

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
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 Dongcheng District., Beijing

TEE&HOWE INTELLECTUAL PROPERTY
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PCT

WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 11 September 2019	
Applicant's or agent's file reference UP-180324-02	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/CN2018/117873	International filing date (day/month/year) 28 November 2018
Priority date (day/month/year)	
International Patent Classification (IPC) or both national classification and IPC H01L 27/32(2006.01)i; H01L 51/52(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 and 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/ National Intellectual Property Administration, PRC China 6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088	Date of completion of this opinion 05 September 2019	Authorized officer ZHONG, Yu
Facsimile No. (86—10) 62019451	Telephone No. 86-10-62085552	

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Box No. I Basis of the 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:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
 - on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
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 forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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Box No. V **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	<u>1-20</u>	YES
	Claims	<u>None</u>	NO
Inventive step (IS)	Claims	<u>4, 5, 7, 8, 18-20</u>	YES
	Claims	<u>1-3, 6, 9-17</u>	NO
Industrial applicability (IA)	Claims	<u>1-20</u>	YES
	Claims	<u>None</u>	NO

2. Citations and explanations :

[1] D1:CN104733501 A, 24 June 2015 (24.06.2015)

[2] 1.Novelty

[3] D1 is regarded as the closest prior art to the present application. D1 (description, paragraphs [0059]-[0118] and figures 1-8b) discloses a pixel structure, a display apparatus and a manufacturing method thereof. The pixel structure includes a substrate 1, a first insulation layer 3 on the substrate 1, and a luminescent unit on a side of the first insulation layer 3 away from the substrate 1. The luminescent unit comprises a first electrode layer 41, a second electrode layer 43 and a luminescent layer 42 disposed between the first and second electrode layers 41, 43. A pixel defining layer 5 is configured for defining a pixel aperture and the luminescent unit is disposed in the pixel aperture. Light 21 emitted from the luminescent layer 42 passes through the pixel defining layer 5. A second insulation layer 61 located around the periphery of the pixel defining layer 5 is disposed on the first insulation layer 3. A groove 62 is formed between the second insulation layer 61 and the pixel defining layer 5. A reflective layer 63 is disposed on a side of the groove 62 located on the second insulation layer 61 surrounding a periphery of the luminescent unit, and configured to reflect the light 21 passing through the pixel defining layer 5. A reflective surface of the reflective layer 63 is designed as an inclined, an arcuate or a parabolic surface so as to enable the light 21 to exit from the emitting surface of the pixel structure. The second insulation layer 61 has a height relative to a main surface of the substrate 1 greater than a height of the first insulation layer 3 relative to the main surface of the substrate 1. D1 also discloses a manufacturing method of the pixel structure, therefore the steps of forming corresponding elements or units are apparent from an inherent or implicit teaching of D1.

[4] D1 does not disclose the first insulation layer is an insulating island, and the second insulation layer is formed on the base substrate directly, surrounding and apart from the insulating island by the groove.

[5] Therefore, the independent claims 1, 14, 15, and the corresponding dependent claims 2-13, 16-20 are novel in the sense of PCT Article 33(2).

[6] 2.Inventive Step

[7] The pixel structure of D1 can solve the same problem as the present application , and if the groove 62 of D1 is formed deeper to the surface of the substrate 1, the first insulation layer 3 would be separated as two insulating portions apart. One insulating portion under the luminescent unit is regarded as an insulating island, the other insulating portion is regarded as forming on the base substrate directly, surrounding and apart from the insulating island together with the second insulation layer 61. Because the depth of the groove 62 can be controlled and it is a common technical means for the skilled person in the art, claims 1, 14 and 15 do not appear to involve an inventive step in the sense of Article 33(3) PCT.

[8] The additional features of claims 2, 3, 6, 13 and 16 are disclosed by D1, and the additional features of claims 9-12, 17 are common technical means. Therefore, claims 2, 3, 6, 9-13, 16 and 17 do not appear to involve an inventive step in the sense of Article 33(3) PCT.

[9] A person skilled in the art would not be motivated or prompted to arrive at the technical solution of claims 4, 5, 7, 8, 18-20 by substitution, combination or modification of the prior art. Therefore, the independent claims 4, 5, 7, 8, 18-20 and the corresponding dependent claims 13 involve an inventive step in the sense of PCT Article 33(3).

[10] 3.Industrial Applicability

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Box No. V

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

[11] Claims 1-20 are industrially applicable in the sense of PCT Article 33(4) because the subject matter can be made or used in industry.

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Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

<u>Application No. Patent No.</u>	<u>Publication date (day/month/year)</u>	<u>Filing date (day/month/year)</u>	<u>Priority date (valid claim) (day/month/year)</u>
CN 109037493 A	18 December 2018	27 July 2018	

2. Non-written disclosures (Rules 43bis.1 and 70.9)

<u>Kind of non-written disclosure</u>	<u>Date of non-written disclosure (day/month/year)</u>	<u>Date of written disclosure referring to non-written disclosure (day/month/year)</u>
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