

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. 10,894,503 to Spero

Case No.: IPR2023-00197*

**PATENT OWNER'S DEMONSTRATIVE EXHIBIT 2029 AND UPDATED
EXHIBIT LIST**

* Porsche Cars North America, Inc., which filed a petition in IPR2023-01231, has been joined as a party to this proceeding.

Updated List of Exhibits

Exhibit No.	Description
2001	Declaration of Matthew A. Turk, Ph.D.
2002	Curriculum Vitae of Matthew A. Turk, Ph.D.
2003	Best Practices and FAQs for Filing Requests for Reexamination Compliant with 37 CFR 1.510 and 1.915, PTAB, May 2010
2004	Petition challenging U.S. Patent No. 10,894,503, Volkswagen Group of America, Inc. v. Yechezkal Evan Spero, IPR2023-00328, Paper 2, December 16, 2022
2005	Petition challenging U.S. Patent No. 10,894,503, Volkswagen Group of America, Inc. v. Yechezkal Evan Spero, IPR2023-00335, Paper 2, December 23, 2022
2006	Second Declaration of Matthew A. Turk, Ph.D.
2007	Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on August 2, 2023, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-01586
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

Exhibit No.	Description
	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	<i>Intentionally left blank.</i>
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	Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on August 23, 2023, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-00315, IPR2023-00318.
2019	<i>Intentionally left blank.</i>
2020	Michael Bass, <i>Handbook of Optics</i> 3 RD Edition Volume V, (McGraw-Hill, 2010) (Available at https://www.worldcat.org/title/557121959.)
2021	Texas Instruments/Digikey “How DLP Technology Works,” (Available at https://www.digikey.com/en/product-highlight/t/texas-instruments/dlp-technology.) (Accessed September 12, 2023.)
2022	Texas Instruments “Introduction to +/- 12 Degree Orthogonal Digital Micromirror Devices (DMDs) (Available at https://www.ti.com/lit/an/dlpa008b/dlpa008b.pdf?HQS=dis-dk-null-digikeymode-dsf-pf-null-ww&DCM=yes&distId=10) (Accessed September 12, 2023.)
2023	<i>Intentionally left blank.</i>
2024	<i>Intentionally left blank.</i>

Exhibit No.	Description
2025	Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on October 3, 2023, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-00197
2026	Condensed Transcript of Deposition of Jianzhong Jiao, Ph.D. taken on January 29, 2024, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-00197
2027	Patent Owner Objection Response Letter – Service Copy <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> IPR2023-00197, July 20, 2023
2028	Patent Owner Objection Response Letter – Service Copy <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> IPR2023-00197, November 2, 2023
2029	Patent Owner’s Demonstrative Exhibit IPR2023-00197

Patent Owner hereby files Demonstrative Exhibit 2029 to be used at the Oral Argument on Tuesday, April 16, 2024.

Dated: April 12, 2024

Respectfully submitted,

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Certificate of Service Pursuant to 37 C.F.R. § 42.6(e)

The undersigned hereby certifies that on April 12, 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 addresses of the following lead and back-up counsel as shown below:

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