

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner,

v.

APEX BEAM TECHNOLOGIES LLC,

Patent Owner.

Patent No. 11,546,110

Filing Date: January 7, 2021

Issue Date: January 3, 2023

Inventor: Xiaobo Zhang

Title: METHOD AND DEVICE FOR MULTI-ANTENNA
TRANSMISSION IN USER EQUIPMENT (UE) AND BASE STATION

PATENT OWNER'S PRELIMINARY RESPONSE

Case No. IPR2025-00903

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LIST OF EXHIBITS

Exhibit No.	Description of Document
2001	Scheduling Order, Dkt. 40, <i>Apex Beam Techs. LLC v. Apple Inc.</i> , Case No. 6:24-cv-00223-ADA (W.D. Tex. June 18, 2025)
2002	Apex Beam Technologies LLC's Infringement Contentions and P.R. 3-1 and 3-2 Disclosures in <i>Apex Beam Techs. LLC v. Apple Inc.</i> , Case No. 6:24-cv-00223-ADA (W.D. Tex.), dated May 27, 2025
2003	Complaint, Dkt. 1, <i>Apex Beam Techs. LLC v. Apple Inc.</i> , Case No. 6:24-cv-00223-ADA (W.D. Tex. April 29, 2024)

I. INTRODUCTION

On May 5, 2025, Apple Inc. (“Petitioner”) submitted a petition (Paper 2, “Petition” or “Pet.”) to institute *inter partes* review (“IPR”) of U.S. Patent No. 11,546,110 (APPLE-1001, the “’110 Patent”), challenging Claims 1-20 (the “Challenged Claims”). The Petition asserts that the Challenged Claims are rendered obvious by three references: the Kim reference (APPLE-1004 or “Kim”); in view of the Dahlman reference (APPLE-1007 or “Dahlman”); and further in view of the Kim-966 reference (APPLE-1008 or “Kim-966”). Pet. at 1.

The Board should deny the Petition because Petitioner’s mapping as to claim limitations 1g and 1h constitutes a failure to comply with Rule 104(b)(4) and fails to show a reasonable likelihood of success. Claim limitation [1.6] recites “the first signaling *is used to determine* a first time resource pool.” Petitioner has not shown that Dahlman’s SIB *is used to determine* the first time resource pool as required by the claims. Petitioner fails to identify where these required elements are disclosed in the prior art publication Dahlman. Instead, Petitioner impermissibly relies on POSITA knowledge and expert testimony alone to account for these missing elements. This approach fails to comply with 37 C.F.R. 42.104(b)(4) which requires that a petition for *inter partes* review “must specify where each element of the claim is found in the prior art patents or printed publications relied upon.” Accordingly, the Board should deny institution of the Petition.

II. CLAIM CONSTRUCTION

For the purposes of this Preliminary Response only, Patent Owner believes that claim construction is not required to resolve any issues. Pet. at 2.

III. LEVEL OF ORDINARY SKILL IN THE ART

For the purposes of this Preliminary Response only, Patent Owner utilizes Petitioner's proposed level of skill in the art: "bachelor's degree in electrical engineering, computer engineering, computer science, or a similar field, along with two years of experience designing or developing wireless networks." Pet. at 12 (citations omitted).

IV. PETITIONER HAS NOT DEMONSTRATED A REASONABLE LIKELIHOOD OF SUCCESS FOR THE GROUNDS ADVANCED IN THE PETITION, AND THE PETITION SHOULD BE DENIED

The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) so-called secondary considerations where in evidence. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983).

The Board has held that a failure to identify the differences between the claimed subject matter and the prior art is fatal to an obviousness challenge. *See, Apple, Inc. v. Contentguard Holdings, Inc.*, IPR2015-00355, Decision Denying Institution of *Inter Partes* Review, Paper 9 at 9-10 (P.T.A.B. June 26, 2015) (denying institution for failure to identify the differences between the claimed subject matter and the prior art).

In arriving at an obviousness determination, the Board must sufficiently explain and support the conclusions that the prior-art references disclose all the elements recited in the Challenged Claims and a relevant, skilled artisan not only could have made, but would have been motivated to combine all the prior art references in the way the patent claims and reasonably expected success. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). That is, even if all the claim elements are found across a number of references, an obviousness determination must consider whether a person of ordinary skill in the art would have the motivation to combine those references. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1368 (Fed. Cir. 2016); *Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1067 (Fed. Cir. 2017) (vacating and remanding an obviousness determination, in part, because the Board did not make factual finding as to whether there was an apparent reason to combine all three prior art references to achieve the claimed invention and whether

a person of skill in the art would have had a reasonable expectation of success from such a combination). This combinability determination, as supported by an articulated motivation to combine, requires a plausible rationale as to why those prior art references would have worked together. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). Absent some articulated rationale, a “common sense” finding is no different than the conclusory statement “would have been obvious.” *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017). Of additional importance, “knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references” *Innogenetics, N.V. v. Abbott Lab’ys*, 512 F.3d 1363, 1373 (Fed. Cir. 2008).

35 U.S.C. 312(a)(3) requires that an IPR petition must identify, “in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. 312(a)(4) requires that a “petition filed under section 311 may be considered only if . . . the petition provides such other information as the Director may require by regulation.” 37 C.F.R. 42.104(b)(4) requires that a petition for inter partes review “must specify where each element of the claim is found in the prior art patents or printed publications relied upon.” General knowledge, such as applicant admitted prior art, expert testimony, common sense, and other evidence, that is not prior art consisting of patents or printed publications may not be used to

supply a missing claim limitation. *See* July 31, 2025 Memorandum from Acting Director Stewart Regarding Enforcement and Non-Waiver of 37 C.F.R. 42.104(b)(4). The Board may deny an IPR petition that fails to comply with Rule 104(b)(4). *Id.*

A. The Petition Fails to Show How Kim Discloses or Renders Obvious Claim Limitation [1.6] “*the first signaling is used to determine a first time resource pool*”

Claim 1 recites “the first signaling is used to determine a first time resource pool.” Petitioner relies only on Kim for this limitation. Petitioner contends that all claims require this limitation.

Petitioner maps the Dahlman’s SIB to the claimed first signaling. Pet. at 50. Petitioner contends that “Dahlman indicates that SIB ‘includes information about the allocation of subframes to uplink/downlink and configuration of the special subframe in the case of TDD.’” Pet. at 51. This special case describes nothing related to the “is used to determine” portion of the limitation. Specifically, Petitioner does not identify any specific portion of Dahlman to show that the SIB “is used to determine” a first time resource pool. Instead, Petitioner alleges POSITA knowledge in an attempt to interpret the disclosure of an SIB “to function as and render obvious as assigning” and that “a POSITA would have understood and found obvious that [SIB] is used to determine” Petitioner’s allegation is conclusory and based on unsupported POSITA knowledge. The mere recitation of an SIB with nothing more

cannot and does not teach the required “*is used to determine*” limitation.

Without more, Petitioner has advanced an allegation using POSITA knowledge to plug missing elements without showing where the claim limitation is actually taught in the references. Petitioner impermissibly relies on POSITA knowledge and expert testimony alone to account for missing elements which are not disclosed in the Dahlman reference. This is not a case in which Petitioner utilizes POSITA knowledge to support a motivation to combine references. Because Petitioner has not shown that the SIB *is used to determine* the first time resource pool, Petitioner has failed to identify where the elements are disclosed in the prior art publication.

The Board should deny the Petition because this mapping is impermissible and constitutes a failure to comply with Rule 104(b)(4). As submitted, Petitioner has failed to show a reasonable likelihood of success.

V. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of the Petition in its entirety.

Respectfully submitted,

Dated: September 10, 2025

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned PATENT OWNER'S PRELIMINARY RESPONSE has 1,361 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word for Office 365.

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CERTIFICATE OF SERVICE

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