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*[Continued on next page]*

- (54) Title:** METHODS FOR OBTAINING STABILIZED OUTPUT BEAMS FROM FREQUENCY CONVERTED LIGHT SOURCES AND FREQUENCY CONVERTED LIGHT SOURCES UTILIZING THE SAME

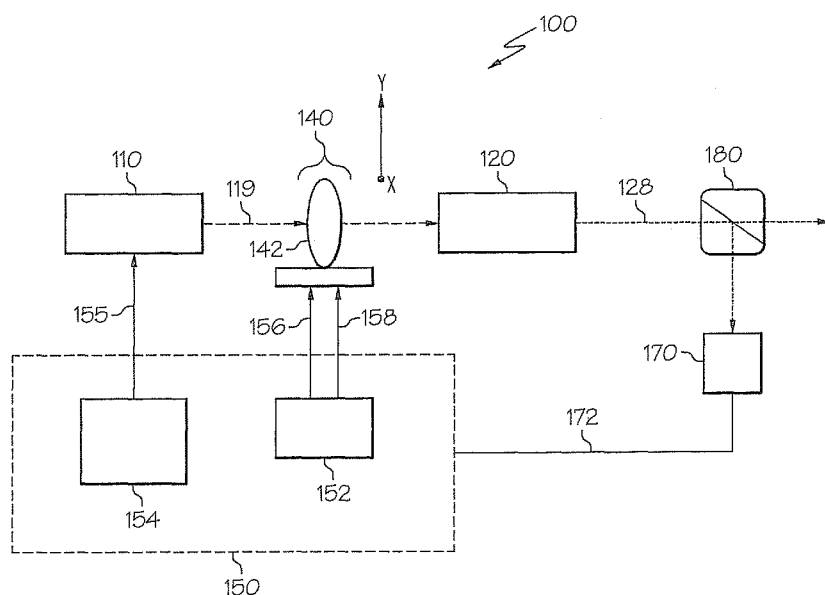


FIG. 1

- (57) Abstract:** A method for operating a frequency converted light source includes sweeping a wavelength control signal of a semiconductor laser over an initial signal range and measuring an optical power of an output beam emitted from a wavelength conversion device coupled to the semiconductor laser. The wavelength control signal of the semiconductor laser may then be swept over at least one truncated signal range and the optical power of the resulting output beam is measured. The at least one truncated signal range may be centered on a point corresponding to a maximum power of the output beam of the sweep of the wavelength control signal over the preceding signal range. An operational signal range for the wavelength control signal is determined such that a midpoint of the operational signal range corresponds to the maximum optical power of the resulting output beam of the sweep over the preceding signal range. Closed-loop feedback control of the wavelength control signal in the operational signal range may then be

initiated.



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## INTERNATIONAL SEARCH REPORT

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**PCT/US2010/037030****A. CLASSIFICATION OF SUBJECT MATTER*****H01S 3/10(2006.01)i, H01S 3/13(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

H01S 3/10; H01S 3/04; H01S 3/091

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: laser, frequency, wavelength, conversion, sweep

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                           | Relevant to claim No. |
|-----------|--------------------------------------------------------------------------------------------------------------|-----------------------|
| A         | US 2008-0089369 A1 (NINGYI LUO et al.) 17 April 2008<br>See figures 1-7 and paragraph 43 - paragraph 70.     | 1-14                  |
| A         | US 2002-0105997 A1 (TONG ZHANG) 08 August 2002<br>See figures 1-7c and paragraph 86 - paragraph 163.         | 1-14                  |
| A         | US 5832009 A1 (HIROKI KIKUCHI) 03 November 1998<br>See figures 1-4 and column 4, line 7 - column 9, line 27. | 1-14                  |

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&amp;" document member of the same patent family

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                | Publication<br>date                                  |
|-------------------------------------------|---------------------|---------------------------------------------------------------------------|------------------------------------------------------|
| US 2008-0089369 A1                        | 17.04.2008          | None                                                                      |                                                      |
| US 2002-0105997 A1                        | 08.08.2002          | US 2002-105997 A1<br>US 5515394 A1<br>US 6373868 B1<br>US 6873639 B2      | 08.08.2002<br>07.05.1996<br>16.04.2002<br>29.03.2005 |
| US 5832009 A1                             | 03.11.1998          | JP 09-121069 A<br>KR 10-1997-0013532 A<br>US 05832009A A<br>US 5991316 A1 | 06.05.1997<br>29.03.1997<br>03.11.1998<br>23.11.1999 |