain its position. *See id.* at 14.

Based on the arguments and evidence presented, Petitioner’s position is more persuasive than Patent Owner’s. The record does not support Patent Owner’s contention that Kawano’s principle of operation involves shifting the spare areas in each available mode or format. Employing Format 3, as Petitioner contends, would satisfy the shifting principle—which involves shifting management areas to areas of lower rewrite frequency. *See Ex. 1003 ¶ 14.*

In addition, Figure 4 represents an embodiment in which management and user areas are shifted, but not the spare areas: “The spare areas [depicted in Figure 4] are made to be the same physical address areas in each format.” *Id.* ¶ 15. Patent Owner agrees: “In fact moving the spare area 13 ‘integrally with the management area 14’ is the distinguishing feature of *the embodiment of Fig. 5 relative to the embodiment of Fig. 4*, where ‘[t]he spare areas are made to be the same physical address areas in each format.’” PO Resp. 46–47 (quoting Ex. 1003 ¶¶ 15–16, citing *id.* at Figs. 4–5, emphasis added). Notwithstanding Patent Owner’s argument, Kawano’s “embodiment of Fig. 5” does not define Kawano’s principle of operation, and Kawano’s Figure 4 contradicts Patent Owner’s assertion that Kawano’s principle of operation requires, or is limited to, shifting spare areas between modes.

Based on the foregoing discussion, considering the arguments and record evidence, Petitioner shows by a preponderance of evidence that the combination of Kawano and Ozaki renders claims 6 and 18 obvious.

D. Obviousness over Kawano and Kulakowski

Considering Patent Owner's arguments and evidence, Petitioner shows by a preponderance of evidence that claims 9 and 16 would have been obvious over Kawano and Kulakowski. *See* Pet. 33–39. Claims 9 and 16, which depend from independent claims 1 and 15, respectively, recite “in the assigning step, the spare area is assigned according to one of either the first mode or the second mode based upon a selection by a user or a manufacturer.”

Kulakowski describes a disk in which “[a] portion of each band on the disk includes a user data area and a reserved area.” Ex. 1009, Abstract. “Sectors in the reserved area are usable . . . as spare sectors, replacing defective sectors in the user area.” *Id.* Kulakowski also describes a “common overflow reserved area” for use if all the sectors in the primary reserved areas have been exhausted. *Id.* Kulakowski further describes using common overflow reserved area 118 when reserved area 170 has been filled, and “the size of each reserved area 170 can be established by the media manufacturer if the manufacturer initializes the media or can be established by the user.” Ex. 1009, col. 7, ll. 8–11.

Petitioner relies on these teachings. *See, e.g.*, Pet. 35–37 (citing Ex. 1009, col. 6, l. 49–col. 7, l. 27, Fig. 4A). Petitioner contends that an ordinarily skilled artisan would have modified Kawano in view of

Kulakowski to enable a user or manufacturer to assign modes, because, for example, “it would be useful and valuable for the manufacturer and user to be able to determine whether to use the first mode or second mode. The manufacturer is in a unique position of knowing how reliable the disc that it manufactured is.” *Id.* at 37.

Patent Owner contends that Kulakowski does not teach selecting from two modes, because, although Kulakowski teaches selecting the size of a reserve area 170 (first mode), Kulakowski does not teach selecting a reserve area size of zero (second mode). *See* PO Resp. 58 (citing Ex. 2002 ¶¶ 125–126; Ex. 2003, 149:2–6 (pointing out that Dr. Hesselink testifies that Kulakowski does not employ the word “zero”).

Notwithstanding the lack of an explicit recitation of the word “zero” as choice of size for a replacement area, Kulakowski generally suggests selecting any size, including a size of zero. In other words, Kulakowski and the record support Petitioner’s argument that zero is “the obvious number selection to maximize recording capacity” (Pet. Reply 14–15), and Patent Owner has not introduced credible evidence or persuasive argument to the contrary. *See also* Ex. 2003, 148:18–21 (Dr. Hesselink asserting that Kulakowski teaches that “the size of each reserved area can be established by the media manufacturer . . . or . . . the user”). For example, in addition to the teachings described above, Kulakowski also teaches selecting “how many spare sectors . . . will be needed . . . based upon the particular operating environment and conditions.” Ex. 1009, col. 7, ll. 1–13. A user or manufacture may decide that no sector will be needed. In essence,

Kulakowski suggests that a user or manufacturer may decide not to create an unneeded supplemental spare area in some disks and may decide to create one or more needed spare areas in others. *See id.* at col. 7, ll. 8–27.

Based on the foregoing discussion, the record evidence, and the arguments presented, Petitioner has shown by a preponderance of evidence that the combination of Kawano and Kulakowski renders obvious claims 9 and 16.

E. Obviousness over Kawano, Ohata, and Kulakowski

Petitioner asserts that claims 10, 11, 13, 14, and 17 would have been obvious over Kawano, Ohata, and Kulakowski. *See* Pet. 39–49. Claims 10, 11, 13, and 14 depend, directly or indirectly, from independent claim 1, and claim 17 indirectly depends from independent claim 15.

Petitioner’s explanations and claim charts demonstrate by a preponderance of evidence that the combination of Kawano, Ohata, and Kulakowski renders obvious claims 10, 11, 13, 14, and 17. Patent Owner does not present separate patentability arguments for claims 10, 11, 13, 14, and 17, and, instead, relies on asserted deficiencies in Petitioner’s showing regarding unpatentability of claims 1, 9, 15, and 16. *See* PO Resp. 59–60.

Based on the foregoing discussion, record evidence, and arguments presented, Petitioner has shown by a preponderance of evidence that the combination of Kawano, Ohata, and Kulakowski renders obvious claims 10, 11, 13, 14, and 17.

F. Summary

Based on the foregoing discussion, record evidence, and arguments presented, Petitioner has shown by a preponderance of evidence that the asserted prior art renders claims 1, 2, 6–11, and 13–19 unpatentable.

G. Motion to Amend

Patent Owner filed a Motion to Amend the claims of the '126 patent, requesting to substitute, respectively, newly proposed claims 20–24 for issued '126 patent claims 1, 7, 8, 15 and 19. Mot. Amend 1. The Motion to Amend is contingent on the panel's determination that claims 1 and 15 are unpatentable. *Id.* As discussed above, the panel has determined, by a preponderance of evidence, that claims 1, 2, 6–11, and 13–19 are unpatentable, thereby manifesting the contingency.

As the movant, Patent Owner bears the burden of proof in demonstrating patentability of the proposed substitute claims over the prior art in its motion. *See* 37 C.F.R. § 42.20(c). Proposed amendments also must be responsive to a ground of unpatentability involved in the trial. 37 C.F.R. § 42.121(a)(2)(i).

Patent Owner proposes the following claim 20 as a substitution for claim 1:

Claim 20 (substitute for original claim 1): A method of assigning a spare area of an optical recording medium having a data area, the method comprising:

providing a first mode that assigns a spare area having a first size and including in which both a primary spare area and a supplementary spare area ~~are assigned~~;

providing a second mode that assigns a spare area having a second size, which is smaller than the first size, and including only in which a primary spare area is assigned; and assigning the spare area according to one of either the first mode or the second mode when the optical recording medium is formatted.

Mot Amend. 1 (all underlining signifies proposed additions relative to issued claim 1).⁷

Proposed substitute method claim 20, and substitute product claim 23 (reproduced below), each essentially recite first and second modes wherein the first mode assigns a spare area size that is greater than a spare area size assigned during the second mode. *See* Mot Amend 2 (claim 23, tracking claim 20 as a product-by-process claim).

Issued claim 2 depends from claim 1, and in showing that claim 2 would have been obvious, as explained above, Petitioner's version of Kawano's Figure 5, as annotated based on Ohata's teaching, depicts how the combination satisfies the required size limitation that Patent Owner argued was implicit in independent claims 1 and 15. *See* Pet. Reply 12 (right-hand side annotated version of Fig. 5 depicts the size of PSA 13 plus SSA 13 in Format 1 as being larger than either PSA 13 in Formats 2 or 3). Tracking the analysis of claim 2, Petitioner applies the same prior art combination of Kawano and Ohata, and a similar analysis, to rebut Patent Owner's Motion to Amend regarding patentability of proposed substitute claims 20 and 23. *See* Pet. Opp. 6–12. For example, Petitioner provides the same annotated

⁷ Patent Owner provided incomplete underlining for its proposed additions. We added double underlining to show the remaining proposed additions.

version of Figure 5 of Kawano, which shows the proposed modification based on Ohata, to address issued claim 2 and contingently proposed claims 20 and 23. *Compare* Pet. Reply 12, *with* Pet. Opp. 10; *see also* Pet. Opp. 3 (asserting that “Patent Owner does not amend the claims with any new limitations not already disclosed in the prior art relied upon for [original] Challenge #2”), 6–12 (discussing why the proposed size limitations would have been obvious).

Patent Owner verified during the oral hearing that the issues raised with respect to its proposed substitute claims 20 and 23 already had been briefed during the trial of claim 2. For example, Patent Owner’s counsel noted that Petitioner’s counsel essentially agreed that the issue had been “fully briefed,” as follows:

MR. LIEBERMAN: Mr. Limbach[, Petitioner’s counsel,] when he talked about what wasn’t in the motion for leave to amend admitted in response to the panel’s questioning that at least one critical issue, which is the focus of their opposition to the motion for leave to amend, *the Ohata/Kawano combination, was identical or virtually identical to the issues that were fully briefed in the underlying substantive papers*, and I don’t think Mr. Limbach is trying to ask this panel to set a precedent that Patent Owner should repeat in 15 pages all of the arguments that they had in their underlying substantive papers.

If the issue was wholly addressed, as it was, with respect to claim 2, then there’s no reason to repeat that. We’ve got a lot of work to do in 15 pages, and what we did was we took each and every one of the references that they cited and what happened to be the most important references from the prosecution history, and I believe that’s exactly what the rules contemplate, and we dealt with those in 15 pages. To the extent there are identical issues, it doesn’t really make sense to repeat

those arguments, and counsel has admitted that they were the same.

Tr. 107:23–108:15 (emphases added).

There is no dispute, according to characterizations of the issue by the parties at the oral hearing and in the briefing, that the proposed substitute claims, as argued in the Motion to Amend, present the same issue as the ground of unpatentability regarding claim 2.

Patent Owner has the burden of demonstrating that its proposed claims are patentable. *See* 37 C.F.R. § 42.20(c). Patent Owner has not shown a patentable distinction between proposed substitute claims 20 and 23 and original patent claim 2, which we determined to be unpatentable over the combination of Kawano and Ohata. Therefore, based on the reasons discussed above with respect to claim 2, Patent Owner has failed to satisfy its burden of showing that proposed amended claims 20 and 23, which present the same issue as claim 2, are patentable. *See* 37 C.F.R. §42.20(c).

Tracking its analysis for claim 2, but specifically addressing the Motion to Amend, Petitioner explains how modifying Kawano to have equal sized PSAs in each mode, as set forth in claim 2, while only having a PSA in the second mode, and a SSA and PSA in the first mode, as set forth in claims 20 and 23, implicitly creates, and renders obvious, a larger spare area in the first mode (because the total size of PSA and SSA is larger than the size of a PSA). *See* Pet. Opp. 9–10. The analysis of claims 2 and 15, applied to claims 20 and 23, in light of the additional briefing by the parties regarding the latter claims, reveals that Patent Owner has not shown by a

preponderance of evidence that the proposed claims in the Motion to Amend are patentable. *See generally* Pet. Opp.; Mot. Amend.; PO Reply.

Proposed claim 23 follows:

Claim 23 (substitute for original claim 15): An optical recording medium having a data area in which a spare area is assigned by:

providing a first mode that assigns a spare area having a first size and including in which both a primary spare area and a supplementary spare area ~~are assigned~~;

providing a second mode that assigns a spare area having a second size, which is smaller than the first size, and including only in which a primary spare area ~~is assigned~~; and

assigning the spare area according to one of either the first mode or the second mode when the optical recording medium is formatted.

Mot. Amend 2 (underlining by Patent Owner to signify additions relative to issued claim 15).

As amended, proposed claim 23, like issued claim 15, is a product-by-process claim. It requires a recording medium that has a single spare area assigned—produced according to either a first mode or a second mode assignment step. In other words, an “optical recording medium” produced according to a first mode only “assigns . . . both a primary spare area and a supplementary spare area”—without regard to any size implicated by a second mode assignment step (which is not employed given that claim 23 requires “assigning the spare area according to one of either the first mode or the second mode”). Therefore, in addition to the obviousness rationale that

applies to claim 23 based on the discussion of claims 2 and 15 (i.e., the Kawano/Ohata ground), Kawano's Format 1 in Figure 5, which includes a PSA 13 and separate SSA 13, anticipates the product produced according to the first mode as recited in claim 23. *See* Ex. 1003, Fig. 5; *see also supra* Section II.A (showing and discussing annotated version of Kawano's Fig. 5).

Patent Owner does not present separate patentability arguments for its proposed claims 21–22 and 24, which “recit[e] the limitations originally recited in claims 7 and 8,” and “claim 19.” Mot. Amend. 3. Accordingly, these proposed amendments are denied for the same reasons that claims 20 and 23 are denied.

For the foregoing reasons, Patent Owner's Motion to Amend is denied. *See* 37 C.F.R. §§ 42.121(a)(2)(i); 37 C.F.R. § 42.20(c).

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that the claims instituted for *inter partes* review are unpatentable as follows:

- A. Claims 1, 7, 8, 15, and 19 as anticipated by Kawano under 35 U.S.C. § 102;
- B. Claim 2 as obvious under 35 U.S.C. § 103 over Kawano and Ohata;
- C. Claims 6 and 18 as obvious under 35 U.S.C. § 103 over Kawano and Ozaki;
- D. Claims 9 and 16 as obvious under 35 U.S.C. § 103 over Kawano and Kulakowski; and

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E. Claims 10, 11, 13, 14, and 17 as obvious under 35 U.S.C. § 103 over Kawano, Ohata, and Kulakowski.

In addition, Patent Owner failed to meet its burden on its Motion to Amend.

IV. ORDER

In consideration of the foregoing, it is hereby
ORDERED that, based on a preponderance of the evidence, claims 1, 2, 6–11, and 13–19 of the '126 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend is *denied*; and

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

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