

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. 9,955,551 to Spero

Case No.: IPR2023-00315*

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

* Porsche Cars North America, Inc., which filed a petition in IPR2023-01225, 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. 9,955,551, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-00318, Paper 1, December 22, 2022
2005	Petition challenging U.S. Patent No. 9,955,551, <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> , IPR2023-00336, Paper 1, December 22, 2022
2006	Second Declaration of Matthew A. Turk, PhD
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> , IPR2022-01586
2008	<i>Intentionally left blank</i>
2009	<i>Intentionally left blank</i>
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	<i>Intentionally left blank</i>
2015	Jianzhong Jiao and Ben Wang “High-Efficiency Reflector Optics for

Exhibit No.	Description
	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
2019	Alliance for Automotive Innovation website retrieved September 11, 2023 https://www.autosinnovate.org/about/our-members
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	Certified File Wrapper of Reexamination Application 90/014815 dated January 11, 2023
2024	<i>Intentionally left blank</i>
2025	Condensed Transcript of Deposition of Jianzhong, Ph.D. taken on January 9, 2024 <i>Volkswagen Group of America, Inc. v. Yechezkal Evan Spero</i> IPR2023-00315, IPR2023-00318
2026	<i>Intentionally left blank</i>
2027	2023-07-20 Letter to Fitzsimmons re objections to evidence
2028	2023-10-04 Letter to Fitzsimmons re objections to evidence
2029	Patent Owner’s Demonstrative Exhibit IPR2023-00315

Patent Owner hereby files Demonstrative Exhibit 2029 to be used at the Oral
Argument on Wednesday, March 20, 2024.

Respectfully submitted,

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Certificate of Service

The undersigned hereby certifies that on March 18, 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:

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