

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CARL ZEISS SMT GMBH

Petitioner

v.

NIKON CORPORATION

Patent Owner

Case IPR2013-00362

Patent 7,348,575

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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2. Nikon does not and cannot establish that a POSITA would not have had a reasonable expectation of success to modify Terasawa to implement immersion5

3. A POSITA in 2003 would have been able to use optical design software to modify the lens prescription in Terasawa to implement immersion to increase NA and/or DOF 11

4. There was motivation to modify Terasawa to increase DOF14

TABLE OF AUTHORITIES

<i>CFMT, Inc. v. Yieldup Intern. Corp.</i> , 349 F.3d 1333, 1383 (Fed. Cir. 2003)	8
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<i>Thorner v. Sony Computer Entertainment America LLC</i> , 669 F.3d 1362, 1365-7 (Fed. Cir. 2012).....	2
<i>Verizon Services Corp.</i> , 602 F.3d 1325, 1337 (Fed. Cir. 2010)	5

EXHIBITS

ZEISS 1001	U.S. Patent No. 7,348,575 (“the Omura Patent”)
ZEISS 1002	U.S. Patent No. 7,309,870 (“the Omura ’870 Patent”)
ZEISS 1003	Judgment, Paper No. 49, Interference No. 105, 678 (“the ’678 Judgment”)
ZEISS 1004	Judgment, Paper No. 157, Interference No. 105, 749 (“the ’749 Judgment”)
ZEISS 1005	Judgment, Paper No. 41, Interference No. 105, 753 (“the ’753 Judgment”)
ZEISS 1006	Judgment, Paper No. 291, Interference No. 105, 834 (“the ’834 Judgment”)
ZEISS 1007	PCT Patent Publication WO 02/035273 (“Takahashi PCT”)
ZEISS 1008	US Patent Application Publication No. US 2002/0024741 A1 (“Terasawa”)
ZEISS 1009	US Patent No. 5,825,043 (“Suwa”)
ZEISS 1010	M. Switkes and M. Rothschild, “Resolution Enhancement of 157 nm Lithography by Liquid Immersion,” Proc. SPIE Vol. 4691, pp. 460-465 (2002) (“Switkes”)
ZEISS 1011	Willi Ulrich et al., “The Development of Dioptric Projection Lenses for DUV Lithography,” Proc. SPIE Vol. 4832, pp. 158-169 (2002) (“Ulrich”)
ZEISS 1012	PCT Patent Publication WO 99/49504 (“Fukami JP”)
ZEISS 1013	Satori Asai et al., “Resolution Limit for Optical Lithography Using Polarized Light Illumination,” Jpn. J. Appl. Phys. Vol. 32, pp. 5863-5866 (1993) (“Asai”)
ZEISS 1014	European Patent Application Publication No. EP 1 336 887 A1 (“Takahashi”)
ZEISS 1015	Certified English translation of PCT Patent Publication WO 99/49504 (“Fukami”)
ZEISS 1016	Expert Declaration of Richard C. Juergens

ZEISS 1017	Wikipedia, "Optical Power," https://en.wikipedia.org/wiki/Optical_power (downloaded May 20, 2013)
ZEISS 1018	Willi Ulrich et al., "Trends in Optical Design of Projection Lenses for UV- and EUV-Lithography," Proc. SPIE Vol. 4146, pp. 13-24 (2000) ("Ulrich 2000")
ZEISS 1019	Eugene Hecht, <i>Optics</i> (4 th ed.), Addison Wesley (2002), pp. 171-173.
ZEISS 1020	Wikipedia, "Optical Axis," https://en.wikipedia.org/wiki/Optical_axis (downloaded May 20, 2013)
ZEISS 1021	File History Excerpts from U.S. Serial No. 11/266,288 ("the Omura Application")
ZEISS 1022	File History Excerpts from U.S. Serial No. 11/513,160 ("the Omura Continuation Application")
ZEISS 1023	Decision, Paper No. 40, Interference No. 105,753 (the "753 Decision")
ZEISS 1024	Wikipedia, "Refractive Index," http://en.wikipedia.org/wiki/Refractive_index (downloaded May 20, 2013)
ZEISS 1025	U.S. Patent No. 4,346,164 ("Tabarelli")
ZEISS 1026	Omura Reply 1, Paper No. 200, Interference No. 105,834
ZEISS 1027	European Patent Application Publication No. EP 1 069 448 B1 ("Suenaga")
ZEISS 1028	<i>Curriculum Vitae</i> of Richard C. Juergens
ZEISS 1029	CODE V sequence data
ZEISS 1030	US Patent Publication 2013/0329283 (cited as exhibit 1030 during May 7, 2014 cross-examination of Dr. Sasian)
ZEISS 1031	US Patent No. 5,650,877 (cited as exhibit 1031 during May 7, 2014 cross-examination of Dr. Sasian)
ZEISS 1032	United States Court of Appeals for the Federal Circuit decision in GE Lighting Solutions, LLC v. Agilent, Inc., Appeal No. 2013-1267 (May 1, 2014)

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