

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PCT150153CN	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/CN2015/090757	International filing date ( <i>day/month/year</i> ) 25 September 2015 (25.09.2015)	Priority date ( <i>day/month/year</i> ) 09 March 2015 (09.03.2015)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant BOE TECHNOLOGY GROUP CO., LTD.			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<p align="center">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report 12 September 2017 (12.09.2017)</p>
	<p>Authorized officer</p> <p align="center"><b>Lingfei Bai</b></p> <p>e-mail: pct.team2@wipo.int</p>

**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>15.12.2015</b>
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Applicant's or agent's file reference <b>PCT150153CN</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/CN2015/090757</b>	International filing date (day/month/year) <b>25.09.2015</b>	Priority date (day/month/year) <b>09.03.2015</b>
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International Patent Classification (IPC) or both national classification and IPC  
**G02F 1/29 (2006.01) i**

Applicant  
**BOE TECHNOLOGY GROUP CO., LTD.**

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/CN	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/090757

**Box No. I**      **Basis of this opinion**

1. With regard to the **language**, this opinion has been established 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)).
2.  This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)
    - on paper
    - in electronic form
  - b. (time)
    - in the international application as filed
    - together with the international application in electronic form
    - subsequently to this Authority for the purposes of search
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/090757

**Box No. II**      **Priority**

1.  The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2.  This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:  
[1] Upon verification, the right of priority is valid.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/CN2015/090757
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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1. Statement									
Novelty (N)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-11</td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="text-align: right; padding: 2px;">NO</td> </tr> </table>	Claims	1-11	YES	Claims	None	NO	
Claims	1-11	YES							
Claims	None	NO							
Inventive step (IS)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-11</td> <td style="text-align: right; padding: 2px;">NO</td> </tr> </table>	Claims	None	YES	Claims	1-11	NO	
Claims	None	YES							
Claims	1-11	NO							
Industrial applicability (IA)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-11</td> <td style="width: 10%; text-align: right; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="text-align: right; padding: 2px;">NO</td> </tr> </table>	Claims	1-11	YES	Claims	None	NO	
Claims	1-11	YES							
Claims	None	NO							

2. Citations and explanations:	
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[1]	(1) Reference is made to the following documents:
[2]	D1: CN 102681244 A (19 September 2012)
[3]	D2: CN 103984163 A (13 August 2014)
[4]	D3: CN 103472650 A (25 December 2013)
[5]	(2) Novelty:
[6]	<p>Claim 1 relates to a display device. D1 discloses a display device (see the description, pages 3-9, and figures 1-11), as shown in figures 1 and 2, comprising a plurality of sub-pixels R, G and B, which have the same number and are substantially the same in size, and are arranged two-dimensionally, wherein the sub-pixels adjacent to each other are different in colour in every direction (see the description, paragraphs [0032] and [0033], and figures 1 and 2); in an x-axis direction, a plurality of columns of pixels are included, and the upper edges in odd and even columns are respectively aligned and are longitudinally staggered with a pre-set length which is less than the longitudinal length of a sub-pixel; a liquid crystal layer is enclosed</p>

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/090757

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

between a pair of transparent substrates which are oppositely arranged and provided with a pixel electrode and an opposing electrode (the liquid crystal layer and the pair of transparent substrates forming a grating); and when a voltage is applied between pattern electrodes and the opposing electrode, light pass-through sections (equivalent to a light-transmitting region) each stripe-shaped correspondingly to the shape of the pattern electrodes are formed at fixed intervals (i.e. electrodes of the two substrates generating an electric field to control the deflection of liquid crystal molecules) (see the description, paragraphs [0030] and [0037] - [0042]). D1 does not explicitly disclose that first and second substrates respectively comprise a plurality of electrodes arranged in parallel and at intervals in the longitudinal and transverse directions; the width of an electrode of the first substrate is less than the transverse length of a sub-pixel; the distance between various electrodes is equal to the transverse width of a black matrix between adjacent sub-pixels; and all the electrodes of the first substrate are configured to correspond to a part of a region of sub-pixels in the odd columns or a part of a region of sub-pixels in the even columns of a pixel array. Therefore, claim 1 and its dependent claims 2-10, and claim 11, relating to a method for controlling a grating of the device as claimed in any one of claims 1-10, are also novel and comply with the requirements of PCT Article 33(2).

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/090757

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
[7]	(3) Inventive step:
[8]	With regard to the above-mentioned distinguishing features, D2 discloses a liquid crystal grating, and a first substrate and a second substrate respectively comprising a plurality of electrodes arranged in parallel and at intervals in the longitudinal and transverse directions (see the description, paragraphs [0037] - [0039] and [0046], and figure 2). In addition, the width of an electrode of a first substrate being less than the transverse length of a sub-pixel, a distance between various electrodes being equal to the transverse width of a black matrix between adjacent sub-pixels, and all electrodes of the first substrate being configured to correspond to a part of a region of sub-pixels in odd columns or a part of a region of sub-pixels in even columns of a pixel array are merely conventional choices in the art. Therefore, claim 1 does not involve an inventive step and does not comply with the requirements of PCT Article 33(3).
[9]	The additional technical features of claims 2, 3, 9 and 10 are disclosed in D1 (see the description, paragraphs [0032] and [0033], and figures 1 and 2). Therefore, said claims do not involve an inventive step and do not comply with the requirements of PCT Article 33(3).
[10]	Most of the features of claim 5 and method claim 11 are disclosed in D1 and D2 or are conventional choices in the art. D3 discloses a voltage applying method for a corresponding electrode in a liquid crystal lens (see the description,

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/090757

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

paragraphs [0045] - [0049] and [0075], and figures 2-4). It would have readily occurred to a person skilled in the art to apply the voltage applying method in D3 to the display device in D1.

Therefore, said claims do not involve an inventive step and do not comply with the requirements of PCT Article 33(3).

[11] The additional technical features of claims 4 and 6-8 are conventional choices in the art.

Therefore, said claims do not involve an inventive step and do not comply with the requirements of PCT Article 33(3).

[12] (3) Industrial applicability:

[13] Claims 1-11 are industrially applicable and comply with PCT Article 33(4).