

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CHP-016-PCT	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 15/63242	International filing date (<i>day/month/year</i>) 01 December 2015 (01.12.2015)	(Earliest) Priority Date (<i>day/month/year</i>)
Applicant CHIRP MICROSYSTEMS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- the international application in the language in which it was filed.
 a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. Certain claims were found unsearchable (see Box No. II).

3. Unity of invention is lacking (see Box No. III).

4. With regard to the title,

- the text is approved as submitted by the applicant.
 the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
 the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 3
 as suggested by the applicant.
 as selected by this Authority, because the applicant failed to suggest a figure.
 as selected by this Authority, because this figure better characterizes the invention.
- b. none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 15/63242

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B06B 1/06 (2016.01) CPC - H01L 41/053, H01L 41/081, B06B 1/0292, B06B 1/06, B06B 1/0651, B06B 2201/55, B06B 2201/51 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) IPC(8) - B06B 1/06 (2016.01) CPC - H01L 41/053, H01L 41/081, B06B 1/0292, B06B 1/06, B06B 1/0651, B06B 2201/55, B06B 2201/51 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched UPC- 310/334; 600/459; CPC- H01L 41/04*, 41/08*; G01N 29/2406; B06B*, B06B 1/06, 1/06*; G01H 11/*, G01H 11/06, G01H 11/08; G10K 11/*, G10K 11/002 (Search term limited; see below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWest (PGPB, USPT, EPAB, JPAB); Google; PatBase (All); Search Terms: Micro*, micromachin*, microfabric*, microelectr*, machin*, fabricat*, electr*, MEMS, MEM, ultraso*, sonic*, acoustic*, transducer, transmitter, emitter, MUT, capacitive, piezoelectric, cMUT, pMUT, size, circular*, circle%, ovoid, oval*, cylinder%, cylindrical*		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	WO 2009/096576 A2 (CANON) 06 August 2009 (06.08.2009) Entire document, especially Abstract, para[0001]- para[0003], para[0006]- para[0011], para[0030]- para[0036] and FIGS. 1-2.	1-18, 24, 26 ----- 19-23, 25
Y	CN 102430512 A (UNIV SOUTHEAST) 05 February 2012 (05.02.2012) Abstract, FIG. 2	19-23
Y	(DAUSCH et al.) Theory and Operation of 2-D Array Piezoelectric Micromachined Ultrasound Transducers. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 55, no. 11 November 2008	25
A	US 2012/0010538 A1 (DIRKSEN) 12 January 2012 (12.01.2012) Entire document, especially Abstract, para[0025].	1-26
A	WO 2015/112453 A1 (UNIV CALIFORNIA) 30 July 2015 (30.07.2015) Entire document.	1-26
A	US 2014/0286509 A1 (SCIUTTI et al.) 25 September 2014 (25.09.2014) Entire document.	1-26
A	US 2013/0034257 A1 (DOLLER et al.) 07 February 2013 (07.02.2013) Entire document.	1-26
A	US 2010/0207485 A1 (DIRKSEN et al.) 19 August 2010 (19.08.2010) Entire document.	1-26
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
Date of the actual completion of the international search 18 March 2016 (18.03.2016)		Date of mailing of the international search report 07 APR 2016
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774