

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TCL INDUSTRIES HOLDINGS CO. LTD,
Petitioner,

v.

ATI TECHNOLOGIES ULC,
Patent Owner.

IPR2024-00366
Patent 8,760,454 B2

Before JAMES P. CALVE, BRIAN J. McNAMARA, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

McNAMARA, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

On January 2, 2024, TCL Industries Holdings Co., Ltd. (“Petitioner”) filed a petition, Paper 1 (“Petition” or “Pet.”), to institute an *inter partes* review (“IPR”) of claims 1–11 (the “challenged claims”) of U.S. Patent No. 8,760,454 B2 (“the ’454 patent”). 35 U.S.C. § 311. Petitioner also filed a Motion For Joinder with *Realtek Semiconductor Corp. v. ATI Technologies ULC*, IPR2023-00922 (“the Realtek IPR”). Paper 3 (“Motion For Joinder” or “Mot.”).¹ Petitioner’s Motion for Joinder states that Petition relies on the identical arguments and grounds and the same expert opinions and testimony as those asserted by the petitioner (Realtek) in the petition filed in the Realtek IPR. Mot. 3–4. We instituted trial in the Realtek IPR on December 1, 2023 and entered a scheduling Order in the Realtek IPR on December 5, 2023. Realtek IPR, Papers 10, 11.

In this proceeding, a Notice of Filing Date Accorded was entered on January 18, 2024, setting the due date for Patent Owner’s Preliminary Response to April 18, 2024. On February 2, 2024, ATI Technologies ULC (“Patent Owner”) filed a Response to Petitioner’s Motion for Joinder in which Patent Owner did not object to the joinder, given Petitioner’s agreement to assume an understudy role in a joined proceeding. Paper 7. We recognize Patent Owner’s acquiescence to joinder as effectively acknowledging that the challenges asserted by TCL are identical to those in

¹ In this Decision, citations to papers in the Realtek IPR are preceded with “Realtek IPR,” e.g., the Decision to Institute in the Realtek IPR is cited as “Realtek IPR Dec. to Inst.,” the Preliminary Response in the Realtek IPR is cited as “Realtek IPR Prelim. Resp.,” and the Petition in the Realtek IPR is cited as “Realtek IPR Pet.”

the Realtek IPR and waiving the filing of a Preliminary Response in this proceeding. Therefore, we proceed to this Decision.

We have jurisdiction under 35 U.S.C. § 6. This Decision on Institution is issued pursuant to 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted unless the information presented in the Petition “shows that there is a reasonable likelihood that the Petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

A decision to institute under § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). In addition, per Board practice, if the Board institutes trial, it will institute “on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” *See* 37 C.F.R. § 42.108(a).

Having considered the arguments and the associated evidence presented in the Petition and in the Realtek IPR, we institute *inter partes* review.

II. REAL PARTIES IN INTEREST

The Petition identifies TCL Industries Holdings Co., Ltd. (“TCL”) and TCL Industries Holdings (H.K.) Limited; TCL Electronics Holdings Limited; TCL Technology Group Corporation; TTE Corporation; TCL Holdings (BVI) Limited; TCL King Electrical Appliances (Huizhou) Co., Ltd.; Shenzhen TCL New Technology Co., Ltd.; TCL MOKA International Limited; TCL Smart Device (Vietnam) Co., Ltd., Manufacturas Avanzadas SA de CV; TCL Electronics Mexico, S de RL de CV; TCL Overseas Marketing Ltd., and TTE Technology, Inc. as real parties-in-interest. Pet. 1–2.

Patent Owner identifies ATI Technologies ULC as its real party-in-interest. Paper 5, 1.

III. RELATED MATTERS

Petitioner and Patent Owner identify the following proceedings as ones that may affect or be affected by a decision in this proceeding:

Advanced Micro Devices, Inc. et al v. TCL Industries Holdings Co., Ltd. et al, C.A. No. 2:22-cv-00134 (E.D. Tex. May 5, 2022) (“the AMD Litigation”); and

Certain Graphics Systems, Components Thereof, and Digital Televisions Containing the Same, Inv. No. 337-TA-1318 (“the ITC Investigation”);

Realtek Semiconductor Corp. v. ATI Technologies ULC, No. IPR2023- 00922;

Pet. 2–3, Paper 5, 1. Petitioner states that “the asserted patent claims were terminated by Order No. 10 on July 14, 2022 upon motion of ATI” and “the target date for completion of the investigation is January 23, 2024.” Pet. 2–3. AMD litigation is stayed pending final resolution of the ITC Investigation, expected on or about November 7, 2023. *Id.*

IV. THE '454 PATENT

The '454 patent concerns a graphics processing architecture that employs a single or “unified shader,” i.e., a shader that “is configured to perform both vertex and pixel operations.” Ex. 1001, 1:32–33, 3:10–12. The '454 patent explains that, in computer graphics, complex shapes and structures are formed by sampling, interconnecting, and rendering simpler objects, e.g., triangles or other suitable polygons, called primitives. *Id.* at 1:38–42. Primitives are formed by interconnecting individual pixels. *Id.* at 1:42–43. In order to render an object for display, based on the location of the pixels within the primitives and the primitives’ orientation with respect

to the desired shape, color and texture are applied to the individual pixels that make up the shape to be generated. *Id.* at 1:42–48.

Graphics processors that interconnect the primitives and apply color and textures to the generated shapes include a series of shaders that specify how a final image is drawn on a display device and its corresponding attributes. *Id.* at 1:49–54. A shader receives shape data in object space (x , y , z), color information, texture information, luminance information, and viewing angle information and produces output data (x' , y' , z') that represent the object with texture and other appearance properties applied to it. *Id.* at 1:55–60. Figs. 2A, 2B of the '454 patent show vertex data V_x , V_y , V_z of a cube applied to a vertex shader that outputs angularly oriented vertices V_x' , V_y' , V_z' and appearance attributes of a corresponding cube. *Id.* at 2:3–7. A pixel shader operating at the pixel level provides the color value associated with each pixel of a rendered object. *Id.* at 2:8–12.

According to the '454 patent, in a conventional graphics processor, the vertex shader and pixel shader are “separate components that are configured to perform only a single transformation or operation. Ex. 1001, 2:12–15. “In conventional graphics processors, the vertex shader and the pixel shader are juxtaposed in a sequential, pipelined fashion, with the vertex shader being positioned before and operating on vertex data before the pixel shader can operate on individual pixel data.” *Id.* at 2:25–29, 4:5–7. Figure 3, reproduced below, is a schematic of such a conventional shader.

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