

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 9170186WO01	FOR FURTHER ACTION		See item 4 below
International application No. PCT/JP2017/016919	International filing date (<i>day/month/year</i>) 28 April 2017 (28.04.2017)	Priority date (<i>day/month/year</i>) 23 August 2016 (23.08.2016)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant MURATA MANUFACTURING 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 6 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 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 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
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																						
<input 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																						

<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 26 February 2019 (26.02.2019)</p>
	<p>Authorized officer</p> <p align="center">Yukari Nakamura</p> <p>e-mail: pct.team7@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)	08.08.2017
-------------------------------------	-------------------

Applicant's or agent's file reference 9170186W001	FOR FURTHER ACTION See paragraph 2 below
---	--

International application No. PCT/JP2017/016919	International filing date (day/month/year) 28.04.2017	Priority date (day/month/year) 23.08.2016
---	---	---

International Patent Classification (IPC) or both national classification and IPC
H05K3/46 (2006.01) i

Applicant
MURATA MANUFACTURING 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/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/016919

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 43bis.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 13ter.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 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.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:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/JP2017/016919
--

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		
1. Statement			
Novelty (N)	Claims	1-8	YES
	Claims		NO
Inventive step (IS)	Claims	1-8	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO
2. Citations and explanations:			
<p>Document 1: WO 2014/188830 A1 (MURATA MFG. CO., LTD.) 27 November 2014, entire text, all drawings & US 2015/0294754 A1, entire text, all drawings & CN 104822737 A</p> <p>Document 2: WO 2014/109139 A1 (MURATA MFG. CO., LTD.) 17 July 2014, entire text, all drawings & US 2015/0305150 A1, entire text, all drawings & CN 104919909 A</p> <p>Document 3: WO 2014/103530 A1 (MURATA MFG. CO., LTD.) 03 July 2014, entire text, all drawings & US 2014/0264737 A1, entire text, all drawings & CN 104081885 A</p> <p>Document 4: JP 2013-123031 A (DENSO CORP.) 20 June 2013, entire text, all drawings & US 2013/0114212 A1, entire text, all drawings & DE 102012110536 A & CN 103096617 A & TW 201337952 A</p> <p style="margin-top: 20px;">The invention as in claims 1-3 is not disclosed in any of the documents cited in the ISR, and is thus novel and involves an inventive step.</p>			

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/016919

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

In particular, none of the documents discloses a resin multilayer substrate comprising: a laminate resulting from laying resin layers having a thermoplastic resin as a main material; a component built into the laminate, or a first conductor foil, or a cavity provided so as to delve in the lamination direction of the laminate; and one or more conductor patterns disposed at gaps between resin layers, wherein a resin portion, derived from a resin paste having a thermoplastic resin powder as a main material and at which there remains substantially no liquid component of the resin paste, is disposed along a portion, of a contour line of a first-type conductor pattern (pattern, from among conductor patterns, that is positioned overlapping the component, the first conductor foil or the cavity, when at least part of the contour line is viewed from above in the lamination direction of the laminate), so as to be adjacent to the outer side of the first-type conductor pattern along a portion overlapping the component, the first conductor foil or the cavity, nor would such a feature be obvious to a person skilled in the art.

The invention as in claims 4-6 is not disclosed in any of the documents cited in the ISR, and is thus novel and involves an inventive step.

In particular, none of the documents discloses a resin multilayer substrate comprising: a laminate resulting from laying resin layers having a thermoplastic resin as a main material; one or more conductor patterns disposed at gaps between resin layers, in the interior of the laminate; and one or more conductor via joining portions each having a contour line of a joining surface,

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/016919

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

when viewed from above in the lamination direction of the laminate, and being portions at which conductor vias, disposed so as to run through any one of the plurality of resin layers in the interior of the laminate, are joined to each other contiguously along the lamination direction of the laminate, the resin multilayer substrate further comprising: a component built into the laminate, or a first conductor foil, or a cavity provided so as to delve in the lamination direction of the laminate; wherein a resin portion, derived from a resin paste having a thermoplastic resin powder as a main material and at which there remains substantially no liquid component of the resin paste, is disposed along a portion, of a contour line of a conductor via first-type joining portion (portion, from among joining portions of conductor vias, that is positioned overlapping the component, the first conductor foil or the cavity, when at least part of the contour line is viewed from above in the lamination direction of the laminate) so as to be adjacent to the outer side of the conductor via first-type joining portion, along a portion overlapping the component, the first conductor foil or the cavity, nor would such a feature be obvious to a person skilled in the art.

The invention as in claims 7 and 8 is not disclosed in any of the documents cited in the ISR, and is thus novel and involves an inventive step.