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Paper 30
Date: January 15, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,
Petitioner,

v.

QUALCOMM INCORPORATED,
Patent Owner.

IPR2018-01152
IPR2018-01153
Patent 8,698,558 B2

Before TREVOR M. JEFFERON, DANIEL N. FISHMAN, and SCOTT B. HOWARD, *Administrative Patent Judges.*

JEFFERSON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

In the *inter partes* reviews in IPR2018-01152 and IPR2018-01153, Intel Corporation ("Petitioner") challenges claims 1–9 and 12–14 of U.S. Patent No. 8,698,558 B2 (IPR2018-00152, Ex. 1001; IPR2018-01153, Ex. 1101; "the '558 patent"), which is assigned to Qualcomm Incorporated ("Patent Owner").

As explained in detail below, the references applied against the challenged claims are identical in each of the cases. A joint hearing was held for these cases. The parties rely on the same declarants submitting substantially similar declarations in each case for testimonial evidence. Under these circumstances, we determine that a combined Final Decision will promote a just, speedy, and inexpensive resolution of these proceedings.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a), addresses issues and arguments raised during the trial in these *inter partes* reviews. For the reasons discussed below, we determine that Petitioner has proven by a preponderance of the evidence that claim 12–14 of the '558 patent are unpatentable in IPR2018-01152 and claims 1–9 of the '558 patent are unpatentable in IPR2018-01153. *See* 35 U.S.C. § 316(e).

A. Procedural History

In IPR2018-01152, Petitioner filed a Petition (Paper 2, "1152 Pet.") challenging claims 12–14 of the '558 patent. Patent Owner filed a Preliminary Response (Paper 8).[1] We instituted trial on all grounds of

[1] Similar papers and exhibits were filed in each case with related numbering. References to papers and exhibits in this Final Written Decision refer to

unpatentability. Paper 9 ("1152 Dec. on Inst."), 22–23. During trial, Patent Owner filed a Response (Paper 16, "1152 PO Resp."), Petitioner filed a Reply (Paper 20, "1152 Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 23, "1152 PO Sur-reply").

In IPR2018-01153, Petitioner filed a Petition (Paper 3, "1153 Pet.") challenging claims 1–9 of the '558 patent. Patent Owner filed a Preliminary Response (Paper 8). We instituted trial on all grounds of unpatentability. Paper 9 ("1153 Dec. on Inst."), 22–23. During the trial, Patent Owner filed a Response (Paper 16, "1153 PO Resp."), Petitioner filed a Reply (Paper 19, "1153 Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 22, "1153 PO Sur-reply").

A combined oral hearing for these *inter partes* reviews was held on October 28, 2019, a transcript of which appears in the record in each case. Paper 29 ("Tr.") (IPR2018-01152); Paper 27 (IPR2018-01153).

B. Instituted Grounds of Unpatentability

1. IPR2018-01152 Grounds

We instituted *inter partes* review of claims 12–14 of the '558 patent in IPR2018-01152 on the following grounds:

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filings in IPR2018-01152 unless otherwise specified by "1152" or "1153" preceding the citation.

Claim(s) Challenged	35 U.S.C. §	References
12, 14	102(b)[2]	Chu[3]
14	103(a)	Chu, Blanken[4]
13	103(a)	Chu, Choi 2010[5]
13	103(a)	Chu, Choi 2010, Myers[6]

1152 Dec. on Inst. 22–23; 1152 Pet. 39–40, 72.

In support of these grounds, Petitioner relies on the Declaration of Dr. Alyssa Apsel (Ex. 1003), the Reply Declaration of Dr. Alyssa B. Apsel (Ex. 1027), and the Deposition of Dr. Arthur Kelley (Ex. 1028) in support the Petition. Patent Owner relies on the Declaration of Dr. Arthur Kelley (Ex. 2005) and Depositions of Dr. Alyssa Apsel (Ex. 2006; Ex. 2008).

2. IPR2018-01153 Grounds

We instituted *inter partes* review of claims 1–9 of the '558 patent in IPR2018-01153 on the following grounds.

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[2] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the '558 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability.

[3] Wing-Yee Chu, et al., *A 10 MHz Bandwidth, 2 mV Ripple PA Regulator for CDMA Transmitters*, IEEE JOURNAL OF SOLID-STATE CIRCUITS 2809–2819 (2008) (Ex. 1004, "Chu").

[4] P.G. Blanken, et al., *A 50MHz Bandwidth Multi-Mode PA Supply Modulator for GSM, EDGE and UMTS Application*, 2008 RADIO FREQUENCY INTEGRATED CIRCUITS SYMPOSIUM (IEEE) 401–404 (2008) (Ex. 1010, "Blanken").

[5] Jinsung Choi, et al., *Envelope Tracking Power Amplifier Robust to Battery Depletion,"* Microwave Symposium Digest (MTT), 2010 IEEE MTT-S INTERNATIONAL 1074–1077 (2010) (Ex. 1007, "Choi 2010").

[6] Myers, et al., U.S. Patent No. 5,929,702 (Ex. 1012, "Myers").

Claims Challenged	35 U.S.C. §	References
6, 8	103(a)	Chu, Choi 2010
1–9	103(a)	Chu, Choi 2010, Myers

1153 Dec. on Inst. 24–25; 1153 Pet. 39–40.

Petitioner relies on the Declaration of Dr. Alyssa Apsel (1153 Ex. 1103), the Reply Declaration of Dr. Alyssa B. Apsel (1153 Ex. 1127), and the Deposition of Dr. Arthur Kelley (1153 Ex. 1128) in support of the 1153 Petition. Patent Owner relies on the Declaration of Dr. Arthur Kelley (Ex. 2005) and Depositions of Dr. Alyssa Apsel (Ex. 2006, Ex. 2008).

C. Related Proceedings

Apple Inc. is identified as an additional real party-in-interest. 1152 Pet. 2. The parties inform us that the '558 patent was asserted against Petitioner in the litigation *Qualcomm Inc. v. Apple Inc.*, Case No. 3:17-cv-01375-DMS-MDD (S.D. Cal.) and against Apple in a proceeding before the International Trade Commission ("ITC") captioned *In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof*, Inv. No. 337-TA-1065. 1152 Pet. 2; 1152 Paper 6, 2.

D. The '558 Patent and Illustrative Claims

The '558 patent is titled "Low-Voltage Power-Efficient Envelope Tracker" and discloses "[t]echniques for efficiently generating a power supply for a power amplifier" used in communication system transmitters. Ex. 1001, 1:30–31, code (54). The '558 patent discloses that a

> transmitter typically includes a power amplifier (PA) to provide high transmit power for the output RF signal. The power amplifier should be able to provide high output power and have high power-added efficiency (PAE). Furthermore, the power amplifier may be required to have good performance and high PAE even with a low battery voltage.

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