UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CARL ZEISS SMT GMBH
Petitioner

v.

NIKON CORPORATION
Patent Owner

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Case IPR2013-00362

Patent 7,348,575

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SECOND DECLARATION OF DR. JOSE SASIAN

Mail Stop "PATENT BOARD"
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

1.   My name is Jose Sasian. I have been retained by counsel for patent owner, Nikon Corporation ("Nikon"), in the above captioned matter.

2.   In my previous declaration dated March 6, 2014 (Ex. 2024), I provided my opinion as to the validity of U.S. Patent No. 7,348,575 (Ex. 1001). My background and qualifications are set forth in Section II of my March 6, 2014 declaration which is incorporated herein by reference.

3.   I have personal knowledge of the facts set forth below. All statements made herein are, to the best of my knowledge, true.

4.   In preparing each of the exhibits described below, I used the professional lens design software Zemax 13 Release 2 SP1 Professional from Radiant–Zemax. I prepared the plots in Tucson, Arizona and in Kohala, Hawaii.

I.   Exhibit 2036 - "RMS Wavefront Error (157 nm waves) for Example 2 (Table 2, Fig. 5) in Terasawa"

5.   On May 31, 2014 and June 22, 2014, I plotted the RMS wavefront error and distortion for the projection optical system labeled as Example 2 and shown in Figure 5 of Terasawa (Ex. 1008). To prepare the plots, I used the lens specification data corresponding to Example 2 that is provided in Table 2 of Terasawa.

6.   Exhibit 2036 demonstrates plots of RMS performance versus field position (Ex. 2036 1)[1] and distortion (Ex. 2036 2) based on the data in Table 2 of Terasawa. The exhibit also includes the lens prescription data corresponding to Table 2 that was used by the Zemax software.

7.   To prepare the plots, I replicated the data provided in Table 2 of Terasawa into a Zemax lens file. I then inputted the field of view and object numerical aperture as taught by Terasawa. Next, I produced the plots shown in Exhibit 2036 using standard plotting commands in Zemax.

8.   A true and accurate copy of the results of my analysis is shown in Nikon's Exhibit 2036 (submitted herewith as Attachment A) entitled "RMS Wavefront Error (157 nm waves) for Example 2 (Table 2, Fig. 5) in Terasawa." Because I am the author/creator of Exhibit 2036, I am familiar with the facts shown therein.

II.   Exhibit 2037 - "RMS Wavefront Error (157 nm waves) for Exhibit 1042"

9.   On May 31, 2014 and on June 22, 2014, I plotted the RMS wavefront error and distortion corresponding to Experiment II as described in Zeiss Exhibit 1042.

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[1] Unless indicated otherwise, citations are to original page or column number.

10.   Exhibit 2037 shows plots RMS wavefront error versus field position (Ex. 2037 1) and distortion (Ex. 2037 2) based on the CODE V lens layout from Exhibit 1042 corresponding to Experiment II of Mr. Juergens' supplemental declaration. The exhibit also includes the lens prescription data corresponding to Exhibit 1042 that was input into the Zemax software.

11.   To prepare the plots, I replicated the lens data from Exhibit 1042 into a Zemax lens file. I then produced the plots shown in Exhibit 2037 using standard plotting commands in Zemax.

12.   From the RMS wavefront error plot, I immediately recognized that – for the two field points at 40 mm and 65 mm which were used by Mr. Juergens – the RMS wavefront error was the same as the results reported in the supplemental declaration of Mr. Richard Juergens (Ex. 1036). This served as a check that the data input was correct, otherwise I would not expect to obtain agreement for those two field points.

13.   A true and accurate copy of the results of my plots are shown in Nikon's Exhibit 2037 (submitted herewith as Attachment B) entitled "RMS Wavefront Error (157 nm waves) for Exhibit 1042." Because I am the author/creator of Exhibit 2037, I am familiar with the facts shown therein.

III.   Exhibit 2038 - "RMS Wavefront Error (157 nm waves) for Exhibit 1047"

14.   On May 31, 2014 and on June 22, 2014, I plotted the RMS wavefront error and distortion corresponding to Experiment III as described in Zeiss Exhibit 1047.

15.   Exhibit 2038 shows plots of the RMS wavefront error versus field position (Ex. 2038 1), distortion (Ex. 2038 2), and a beam footprint (Ex. 2038 3) based on the CODE V lens layout corresponding to Experiment III from Exhibit 1047. The exhibit also includes the lens prescription data corresponding to Exhibit 1047 that was input into the Zemax software.

16.   To prepare the plots, I replicated the lens data from Exhibit 1047 into a Zemax lens file. I then produced the plots shown in Exhibit 2038 using standard plotting commands in Zemax.

17.   From the RMS wavefront error plot, I immediately recognized that – for two field points at 40 mm and 65 mm that were used by Mr. Juergens – the RMS wavefront error was the same with the results reported in the supplemental declaration of Mr. Richard Juergens (Ex. 1036). This served as a check that the data input was correct, otherwise I would not expect to obtain agreement for those two field points.

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