

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLKSWAGEN GROUP OF AMERICA, INC., AND
PORSCHE CARS NORTH AMERICA, INC.,
Petitioner,

v.

YECHEZKAL EVAN SPERO
Patent Owner.

U.S. Patent No. 11,208,029 to Spero

Case No.: IPR2022-01586*

**PATENT OWNER'S DEMONSTRATIVE EXHIBIT 2027 AND UPDATED
EXHIBIT LIST**

* Porsche Cars North America, Inc., which filed a petition in IPR2023-01122, has been joined as a party to this proceeding.

Updated List of Exhibits

Exhibit No.	Description
2001	Declaration of Matthew A. Turk, PhD
2002	Curriculum Vitae of Matthew A. Turk, PhD
2003	Petition challenging U.S. Patent No. 11,208,029, <i>Unified Patents, LLC v. Torchlight Technologies LLC</i> IPR2022-01500, Paper 1, September 22, 2022
2004	U.S. 6,406,172 to Harbers
2005	Comparison of Harbers (Ex. 1011) to Harbers '172 (Ex. 2004)
2006	Supplemental Declaration of Matthew A. Turk, PhD
2007	Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on August 2, 2023
2008	Petition challenging U.S. Patent No. 9,995,551, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> IPR2023-00318, Paper 2, December 22, 2022
2009	Declaration of Dr. Jiao, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> IPR2023-00318, Exhibit 1003.
2010	Jianzhong Jiao and Ben Wang, "Etendue Concern for Automotive Headlamp Using LEDs," SPIE Proceedings Vol. 5187, (January 2004) (Available at https://www.spiedigitallibrary.org/conference-proceedings-of-spie/5187/0000/Etendue-concerns-for-automotive-headlamps-using-white-LEDs/10.1117/12.504363.short)
2011	Michael Bass, <i>Handbook of Optics</i> 3 RD Edition Volume II, (McGraw-Hill, 2010) (Available at https://www.worldcat.org/title/555545456)
2012	Ben Wang and Jianzhong Jiao "Studies for Headlamp Optical Design Using LEDs," SAE Technical Paper Series 2004-01-0434, (March 2004) (Available at https://www.sae.org/publications/technical-papers/content/2004-01-0434/)
2013	Ben Wang and Jianzhong Jiao "Optical Transform Limitations in Headlamp Photometric Performance," SAE Technical Paper Series 2005-01-0861, (April 2005) (Available at https://www.sae.org/publications/technical-papers/content/2005-01-0861/)
2014	LEDs Magazine "Major contributors in LED and lighting standards have led the SSL revolution," Jianzhong Jiao February 2018. (Available at https://www.ledsmagazine.com/manufacturing-services-

Exhibit No.	Description
	testing/standards/article/16695802/major-contributors-in-led-and-lighting-standards-have-led-the-ssl-revolution-magazine)
2015	Jianzhong Jiao and Ben Wang “High-Efficiency Reflector Optics for LED Forward Lighting,” SPIE Proceedings Vol. 6670, (September 2007) (Available at https://www.spiedigitallibrary.org/conference-proceedings-of-spie/6670/66700M/High-efficiency-reflector-optics-for-LED-automotive-forward-lighting/10.1117/12.730524.short)
2016	Navigant Consulting “Energy Saving Estimates of Light Emitting Diodes in Niche Lighting Applications” Building Technologies Program Office of Energy Efficiency and Renewable Energy U.S. Department of Energy (September 2008) (Available at Energy Savings Estimates of Light Emitting Diodes in Niche Lighting Applications (Technical Report) OSTI.GOV.)
2017	PCT Publication No. WO 86/05147 to Flaaten
2018	Condensed Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on December 11, 2023
2019	<i>Intentionally left blank.</i>
2020	<i>Intentionally left blank.</i>
2021	<i>Intentionally left blank.</i>
2022	<i>Intentionally left blank.</i>
2023	<i>Intentionally left blank.</i>
2024	<i>Intentionally left blank.</i>
2025	<i>Intentionally left blank.</i>
2026	<i>Intentionally left blank.</i>
2027	Patent Owner Objection Response Letter – Service Copy <i>Volkswagen Group of America, Inc., v. Yechezkal Evan Spero</i> IPR2022-01586, June 27, 2023
2028	Patent Owner Objection Response Letter – Service Copy <i>Volkswagen Group of America, Inc., v. Yechezkal Evan Spero</i> IPR2022-01586, September 7, 2023
2029	Patent Owner’s Demonstrative Exhibit IPR2022-01586

Patent Owner hereby files Demonstrative Exhibit 2029 to be used at the Oral Argument on Thursday, February 22, 2024.

Respectfully submitted,

/ Andrew B. Turner /
Andrew B. Turner (Reg. No. 63,121)
Sangeeta G. Shah (Reg. No. 38,614)
David S. Bir (Reg. No. 38,383)
Bernard Tomsa (Reg. No. 60,121)
Brooks Kushman P.C.
150 W. Second St., Suite 400N
Royal Oak, MI 48067-3846
(248) 358-4400

Attorneys for Yechezkal Evan Spero

Certificate of Service

The undersigned hereby certifies that on February 20, 2024, a complete and entire copy of **PATENT OWNER'S DEMONSTRATIVE EXHIBIT 2029 AND UPDATED EXHIBIT LIST**, was served via electronic mail by serving the correspondence email address of record as follows:

LEAD COUNSEL	BACK-UP COUNSEL
Michael D. Specht (Reg. No. 54,463) Sterne, Kessler, Goldstein & Fox P.L.L.C. 1101 K Street, N.W., 10 th Floor Washington D.C., 20005 Telephone: (202) 371-2600 Facsimile: (202) 371-2540 mspecht-PTAB@sternekessler.com	Jason A. Fitzsimmons (Reg. No. 65,367) Daniel E. Yonan (Reg. No. 53,812) Ian Soule (Reg. No. 74,290) Sterne, Kessler, Goldstein & Fox P.L.L.C. 1101 K Street, N.W., 10 th Floor Washington D.C., 20005 Telephone: (202) 371-2600 Facsimile: (202) 371-2540 jfitzsimmons-PTAB@sternekessler.com dyonan-PTAB@sternekessler.com isoule-PTAB@sternekessler.com PTAB@sternekessler.com Edgar H. Haug (Reg. No. 29,309) Robert E. Colletti (Reg. No. 76,417) Haug Partners LLP 745 Fifth Avenue New York, NY 10151 Telephone: (212) 588-0800 Facsimile: (212) 588-0500 ehaug@haugpartners.com; rcolletti@haugpartners.com; PTAB-Porsche@haugpartners.com

Respectfully submitted,

/ Andrew B. Turner /
Andrew B. Turner (Reg. No. 63,121)
Sangeeta G. Shah (Reg. No. 38,614)
David S. Bir (Reg. No. 38,383)

Bernard Tomsa (Reg. No. 60,121)
Brooks Kushman P.C.
150 W. Second St., Suite 400N
Royal Oak, MI 48067-3846
(248) 358-4400

Attorneys for Yechezkal Evan Spero