

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

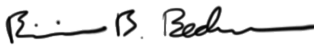
MAXELL, LTD.,
Patent Owner

Inter Partes Review No.: IPR2024-00867
U.S. Patent No. 10,176,848

REPLY DECLARATION OF DR. BENJAMIN B. BEDERSON

I declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent which is under review in this proceeding.

Dated: April 23, 2025

By: 

Dr. Benjamin B. Bederson
University of Maryland, College Park
Professor Emeritus, Computer Science

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I, Benjamin B. Bederson, declare as follows:

I. INTRODUCTION AND SUMMARY OF OPINIONS

A. Introduction

1. I have been retained by counsel for Petitioners, Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (“Petitioners”), to provide my expert opinions in the above-identified petition for *inter partes* review (IPR2024-00867), which challenges claims 11, 12, 16, 17, 19, 20, and 84 (the “Challenged Claims”) of U.S. Patent No. 10,176,848 (“the ’848 patent”).

2. Specifically, I provide herein my expert opinions regarding the evidence submitted by Patent Owner Maxell, Ltd. (“PO”) in support of the Patent Owner’s Response (“POR”), including the opinions expressed in the declaration submitted by PO’s expert Dr. Ravin Balakrishnan (EX2030).

3. As stated in my previous declaration in this matter (EX1005), I am being compensated for my time at the rate of \$600.00 per hour. My compensation is not dependent on my opinions or on the outcome of this proceeding, and I have no direct financial interest in any of the parties to this review.

B. Summary of Opinions

4. After considering the POR and all supporting evidence, it remains my opinion that the Challenged Claims of the ’848 patent would have been obvious to a person of ordinary skill in the art (“POSITA”) as of the earliest priority date to which those claims are entitled based on the following Grounds.

Ground	Claims	Stat. Basis	Prior Art
1	11, 12, 16, 17, 19, 20	35 U.S.C. § 103	Nozaki, Haitani
2	84	35 U.S.C. § 103	Nozaki, Haitani, Graham
3	84	35 U.S.C. § 103	Nozaki, Haitani, Kim

5. The basis for my opinion is set forth in this declaration as well as my initial declaration submitted in this matter (EX1005).

II. QUALIFICATIONS

6. My qualifications and *curriculum vitae* (CV) were provided in my initial declaration (EX1005) and are incorporated by reference here.

III. MATERIALS CONSIDERED

7. The analysis that I provide in this declaration is based on the evidence submitted in these proceedings to date and identified in my initial declaration (EX1005), as well as evidence submitted by PO in connection with the POR along with the transcript from the deposition of PO's expert Dr. Balakrishnan (EX1018).

IV. LEGAL STANDARDS

8. The applicable legal standards as I understand them have been set forth in my initial declaration (EX1005) and are incorporated by reference here.

V. DEFINITION OF A POSITA

9. I understand that Dr. Balakrishnan offers a slightly different definition of a POSITA than the one offered in my previous declaration and adopted by the PTAB in its institution decision (EX2030, ¶¶ 41-42) but acknowledges that the

differences do not have a material impact on his opinions (*id.*, ¶ 43). I agree. Applying Dr. Balakrishnan's definition of a POSITA would not materially impact my opinions in my previous declaration or offered here.

10. As stated in my initial declaration (EX1005), at the relevant time I would have exceeded the qualifications of a POSITA under either definition.

VI. CLAIM CONSTRUCTION

A. "mode"

11. I understand that PO and Dr. Balakrishnan propose to construe the claim term "mode" as it is used in the Challenged Claims as "an operational state that a system has been switched to." See POR 13-19; EX2030, ¶¶ 71-86. Dr. Balakrishnan purports to apply this construction to his opinions regarding the "first reproducing mode" and "second reproducing mode" of challenged claims 11, 12, 16, 17, 19, and 20, as well as to the "third reproducing mode" of challenged claims 12, 17, and 20. EX2030, ¶73. Dr. Balakrishnan also states in his declaration that this construction would apply to the "first setting mode" and "second setting mode" terms in claims 8, 13, and 84 (*id.*), although his declaration does not contain opinions regarding these claim limitations and therefore appears to concede that the prior art discloses or at least renders obvious these claimed "setting modes."

12. It is my opinion that no construction of "mode" is necessary, and that a POSITA would understand it according to its plain and ordinary meaning.

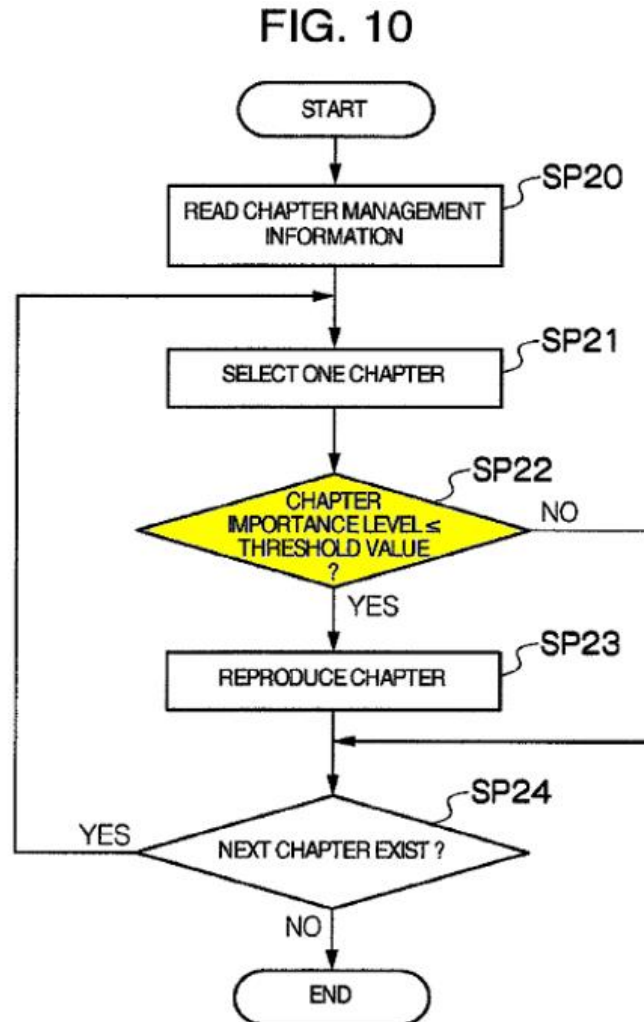
13. Although I do not necessarily disagree that a “mode” could be understood as “an operational state that a system has been switched to”—and as discussed below it is my opinion that the Challenged Claims remain invalid even under this construction—I do disagree with Dr. Balakrishnan’s application of this proposed construction, which interprets the concept of “an operational state” far more narrowly than the words alone would suggest or would have been understood by a POSITA at the relevant time. Specifically, I disagree with this construction to the extent that it would require that “filters”—as disclosed in the prior art and in the ’848 patent—cannot serve as the basis for distinguishing modes.

14. There are two primary reasons why I disagree with PO’s and Dr. Balakrishnan’s interpretation of their proposed construction of “mode.”

15. First, the ’848 patent does not support such an interpretation. The ’848 patent discloses three reproducing modes—standard, express, and superexpress—for reproducing different sets of chapters from a captured video “scene” based on the chapters’ importance level.¹ The specification teaches that all three modes operate using the same algorithm (the “chapter selecting reproducing function”). EX1001, 9:61-62. Figure 10 “illustrates the logic process contents” of this function. EX1001, 10:4-8. As highlighted below, each mode applies a different filter (a

¹ In the patent, chapters have importance levels of 1, 3, or 5. EX1001, Fig. 9.

“threshold” as shown in SP22, highlighted yellow) to reproduce a larger or smaller set of chapters. See EX1001, 10:16-25 (“The threshold value is ‘5’ if the ‘standard reproducing mode’ is set, ‘3’ if the ‘express reproducing mode’ is set, and ‘1’ if the ‘superexpress reproducing mode’ is set.”).



EX1001, Fig. 10 (highlighting added), 10:4-40. A POSITA would have understood from the above disclosures that the specification’s reproducing modes employ user-

selected filters (thresholds)² to selectively reproduce video chapters based on whether the chapters' importance level meets the threshold criteria.

16. As applied by PO and Dr. Balakrishnan, their proposed construction of “mode” excludes this operational principle. Dr. Balakrishnan stated at deposition that multiple modes using a single algorithm that switches filters (thresholds)—similar to the '848 patent disclosures—are **not** distinct “reproducing modes” as the claims require. EX1018, 47:18-48:9, 53:15-55:3. This statement confirms my opinion that PO's application of its proposed construction would exclude from the claims' scope the very embodiment of “reproducing modes” that the '848 patent teaches. The '848 patent therefore contradicts PO's and Dr. Balakrishnan's positions, demonstrating why their construction must be rejected.

17. **Second**, PO's and Dr. Balakrishnan's additional evidence does not support their interpretation of their proposed construction. PO's dictionary definitions, for example, at most show that “mode” and “filter” have different meanings, but do not support Dr. Balakrishnan's opinion that a POSITA would have understood that different “modes” cannot be distinguished by the filters they include. If anything, the definitions demonstrate that modes **can** be distinguished on this basis. For example, EX2029 defines a “mode” as “[o]ne of several alternative

² PO's expert agrees that a threshold is a type of filter. EX1018, 47:18-48:9.

conditions or methods of operation of a device” and a “filter” as “[a] device or program that separates data in accordance with specified criteria.” EX2029 at 5-5.³ A POSITA would have known that, at the relevant time, the “modes” in a recording and reproducing apparatus could consist of alternative methods of operating that device via “filters” for separating data in accordance with specified criteria. This would be consistent with the disclosures of the ’848 patent and the way I have applied the term in my own opinions.

18. The other evidence cited by PO and Dr. Balakrishnan also fails to support PO’s interpretation. For example, PO cites examples in the prior art and in my own previous work that purportedly use the word “mode” in a manner consistent with the definition “an operational state that a system has been switched to.” POR 16-19. But these example uses of “modes” do not define the precise scope of a POSITA’s understanding of that term. They do not, for example, preclude uses of the same term in other contexts within a recording and reproducing apparatus, nor do they impact whether a “filter” can be the basis for distinguishing one mode from another in the context of the ’848 patent claims. Indeed, as previously discussed, the

³ PO’s only support for the “switched to” language in its proposed construction is the PCMag excerpt (EX2028), but I am aware of no evidence that this reference—which is dated 1/21/25, nine days before PO filed its POR—reflects a POSITA’s understanding of the definition of “mode” as of the 2008 assumed priority date.

'848 patent discloses that its reproducing modes use a single algorithm that includes one “threshold” (filter) or another depending on the user’s selection.

VII. GROUND 1: NOZAKI AND HAITANI (CLAIMS 11-12, 16-17, 19-20)

A. Motivation to Combine Nozaki with Haitani

19. As explained in my initial declaration (EX1005), Nozaki and Haitani are analogous art to the '848 patent, and as a result it is my opinion that a POSITA would have found it obvious to combine them for that reason alone. The '848 patent describes “a recording and reproducing apparatus” that captures and reproduces video information in the context of, “e.g., a video camera.” EX1001, 1:15-17. Nozaki and Haitani also disclose devices with digital cameras that can capture and reproduce image/video files. *See, e.g.*, EX1006, [0001], [0047], [0048]; EX1007, 2:8-17. Graham and Kim disclose similar devices in the same field of endeavor. EX1008, Fig. 3, [0010]-[0022], [0060]-[0062], [0088], [0318]; EX1009, 5-6.

20. Also as explained in my initial declaration (EX1005), the '848 patent, Nozaki, and Haitani are all directed to improving the photographing and reproducing efficiency of devices with digital cameras, including through the use of face recognition software. *See, e.g.*, EX1001, 1:15-2:62; EX1006, [0001]-[0040], [0110]-[0112], [0124]; EX1007, 1:24-49. Graham and Kim likewise are directed to addressing similar issues in devices with digital cameras. EX1008, Fig. 3, [0010]-[0022], [0060]-[0062], [0088], [0318]; EX1009, 5-6.

21. Also as explained in my initial declaration (EX1005), Nozaki and Haitani are compatible with and complementary to each other, and in my opinion a POSITA would have been motivated to combine them for this additional reason. A POSITA would have recognized that: (1) Haitani's filtered search modes of reproducing image information overlap with compatible features already present in the Nozaki device; (2) incorporating Haitani's search modes into the existing reproducing modes of Nozaki's device would improve the device, for example by enhancing the efficiency of Nozaki's already existing image search and reproduction capabilities; and (3) such a modification to the Nozaki device was well within the capabilities of a POSITA because it would require no more than the programming skills to alter the existing Nozaki program source code to include the filtered search modes described in Haitani.

22. A POSITA would have understood that the Nozaki device already collects data for each image and video file that corresponds to the search filter modes that Haitani discloses. To the extent that any additional data would need to be gathered or associated with the image information—for example, if a POSITA wanted to incorporate GPS data into the search filter modes of the modified device—such modification would have been easily achievable by a POSITA, as similar devices with those features already existed at the time (as evidenced by Haitani's disclosures) and would have been known to a POSITA.

B. Limitation [11a] – wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

23. As stated in my initial declaration (EX1005), it is my opinion that Nozaki in combination with Haitani renders obvious this limitation.

24. A POSITA would have understood that the “detailed information screen of a registered person” (Figure 5) in Nozaki could be programmed to include a menu—similar to the one disclosed in Haitani—for selecting the reproducing mode that would reproduce smaller or larger sets of images in the lower portion of the screen. Although reproducing the thumbnail images in the lower portion of Figure 5 would meet the “reproducing” claim requirements by admission of PO’s expert Dr. Balakrishnan (EX1018, 19:16-21), a POSITA would have also known how to allow users—upon selecting one or more images/videos from among the search results—to display those images/videos on the full screen in the same way that Nozaki’s “regeneration mode” discloses. I explained this concept in my initial declaration as well. EX1005, ¶¶ 95-99.

25. Even under PO’s and Dr. Balakrishnan’s proposed construction of “mode,” Nozaki and Haitani would still render obvious this limitation. As explained in the claim construction section above, the plain language of PO’s proposed construction merely requires switching between operational states. A POSITA

would have understood that switching reproducing modes in the modified Nozaki-Haitani device constitutes switching the operational states of the device because the functions of the device (e.g., search and reproduce) would operate differently depending upon the filter(s) that each mode included.

C. Limitation [11b] – wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode, and

26. PO and Dr. Balakrishnan argue that the “temporal element” of limitation [11b] is not disclosed by either prior art reference. POR 34-36. I disagree. The '848 patent contains no information about the reproducing time of its embodiment, or about the nature of the image information being reproduced (e.g., the type of data, or how it's structured or indexed). As explained in my initial declaration (EX1005), a POSITA would have understood that reproducing larger sets of image information would have a longer reproducing time as compared to reproducing smaller sets of image information. I understand that Dr. Balakrishnan agrees with this opinion, because he testified that a POSITA would know, in the context of the '848 patent embodiments, that “if you're saying I'm going to reproduce five chapters as opposed to reproduce three chapters, then I think, by definition, each one of those are going to be different reproducing times.” EX1018, 39:19-41:12 (“[I]t takes more time to read two images than it takes to read one image. . . . assum[ing] that both images are of the same size, et cetera.”).

VIII. CONCLUSION

27. The foregoing represents my opinion to date but as discussed above I reserve the right to supplement my opinion if, among other things, further evidence or information becomes available.

28. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross examination in the case and that cross examination will take place within the United States. If cross examination is required of me, I will appear for it within the United States during the time allotted for cross examination.