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(71) Applicant: **NEWSOUTH INNOVATIONS PTY LIMITED** [AU/AU]; Rupert Myers Building, Level 2,

Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU).

(72) Inventors: **KUNZ, Oliver**; c/- NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **REY, Germain Antoine**; c/- NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **TRUPKE, Thorsten**; c/- NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU). **JUHL, Mattias**; c/- NewSouth Innovations Pty Limited, Rupert Myers Building, Level 2, Gate 14, Barker Street, UNSW Sydney, New South Wales 2052 (AU).

(74) Agent: **FB RICE PTY LTD**; Level 23, 44 Market St, Sydney, New South Wales 2000 (AU).

(54) Title: OUTDOOR PHOTOLUMINESCENCE IMAGING OF PHOTOVOLTAIC ARRAYS VIA OPTICAL STRING MODULATION

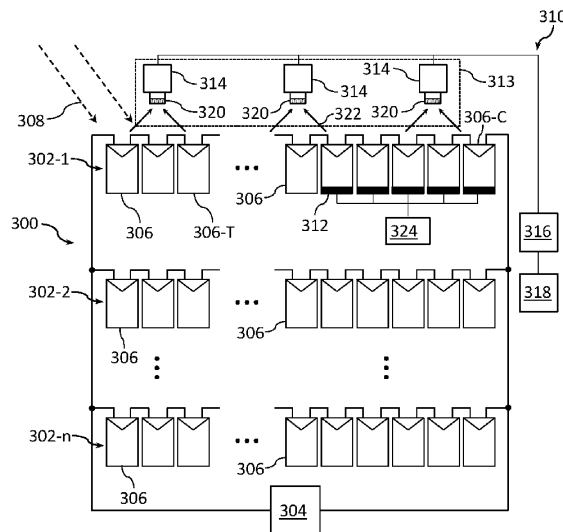


Fig. 3

(57) Abstract: Methods and apparatus are presented for determining data indicative of a photoluminescence (PL) response to solar irradiation from at least one photovoltaic module in a first string of series-connected modules that is one of a plurality of parallel-connected strings connected to an operating inverter. Two or more signals from a module in the first string are measured while modulating its operating point by modulating the illumination intensity incident on selected portions of one or more modules in that string. Measured signals are processed to determine data indicative of a PL response from the module, discriminating the response from the much brighter reflected sunlight. Importantly, this approach has an extended effect whereby modulating the illumination incident on a subset of modules in a string affects the operating point (PL intensity) of all modules in the string, offering increased throughput, reduced cost and improved versatility for outdoor PL imaging of photovoltaic arrays.

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