| Claim | Claim Element | Comments |
|-------|--|--|
| 1. | A laser driven light source comprising: | Representative infringing products from Petitioners incl YieldStar system and other products that incorporate su containing a laser-driven light source or Qioptiq's laser ("Qioptiq LS1"). On information and belief, ASML's Y and YieldStar T-250D ("YieldStar 250") include a laser source. |
| | | |
| | | YieldStar S-250D |
| | | The YieldStar 250 is a tool used in the semiconductor v process. On information and belief, YieldStar 250 syste Qioptiq laser-driven light sources to enable "very precise overlay and focus measurements per field needed to cal corrections to be applied on the scanners." (<i>See</i> YieldS Brochure (Jan. 20, 2014) (Ex. 2052); YieldStar S-250D (Jan. 20, 2014) (Ex. 2053).) |

| Infringem | Infringement Claim Chart U.S. Patent No. 8,969,841 – ASML YieldStar-Qioptiq Laser-D | | |
|-----------|---|---|--|
| Claim | Claim Element | Comments | |
| | | On information and belief, RnD-ISAN developed a laser source for Qioptiq that was eventually incorporated into use in the ASML YieldStar system. (RnD-ISAN LLC, ' Plasma Broadband Light Source" at 6 ("RnD-ISAN") (E ASML's Customer Magazine, 2014 at 18 (Ex. 2005) ("[7] lamp used in the YieldStar 200C has been replaced with delivers substantially more light and improved illuminat characteristics.").) | |
| | | RnD ISAN carried out a research work on request of ASML, which results a special technology yield Star | |
| | | (RnD-ISAN at 6 (Ex. 2039) (incorporation of light sour and YieldStar system).) | |
| | | The Qioptiq LS1 is a laser-driven light source. (RnD-IS (Ex. 2039) ("Laser Pumped Plasma Broadband Light So | |

Г

| Claim | Claim Element | Comments |
|-------|---|---|
| | | (RnD-ISAN at 2 (Ex. 2039) ("Schematic of a laser p |
| | | broadband light source").) |
| | a sealed pressurized | The Qioptiq LS1 includes a sealed chamber containing g |
| | chamber having a gas at a | pressurized to greater than 10 atmospheres during opera |
| | pressure greater than 10 | at 2 (Ex. 2039), element #6 ("Xe high pressure lamp"); |
| | atmospheres during operation; | medium is Xenon at high (~20 atm) pressure.").) |
| | an ignition source for ionizing the gas within the chamber; and | The Qioptiq LS1 includes an RF ignition source for ioni the chamber. (RnD-ISAN at 2 (Ex. 2039), element #5 (unit").) |
| | an at least substantially | The Qioptiq LS1 includes a continuous wave laser that p |
| | continuous laser for | substantially continuous energy at 980 nm, within the ra |
| | providing energy within a | nm, to sustain a plasma within the chamber. (RnD-ISAN |
| | wavelength range from about 700 nm to 2000 nm | element #3 ("Diode laser with optical fiber output (980n ("Continuous wave laser beam is focused onto initial ga |
| | to the ionized gas to | volume sufficient to maintain plasma state.").) |
| | sustain a plasma within the | |
| | chamber to produce a | The sustained plasma produces plasma-generated light h |

| Claim | Claim Element | Comments |
|-------|-------------------------------|---|
| Claim | plasma-generated light | greater than 50 nm. (RnD-ISAN at 3 (Ex. 2039) ("Laser |
| | having wavelengths greater | broadband light source XWS emits light in 200-800nm i |
| | than 50 nm, | spectral brightness.").) |
| | the chamber further | The chamber of the Qioptiq LS1 includes a region of ma |
| | comprising a region of | transparent to a portion of the plasma-generated light an |
| | material that is transparent | plasma-generated light to exit the chamber. (RnD-ISAN |
| | to at least a portion of the | element #6 ("Xe high-pressure lamp," depicting light en |
| | plasma-generated light and | lamp); 4 (depicting light emitted from the lamp).) |
| | that allows said portion of | |
| | the plasma-generated light | |
| | to exit the chamber. | |
| 2. | The laser driven light source | As discussed in detail above, representative infringing p |
| | of claim 1, comprising | Petitioners meet all of the limitations of claim 1. |
| | at least one optical element | The Qioptiq LS1 includes a laser light filter optical elem |
| | for modifying a property of | property of the laser energy provided to the ionized gas. |
| | the laser energy provided | also includes focusing optics that modify a property of the |
| | to the ionized gas. | provided to the ionized gas. (RnD-ISAN at 2 (Ex. 2039) |
| | | ("Laser light filter"); element #4 ("Focusing optics" also |
| | | of laser).) |
| 3. | The laser driven light source | As discussed in detail above, representative infringing p |
| | of claim 2 wherein | Petitioners meet all of the limitations of claim 2. |
| | the optical element is a | The Qioptiq LS1 includes focusing optics that focus the |
| | lens or mirror focusing the | region of the ionized gas. (RnD-ISAN at 2 (Ex. 2039), e |
| | laser energy into a region | ("Focusing optics," also depicted in path of laser); 1 ("C |

| Infringement Claim Chart U.S. Patent No. 8,969,841 – ASML YieldStar-Qioptiq Laser-Di | | | |
|--|-------------------------------|--|--|
| Claim | Claim Element | Comments | |
| | of the ionized gas. | laser beam is focused onto initial gas breakdown volume maintain plasma state.").) | |
| 7. | The laser driven light source | As discussed in detail above, representative infringing p | |
| | of claim 1 wherein | Petitioners meet all of the limitations of claim 1. | |
| | the ignition source is | The Qioptiq LS1 includes an RF ignition source for ioni | |
| | selected from the group | the chamber. (RnD-ISAN at 2 (Ex. 2039), element #5 (| |
| | consisting of electrodes, an | unit").) | |
| | ultraviolet ignition source, | | |
| | a capacitive ignition | | |
| | source, an inductive | | |
| | ignition source, a flash | | |
| | lamp, a pulsed laser, and a | | |
| | pulsed lamp. | | |

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