# Evaluation Report of Environmental Directives Compliance

| | | |
|---|---|---|
| Product Name | : | See Page 3 |
| Product Model | : | LUNA2000-5KW-C0<br>LUNA2000-5-E0<br>LUNA2000-5KW-NHC0<br>LUNA2000-5-NHE0 |
| Report Number | : | SYBH(G)06950162 |

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd.)

No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C

Tel: +86 769 23830808 Fax: +86 769 23837628

 Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd 

# Notice

1. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named “Global Compliance and Testing Center of Huawei Technologies Co., Ltd”, the both names have coexisted since 2009.

2. The evaluation report is invalid if not marked with the signatures of the persons responsible for preparing and approving the report.

3. The evaluation report is invalid if there is any evidence of erasure and/or falsification.

4. The evaluation report is based on the completeness and adequacy of the data and information submitted by the applicant to Reliability Lab. Reliability Lab has not verified and will not be responsible for the accuracy or their true representation of the data and information submitted by applicant. The applicant shall make its/his/her own judgment as to whether the information provided in this evaluation report is sufficient for its/his/her purposes.

5. Content of the evaluation report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

| | | |
|---|---|---|
| **Applicant** | : | Huawei Technologies Co., Ltd. |
| **Address** | : | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |
| **Product Name** | : | 1) Energy Storage, Power Module, LUNA2000-5KW-C0, Including Flooring Bracket;<br>2) Energy Storage, Battery Module, LUNA2000-5-E0, 5kWh;<br>3) Energy Storage, Power Module, LUNA2000-5KW-NHC0, Including Flooring Bracket;<br>4) Energy Storage, Battery Module, LUNA2000-5-NHE0, 5kWh |
| **Product Model** | : | LUNA2000-5KW-C0, LUNA2000-5-E0<br>LUNA2000-5KW-NHC0, LUNA2000-5-NHE0 |
| **Date of Receipt Sample** | : | 2020-09-16 |
| **Start Date of Evaluation** | : | 2020-09-16 |
| **End Date of Evaluation** | : | 2020-09-19 |
| **Evaluation Result** | : | |

| Regulation | Conclusion |
|---|---|
| **2011/65/EU& (EU) 2015/863 (EU RoHS) & other RoHS directives in other countries** | **Complies** |
| **Regulation (EC) No 1907/2006 (REACH) SVHC for Product** | **See Clause 5.4** |
| **94/62/EC& 2004/12/EC for Packaging Material** | **Complies** |
| **2012/19/EU (WEEE) ANNEX V & ANNEX IX** | **Complies** |
| **Huawei Requirements of Restricted Substances (Including Annex XVII of REACH)** | **Complies** |
| **2006/66/EC& 2013/56/EU on batteries and accumulators** | **Complies** |

| | | | |
|---|---|---|---|
| **Approved by Senior Engineer:** | 2020-09-21 | Zhang Jiaojiao | Zhang Jiaojiao |
| | Date | Name | Signature |
| **Prepared by:** | 2020-09-21 | Li Yeshuang | Li Yeshuang |
| | Date | Name | Signature |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

**Modification Record**

| No. | Last Report No. | Modification Description |
|---|---|---|
| 1 | N/A | First report |

**Remark:** This report is evaluated based on the documents and declarations of material environmental compliance provided by the applicant.


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

**List of abbreviations**

| No. | Abbreviations | Full spelling |
|---|---|---|
| 1 | RoHS | the Restriction of the use of certain hazardous substances in electrical and electronic equipment |
| 2 | REACH | REGULATION concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals |
| 3 | SVHC | Substances of Very High Concern |
| 4 | WEEE | Waste Electrical and Electronic Equipment |
| 5 | MCD | Material Composition Declaration |
| 6 | BOM | Bill of Material |
| 7 | PDM | Product Data Management |
| 8 | ppm | parts per million |
| 9 | NA | Not Applicable |
| 10 | ND | Not detected (Less than the method limits for the test lab) |
| 11 | 3R | Recovery, Reuse and Recycling |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

# Contents

1 GENERAL INFORMATION ..... 7
1.1 APPLIED STANDARD ..... 7
1.2 EVALUATION LOCATION ..... 7
1.3 EVALUATION ENVIRONMENT CONDITION ..... 7
2 PRODUCT PHOTO ..... 8
3 REVIEW OF DOCUMENTS OF CONFORMITY ..... 8
4 ROHS EVALUATION OF PRODUCT ..... 9
4.1 EVALUATION OF MATERIALS / SAMPLES ..... 9
4.2 TEST ITEMS AND METHODS OF THE HIGH RISK MATERIALS ..... 10
4.3 ROHS REQUIREMENTS ..... 10
5 REACH SVHC EVALUATION ..... 11
5.1 SVHCS IN A CONCENTRATION ABOVE 0.1% (W/W) OF ARTICLE ..... 11
5.2 LIST OF SVHC ..... 11
5.3 REQUIREMENTS OF SVHC ..... 11
5.4 CONCLUSION ..... 12
6 EVALUATION OF PACKAGING MATERIAL ..... 12
6.1 REQUIREMENTS OF PACKAGING MATERIAL FOR RESTRICTED SUBSTANCE ..... 12
6.2 EVALUATION RESULTS OF PACKAGING MATERIAL ..... 12
7 EVALUATION OF BATTERY ..... 13
7.1 REQUIREMENTS OF BATTERY FOR RESTRICTED SUBSTANCE ..... 13
7.2 EVALUATION RESULTS OF BATTERY ..... 13
8 EVALUATION OF OTHER RESTRICTED SUBSTANCE ..... 13
8.1 HUAWEI'S REQUIREMENTS FOR RESTRICTED SUBSTANCE ..... 13
8.2 EVALUATION OF MATERIALS / SAMPLES ..... 17
8.3 CONCLUSION ..... 17
9 WEEE EVALUATION ..... 17
9.1 WEEE 3R (RECOVERY, RECYCLING & REUSE) EVALUATION ..... 17
9.2 WEEE LABEL EVALUATION ..... 23
10 COMPLIANCE RESULTS IN OTHER COUNTRIES ..... 24
10.1 RESTRICTED SUBSTANCES INFORMATION IN PRODUCT ..... 24
10.2 RESTRICTED SUBSTANCES COMPLIANCE RESULTS IN OTHER COUNTRIES ..... 25
ANNEX Ⅰ CONFIGURATION OF PRODUCT ..... 27


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

# 1 General Information

## 1.1 Applied Standard

| | | |
|---|---|---|
| Applied Product Directives & Standards | : | 2011/65/EU& (EU) 2015/863 (EU RoHS) & EN50581<br>Regulation (EC) No 1907/2006 (EU REACH)<br>2006/66/EC& 2013/56/EU (Battery Directive)<br>94/62/EC (Packaging Directive)<br>Huawei's Requirements for Restricted Substances<br>China RoHS<br>2012/19/EU (WEEE)<br>Similar RoHS Directives in other countries |
| Test Methods | : | See detailed evaluation contents |

## 1.2 Evaluation Location

| | | |
|---|---|---|
| Evaluation Location | : | Reliability Laboratory of Huawei Technologies Co., Ltd. |
| Address | : | No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C |

## 1.3 Evaluation Environment Condition

| | | |
|---|---|---|
| Ambient Temperature | : | 15~35℃ |
| Relative Humidity | : | 25%~75% |
| Atmospheric Pressure | : | 86~106KPa |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

## 2 Product Photo



LUNA2000-5KW-C0 & LUNA2000-5KW-NHC0



LUNA2000-5-E0 & LUNA2000-5-NHE0

## 3 Review of Documents of Conformity

According to European Standard of EN50581: 2012, the manufacturer should collect supplier declarations and/or contractual agreements, and/or material declarations and/or analytical test results from all suppliers. As per Huawei's requirements of material compliance, all suppliers should sign *Quality and Environment Assurance Agreement* and *Indemnity Agreement for Quality and Environment Problems of Supplier's Materials* and/or provide *Declaration of Non-use of Restricted Substances* which declare suppliers' products meet Huawei's environmental requirement, including RoHS requirements, REACH requirements, packaging requirements, battery requirements and other Huawei's special requirements, and provide MCD (Material Composition Declaration) and the test reports of high-risk materials to prove that their products comply with the requirements of Huawei.

In the process of environmental compliance evaluation, all suppliers' documents were evaluated according to Huawei's requirements, and all results were described in table below.

Table 1 Evaluation Results of Documents of Conformity

| Material Descriptions | Reason of Non-compliance | Conclusion |
|---|---|---|
| All Materials | NA | **Complies** |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

Remark: NA = Not Applicable

# 4 RoHS Evaluation of Product

## 4.1 Evaluation of Materials / Samples

According to the European Standard of EN50581: 2012, the high-risk materials should be tested during the RoHS certification process and all materials (the non-risk materials and high-risk materials) were evaluated according to Huawei's requirements (See clause 3). As per the Directive 2011/65/EU and their amendments (RoHS Directive) and other RoHS directives in other countries, the evaluation results were summarized in table below based on the product's Bill of Material (BOM) and tested results provided by the applicant.

(1) High Risk Materials / Samples Information

Table 2 Evaluation results of high risk materials / samples for RoHS

| **Item** | **Evaluation of High Risk Materials / Samples[#1]** | | |
|---|---|---|---|
| High Risk Material Information | Amount | | |
| | High Risk Samples in Product[#2] | Tested Samples | Failed Samples |
| LUNA2000-5KW-C0<br>LUNA2000-5KW-NHC0 | 28 | 28 | 0 |
| LUNA2000-5-E0<br>LUNA2000-5-NHE0 | 20 | 20 | 0 |
| Result[#3] | **Complies** | | |

Remark:

#1 : Evaluation results were based on the configuration of the product (See Annex Ⅰ).

#2 : As per Huawei's "*Product RoHS Certification Guide" , "Annex A in IEC62321"* and *"Annex D in GB/T26572"*, the high risk materials include solder (Pb), plating layer (Pb, Cr(VI)), plastic colorant (Pb, Cd and Cr(VI)), ABS (Acrylonitrile Butadiene Styrene) plastic (PBDE), PVC (Polyvinyl Chloride) plastic (Pb, Cd), PP (Polypropylene) plastic (PBDE), PET (Polyester Terephthalate) plastic (PBDE), PBT (Polybutylene Terephthalate) plastic (PBDE), coatings (Pb), cable jacketing and other soft plastics (phthalate substances such as DEHP, BBP, DBP and DIBP) and alloy (Pb, Cd and Cr(VI)).

#3 : The results based on the evaluation results and the exemptions in EU RoHS Directives, and all exemptions applied to the evaluated product materials were taken as "Pass" for the evaluation results.

(2) Information of Failed Sample

From the part fulfil RoHS attribute in PDM System (pdm.huawei.com), MCD (Material Composition Declaration) in Huawei InSight System (insight.huawei.com) and the test report submitted by suppliers and applicant, the contents of restricted substances in EU RoHS are listed in table below.

Table 3 Contents of Restricted Substance in Failed Sample

| **Material Descriptions** | | **Content of Restricted Substances (ppm)** |
|---|---|---|

| | Report No. | Cd | Pb | Hg | Cr(VI) | PBB | PBDE | DEHP | DBP | BBP | DIBP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - | - | - | - |

Remark:

ppm = parts per million

### 4.2 Test Items and Methods of the High Risk Materials

As per the information provided by the applicant, the high risk materials were tested by the following methods.

Table 4 Test Methods of High Risk Materials for RoHS

| Testing Item | Test Method |
|---|---|
| Cadmium (Cd) | With reference to EN/IEC 62321-5, by acid digestion and determined by ICP-OES |
| Lead (Pb) | |
| Mercury (Hg) | With reference to EN/IEC 62321-4, by acid digestion and determined by ICP-OES |
| Hexavalent chromium [Cr(VI)] | With reference to EN/IEC 62321-7, by solvent extraction and determined by UV-VIS |
| Polybrominated biphenyls (PBB) | With reference to EN/IEC 62321-6, by solvent extraction and determined by GC/MS |
| Polybrominated biphenyl ethers (PBDE) | |
| Bis(2-ethylhexyl) phthalate (DEHP) | With reference to EN/IEC 62321-8, by solvent extraction and determined by GC/MS |
| Butyl benzyl phthalate (BBP) | |
| Dibutyl phthalate (DBP) | |
| Diisobutyl phthalate (DIBP) | |

### 4.3 RoHS Requirements

The limits of restricted substances were quoted from 2011/65/EU& (EU) 2015/863 for homogeneous material.

Table 5 Limits of RoHS Restricted Substances

| Restricted Substances | Limits |
|---|---|
| Cadmium (Cd) | 0.01% (100 ppm) |
| Lead (Pb) | 0.1% (1000 ppm) |
| Mercury (Hg) | 0.1% (1000 ppm) |
| Hexavalent chromium [Cr(VI)] | 0.1% (1000 ppm) |
| Polybrominated Biphenyls (PBB) | 0.1% (1000 ppm) |
| Polybrominated Diphenyl Ethers (PBDE) | 0.1% (1000 ppm) |

| | |
|---|---|
| Bis(2-ethylhexyl) phthalate (DEHP) | 0.1% (1000 ppm) |
| Butyl benzyl phthalate (BBP) | 0.1% (1000 ppm) |
| Dibutyl phthalate (DBP) | 0.1% (1000 ppm) |
| Diisobutyl phthalate (DIBP) | 0.1% (1000 ppm) |

# 5 REACH SVHC Evaluation

## 5.1 SVHCs in a concentration above 0.1% (w/w) of article

From the supplier declarations and/or contractual agreements, the MCD (Material Composition Declaration) in Huawei InSight System (insight.huawei.com) and the test report submitted by suppliers and the applicant, the SVHC (Substances of Very High Concern) in a concentration above 0.1% (w/w) of "article" are listed as below.

Table 6 SVHCs in a concentration above 0.1% weight by weight

| SVHCs in a concentration above 0.1% weight by weight | CAS No. |
|---|---|
| DIBORON TRIOXIDE | 1303-86-2 |
| LEAD (Pb) | 7439-92-1 |
| 4,4'-METHYLENEDIANILINE | 101-77-9 |
| BORACIC ACID | 10043-35-3 |
| 1-METHYL-2-PYRROLIDONE | 872-50-4 |

Remark:

1. The results were based on the configuration of the product (See Annex Ⅰ).
2. "Article" in product means an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition (According to Regulation EC No. 1907/2006). The limit of 0.1% (w/w) applies to every article in the product. The results were calculated to an article defined by decision C-106/14 of EuGH of 10th September 2015.

## 5.2 List of SVHC

According to Regulation EC No 1907/2006 (REACH) and ECHA (European Chemical Agency) website, the SVHC (Substances of very high concern) are listed on the website (https://echa.europa.eu/candidate-list-table).

## 5.3 Requirements of SVHC

5.3.1 In accordance with Regulation (EC) No 1907/2006, any EU manufacturer or importer of articles shall notify ECHA, in accordance with paragraph 2 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per manufacturer or importer per year; and (b) the substance in the Candidate List is present in those articles above a

concentration of 0.1% weight by weight (w/w).The following information has to be submitted for notification:

a. Identification of the registrant and the substance,

b. Classification and labeling of the substance,

c. Description of use of the substance and the article,

d. Registration number, if available,

e. Tonnage range.

5.3.2 As per article 33 of regulation (EC) No 1907/2006 (REACH), recipients of product must be provided with sufficient information, as a minimum, the name of that substance, to allow safe use if the concentration of any SVHC is above 0.1% (w/w). A product meets the requirement of article 33(1) by default when no SVHC exceeds 0.1% (w/w).

### 5.4 Conclusion

According to specified evaluation processes in this report, SVHC (Substances of Very High Concern) in candidate list promulgated by ECHA (European Chemical Agency), which are defined in article 57 of regulation (EC) No 1907/2006 (REACH regulation), are listed in table 6.

## 6 Evaluation of Packaging Material

### 6.1 Requirements of packaging material for restricted substance

(a) According to EU Packaging Directive (94/62/EC), the sum of contents of restricted substances ((Cd, Pb, Hg and Cr (VI)) in packaging material (such as packaging, instruction, guideline and other packaging materials in medium) should be less than 100ppm.

(b) According to REACH regulation ((EC) No 1907/2006), the packaging considered as an independent article should comply with the SVHC requirements, and if the content for individual SVHC more than 0.1% (w/w) should be meet the requirement described in clause 5.3.

### 6.2 Evaluation Results of Packaging Material

From the supplier declarations and/or contractual agreements and the MCD (Material Composition Declaration) in Huawei InSight System (insight.huawei.com) and the test report submitted by suppliers and applicant, the contents of restricted and notification substances for Packaging Directive and SVHC (List described in clause 5.2) in packaging material are listed in table below.

Table 7 Contents of Restricted / Notification Substance in Packaging Material

| Material Descriptions | Report No. | Content of Restricted Substances (ppm) | | | | | SVHC contents (ppm) |
|---|---|---|---|---|---|---|---|
| | | Cd | Pb | Hg | Cr(VI) | Sum | Each SVHC |
| All materials | - | ND | ND | ND | ND | <100 | - |
| SVHC in Article | | - | - | - | - | - | <1000 |
| Conclusion | | **Complies** | | | | | **Don't Need to Notify** |

Remark:

ppm = parts per million

ND = Not detected (Less than the method limits for the test lab)

# 7 Evaluation of Battery

## 7.1 Requirements of battery for restricted substance

(a) According to EU Battery Directive (2006/66/EC& 2013/56/EU), EU shall prohibit the placing on the market of a) all batteries or accumulators, whether or not incorporated into appliances, that contain more than 0,0005 % of mercury by weight; and that contain more than 0,002 % of cadmium by weight. All batteries containing more than 0,004 % lead, shall be marked with the chemical symbol for the metal concerned: Pb.

(b) According to EU REACH Regulation ((EC) No 1907/2006), the battery considered as an independent article should comply with the SVHC requirements, and if the content for individual SVHC more than 0.1% (w/w) should be meet the requirement described in clause 5.3.

## 7.2 Evaluation Results of Battery

From the supplier declarations and/or contractual agreements and the MCD (Material Composition Declaration) in Huawei InSight System (insight.huawei.com) and the test report submitted by suppliers and applicant, the contents of restricted and notification substances for battery directive and SVHC (List is described in clause 5.2) in battery are listed in table below.

Table 8 Contents of Restricted / Notification Substance in Battery

| Material Descriptions | Report No. | Content of Restricted Substances (ppm) | | | SVHC contents (ppm) |
|---|---|---|---|---|---|
| | | Cd | Pb | Hg | Each SVHC |
| Battery | - | ND | ND | ND | <1000 |
| Conclusion | | **Complies** | | | **Don't Need to Notify** |

Remark:

ppm = parts per million

ND = Not detected (Less than the method limits for the test lab)

# 8 Evaluation of Other Restricted Substance

## 8.1 Huawei's requirements for restricted substance

As per Huawei's requirements based on the laws, regulations ((including Annex XVII of Regulation (EC) No 1907/2006 (REACH)), decrees and directives for restricted substances in the world, the following substances were restricted to be added in Huawei's product:

Table 9 List of Huawei Restricted Substances

| Chemical | CAS No. | Threshold | Scope |
|---|---|---|---|
| Lead and its compounds (Pb) | - | 300 ppm | Cable jacketing |

| | | | |
|---|---|---|---|
| | | 40 ppm | Battery |
| | | 100 ppm (Cd + Cr (VI) + Hg + Pb) | Packaging |
| | | 1000 ppm | All other materials (except all exemptions in 2011/65/EU and its amendments) |
| Hexavalent Chromium and its compounds ($Cr^{6+}$) | - | 1000 ppm | Non-metallic (except leather, packaging) |
| | | 0.1μg/$cm^2$ (negative) | Metal plating |
| | | 100 ppm (Cd + Cr (VI) + Hg + Pb) | Packaging |
| | | ND(<3 ppm) | Leather |
| Cadmium and its compounds (Cd) | - | 20 ppm | Battery |
| | | 100 ppm (Cd + Cr (VI) + Hg + Pb) | Packaging |
| | | 100 ppm | All other materials (except batteries and packaging) |
| Mercury and its compounds (Hg) | - | 5 ppm | Battery |
| | | 100 ppm (Cd + Cr (VI) + Hg + Pb) | Packaging |
| | | 1000 ppm | All other materials (except batteries and packaging) |
| Polybrominated Biphenyls (PBBs) | - | 1000 ppm | All materials |
| Polybrominated Diphenyl Ethers (PBDEs) | - | 1000 ppm | All materials |
| Diethylhexyl phthalate (DEHP) | 117-81-7 | 1000 ppm | All materials |
| Butylbenzyl phthalate (BBP) | 85-68-7 | 1000 ppm | All materials |
| Dibutyl phthalate (DBP) | 84-74-2 | 1000 ppm | All materials |
| Diisobutyl phthalate (DIBP) | 84-69-5 | 1000 ppm | All materials |
| Short Chlorinated Paraffins (SCCPs, $C_{10-13}$) | - | 1500ppm | All materials |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

| | | | |
|---|---|---|---|
| PFOS & PFOA and their salts | - | 1000 ppm | All materials (except coatings) |
| | | 1 μg/m$^2$ | coatings |
| Hexachlorobutadiene | 87-68-3 | Forbidden | All materials |
| Monomethyl – tetrachlorodiphenylmethane (Ugilec 141) | 76253-60-6 | Forbidden | All materials |
| Monomethyl-dichloro-diphenyl methane (Ugilec 121, Ugilec 21) | 81161-70-8 | Forbidden | All materials |
| Monomethyl - dibromo - diphenylmethane, bromobenzyl toluene (DBBT) | 99688-47-8 | Forbidden | All materials |
| Dimethyl fumarate (DMF) | 624-49-7 | 0.1 ppm | All materials |
| Asbestos fiber | - | Forbidden | All materials |
| Organotin compounds | - | total content < 1000 ppm | All materials |
| Benzene | 71-43-2 | Not intentionally added | All materials |
| Polychlorinated biphenyls and their derivatives (PCBs) | - | Not intentionally added | All materials |
| Polychlorinated terphenyls and their derivatives (PCTs) | - | 50 ppm | All materials |
| Polychlorinated naphthalenes (PCNs) | 70776-03-3 and so on | Forbidden | All materials |
| Hexabromocyclododecane (HBCDD) | 25637-99-4, 3194-55-6, 134237-50-6 134237-51-7 134237-52-8 | 100ppm | All materials |


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

| | | | |
|---|---|---|---|
| 2- (2'-hydroxy-3 ', 5'-di-tert-butylphenyl) -benzotriazole | 3846-71-7 | Not intentionally added | Adhesives, pigments, printing inks |
| Radioactive material | - | ND | All materials |
| Azo dyes | - | 30 ppm | Dye or colorant for plastics, textiles, leather products |
| Carcinogenic and allergic dyes | - | Not intentionally added | Textiles, leather products |
| Nickel and its compounds | - | 0.5 μg/cm$^2$/ week | Direct and long contact with the skin of the electroplating, corrosion-resistant alloy materials |
| Pentachlorophenol and its salts and esters | 87-86-5 and so on | 5 ppm | Textiles, leather products |
| Nonylphenol (NP) Nonylphenol polyoxyethylene ether (NPEO) | 25154-52-3 9016-45-9 | 100 ppm | Textiles, leather products |
| Tris (2,3-dibromopropyl) phosphate (TRIS) | 126-72-7 | Forbidden | Textiles |
| Tri- (aziridinyl) phosphine oxide (TEPA) | 545-55-1 | Forbidden | Textiles |
| Formaldehyde | 50-00-0 | 75 ppm | Suitable for textiles, leather products, such as mobile phone sets |
| | | 0.1 ml/m$^3$ | Indoor wooden product |
| | | 5 mg/L | Wooden packaging、agglutinant |
| Ozone Depleting Chemicals (ODS) | - | ND | All materials |
| Arsenic and its compounds | - | Not intentionally added | Wooden packaging material |
| Creosote, naphthalene oil, anthracene oil, tar acid, alkaline low temperature tar etc. | - | Not intentionally added | Wooden packaging material |
| The restrictions on the use of pesticides in packaging materials or transport materials | - | Not intentionally added | Packaging materials, transport materials |
| Polycyclic Aromatic Hydrocarbons (PAHs) | - | Single PAHs substance (BaP;BeP;Ba | Rubber or plastic material on the exterior or user contact surface of the product |

| | | | |
|---|---|---|---|
| | | A;BbFA;BjFA;BkFA;CHR;DBAhA;Benzo[g,h,i]perylene;Indeno[1,2,3-cd]pyrene)<1 ppm; | |

Remark:

The threshold level for intentionally added substances is 1000 ppm. When the content of a substance is higher than 1000 ppm, the substance will be deemed as intentionally added.

### 8.2 Evaluation of Materials / Samples

8.2.1 Document Evaluation

The evaluation of restricted substances was based on the statistic of material / sample from the history data, and the supplier was evaluated by the material categories, tested data, and so on. All suppliers should provide supplier declarations and/or sign contractual agreements to prove that their products complied with the requirements of Huawei (See clause 3).

8.2.2 Contents of Restricted Substances

As per the data from Huawei InSight System (insight.huawei.com), test report, MCD and supplier declarations provided by supplier, and Huawei's requirements of other restricted substances, the contents of restricted substances in material or sample are described in table below.

Table 10 Test Results of Huawei Restricted Substances

| Material Descriptions | Restricted Substances | Limit | Content in material / sample |
|---|---|---|---|
| All Materials | NA | NA | NA |

Remark: The evaluation results were based on the configuration of the product.

### 8.3 Conclusion

As per the results as above (Clause 8.2), the contents of restricted substances in submitted sample **comply with** the requirements of Huawei (including Annex XVII of Regulation (EC) No 1907/2006 (REACH)).

## 9 WEEE Evaluation

### 9.1 WEEE 3R (Recovery, Recycling & Reuse) Evaluation

9.1.1 Preparation of Product 3R Evaluation

According to Articles 8 and the Annex VII of Directive 2012/19/EU (WEEE), the product contains the following substances, preparations and components have to be removed and be selective treated in table below.

Table 11 Removed Components in Product

| Descriptions of Parts and Materials | Remarks | Quantity |
|---|---|---|

| | | |
|---|---|---|
| Capacitors / condensers (Containing PCB/PCT) | Polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) | 0 |
| Mercury-containing components | Such as mercury in lamps, display backlights, scanner lamps, switches, batteries | 0 |
| Batteries | All types including standard alkaline and lithium coin or button style batteries | 0 (LUNA2000-5KW-C0, LUNA2000-5KW-NHC0)<br>16 (LUNA2000-5-E0, LUNA2000-5-NHE0) |
| Printed Circuit Boards (PCB) or Printed Circuit Assemblies (PCBA) | Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters, | 5 |
| Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner | Include the cartridges, print heads, tubes, vent chambers, and service stations. | 0 |
| Plastics containing Brominated Flame Retardants | Brominated Flame Retardants include PBB, PBDE, HBCDD and so on | 0 |
| Components and waste containing asbestos | - | 0 |
| Cathode Ray Tubes (CRT) | - | 0 |
| Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC) | - | 0 |
| Gas Discharge Lamps | - | 0 |
| Liquid Crystal Displays (LCD) | With a surface greater than 100 sq cm, includes background illuminated displays with gas discharge lamps | 0 |
| External electrical cables and cords | - | 1 |
| Components, parts and materials containing refractory ceramic fibres | Described in Commission Directive 97/69/EC adapting to technical progress Council Directive 67/548/EEC relating to the classification, packaging and labeling of dangerous substances (2) | 0 |
| Components, parts and materials containing radioactive substances | With the exception of components that are below the exemption thresholds set in Article 3 of an Annex I to Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (3) | 0 |

| | | |
|---|---|---|
| Electrolyte capacitors containing substances of concern | Height > 25 mm, diameter > 25 mm or proportionately similar volume | 0 |

9.1.2 WEEE 3R Calculation of Product

As per the evaluation instructions of WEEE 3R and Huawei InSight Platform, according to IEC: TR merge 62635-62650 and actual 3R data of EEE products, the results of 3R were listed in table below:

Table 12 Results of WEEE 3R for Evaluated Product

a) LUNA2000-5KW-C0, LUNA2000-5KW-NHC0

| Material / Part Description | Weight Ratio (%) | Recoverability Rate (%) | Reuse and Recyclability Rate (%) | Weight Ratio of Recovery (%) | Weight Ratio of Reuse & Recycling (%) |
|---|---|---|---|---|---|
| **(1) Parts required selective treatment** | | | | | |
| Power Cable | 5.36% | 90% | 85% | 4.82% | 4.55% |
| Capacitor (PCB) | 0.00% | 90% | 85% | 0.00% | 0.00% |
| PCB (Printed Circuit Board) | 12.50% | 90% | 70% | 11.25% | 8.75% |
| BFR* Plastics | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Electrolyte Capacitors | 0.00% | 0% | 0% | 0.00% | 0.00% |
| **(2) Parts difficult to process** | | | | | |
| Compressors | 0.00% | 90% | 90% | 0.00% | 0.00% |
| AC Motor | 0.00% | 90% | 90% | 0.00% | 0.00% |
| Resin Motor | 0.00% | 0% | 0% | 0.00% | 0.00% |
| Transformer (MWO) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| **(3) Parts which go to separation process** | | | | | |
| ABS (Acrylonitrile Butadiene Styrene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PC (Polycarbonate) | 1.79% | 90% | 90% | 1.61% | 1.61% |
| PET (Polyethylene Terephthalate) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PP (Polypropylene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PS (Polystyrene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PBT (Polybutylene terephthalate) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PVC (Polyvinyl chloride) | 0.00% | 90% | 0% | 0.00% | 0.00% |
| POM (Polyoxymethylene) | 0.00% | 90% | 90.00% | 0.00% | 0.00% |
| EP (Epoxy Resin) | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Steel | 50.00% | 98% | 98% | 49.00% | 49.00% |

| | | | | | |
|---|---|---|---|---|---|
| Aluminum | 0.00% | 98% | 98% | 0.00% | 0.00% |
| Copper | 30.36% | 98% | 98% | 29.75% | 29.75% |
| Rubber | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Fiberglass | 0.00% | 80% | 80% | 0.00% | 0.00% |
| Others | 0.00% | 60% | 60% | 0.00% | 0.00% |
| Total | **100%** | **-** | **-** | 96.43% | 93.66% |

b) LUNA2000-5-E0, LUNA2000-5-NHE0

| Material / Part Description | Weight Ratio (%) | Recoverability Rate (%) | Reuse and Recyclability Rate (%) | Weight Ratio of Recovery (%) | Weight Ratio of Reuse & Recycling (%) |
|---|---|---|---|---|---|
| **(1) Parts required selective treatment** | | | | | |
| Power Cable | 1.39% | 90% | 85% | 1.25% | 1.18% |
| Capacitor (PCB) | 0.00% | 90% | 85% | 0.00% | 0.00% |
| PCB (Printed Circuit Board) | 8.33% | 90% | 70% | 7.50% | 5.83% |
| BFR* Plastics | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Electrolyte Capacitors | 0.00% | 0% | 0% | 0.00% | 0.00% |
| **(2) Parts difficult to process** | | | | | |
| Compressors | 0.00% | 90% | 90% | 0.00% | 0.00% |
| AC Motor | 0.00% | 90% | 90% | 0.00% | 0.00% |
| Resin Motor | 0.00% | 0% | 0% | 0.00% | 0.00% |
| Transformer (MWO) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| **(3) Parts which go to separation process** | | | | | |
| ABS (Acrylonitrile Butadiene Styrene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PC (Polycarbonate) | 1.39% | 90% | 90% | 1.25% | 1.25% |
| PET (Polyethylene Terephthalate) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PP (Polypropylene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PS (Polystyrene) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PBT (Polybutylene terephthalate) | 0.00% | 90% | 90% | 0.00% | 0.00% |
| PVC (Polyvinyl chloride) | 0.00% | 90% | 0% | 0.00% | 0.00% |
| POM (Polyoxymethylene) | 0.00% | 90% | 90.00% | 0.00% | 0.00% |
| EP (Epoxy Resin) | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Steel | 72.22% | 98% | 98% | 70.78% | 70.78% |
| Aluminum | 0.00% | 98% | 98% | 0.00% | 0.00% |

| | | | | | |
|---|---|---|---|---|---|
| Copper | 16.67% | 98% | 98% | 16.33% | 16.33% |
| Rubber | 0.00% | 90% | 0% | 0.00% | 0.00% |
| Fiberglass | 0.00% | 80% | 80% | 0.00% | 0.00% |
| Others | 0.00% | 60% | 60% | 0.00% | 0.00% |
| Total | **100%** | **-** | **-** | 97.11% | 95.38% |

Remarks：

3R = Recovery, Reuse and Recycling

WEEE = Waste Electrical and Electronic Equipment

BFR* = Brominated Flame Retardants

The evaluation results were based on the configuration of the product (See Annex Ⅰ).

### 9.1.3 WEEE 3R Conclusion

According to the evaluation process of WEEE 3R described above clause 9.1.2, the below conclusion can be gotten in table below.

Table 13 Conclusion of WEEE 3R for Evaluated Product

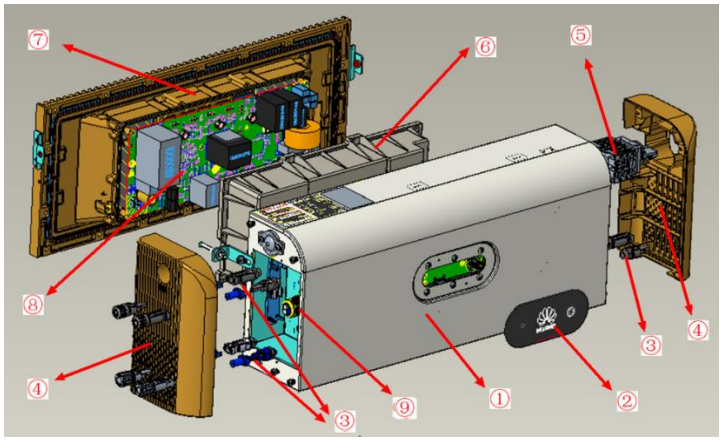
| Product Name | Power System | |
|---|---|---|
| Product Category | Large equipment | |
| Reuse/recycling/recovery (3R) | Recovery (%) | Reuse & Recycling (%) |
| Evaluation Result (LUNA2000-5KW-C0, LUNA2000-5KW-NHC0) | 96.43% | 93.66% |
| Evaluation Result (LUNA2000-5-E0, LUNA2000-5-NHE0) | 97.11% | 95.38% |
| 3R Requirements in WEEE for the Product | 85% | 80% |
| 3R Compliance for the Product | **Complies** | **Complies** |

### 9.1.4 Sketch Figure of Sample Disassembly

The disassembly procedure taken here is in accordance with the treatment requirements under WEEE Directive, and based on economic and efficiency factor, disassembly tools, and current state of the art of recycling and recovery technology. The detailed information for sample disassembly can be described as below in Figure 1.

Figure 1 Sketch Figure of Evaluated Sample Disassembly

a) LUNA2000-5KW-C0, LUNA2000-5KW-NHC0



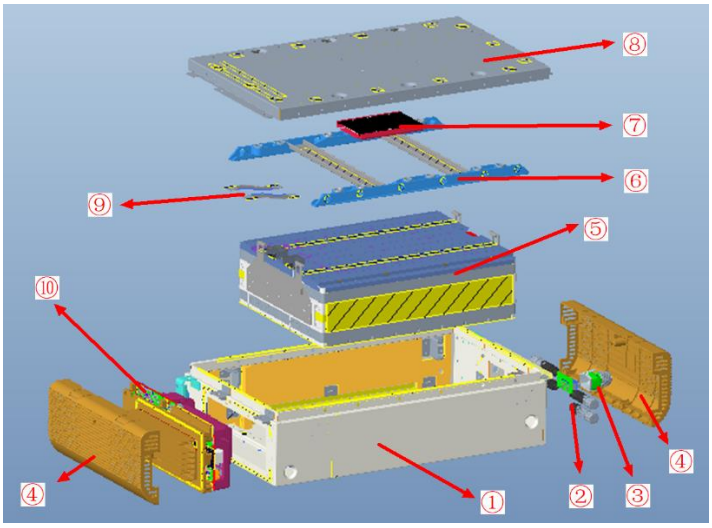
Remarks: (All information is from the installation instruction)

(1) Metal shell (2) Logo (3) Input and output terminals

(4) Plastic decorative shell (5) Input knob switch (6) Seal plastic part

(7) Heat sink (8) PCBA (9) Signal terminal

b) LUNA2000-5-E0 /LUNA2000-5-NHE0




Remarks: (All information is from the installation instruction)

(1) Metal shell (2) Input and output terminals

(3) Signal terminal (4) Plastic decorative shell

(5) Battery (6) Fixing support

(7) Fire extinguishing module (8) Metal cover

(9) Power aluminum bar (10) Power control module

### 9.1.5 WEEE 3R Requirements

As per WEEE Directive (2012/19/EU), all products sold in EU should comply with the requirements of recovery, recycling and re-use (3R) for their design. Detailed requirements for 3R are described in table below.

Table 14 Requirements of WEEE 3R for Products

| Category No. | WEEE Category | Rate of Recovery | Rate of Reuse & Recycling |
|---|---|---|---|
| 1 | Temperature exchange equipment | 85% | 80% |
| 2 | Screens, monitors, and equipment containing screens having a surface greater than 100 $cm^2$ | 80% | 70% |
| 3 | Lamps | 80% | 80% |
| **4** | **Large equipment** | **85%** | **80%** |
| 5 | Small equipment | 75% | 55% |
| 6 | Small IT and telecommunication equipment (no external dimension more than 50 cm) | 75% | 55% |

9.1.6 WEEE 3R Definition

According to directive 2012/19/EU (WEEE), Reuse, Recycling & Recovery Rate using in the report are calculated as following formulas**.**

$$\text{Recovery Rate (\%)} = \frac{Reuse\ \&Recycling\ Weight + Energy\ Recovery\ Weight}{Product\ Tatal\ Weight} \times 100\%$$

$$\text{Reuse \& Recycling Rate (\%)} = \frac{Reuse\ \&\ Recycling\ Weight}{Product\ Tatal\ Weight} \times 100\%$$

Remark: Total weight of the product includes the main product and accessories weight.

## 9.2 WEEE Label Evaluation

9.2.1 WEEE Label Requirements

As per the requirements of WEEE directive (2012/19/EU), producer is committed to marking all obligated EEE put on EU market with the crossed-out wheeled bin symbol, and the WEEE symbol should meet the requirements of EU standard EN50419: 2005. According to Standard EN50419: 2005, the WEEE symbol should meet the below requirements.

(1) The symbol should be printed on the product. In special circumstances, the label can be marked on the package and instruction if it cannot be marked on the product surface for its size.

(2) The symbol must be printed visibly, legibly and indelibly.

(3) The dimensional relationship should meet that (Figure 2):

(a) The symbol should consist of a solid bar, the height of which equals “h” and the width of which equals 1.2a (a is the height of the body of crossed-out wheeled bin).

(b) The height (h) of the bar shall be the greater of 0.3a or 1mm.

(c) The bar should only be used in conjunction with the crossed-out wheeled bin.

(d) The bar should not contain any text or any kind of additional information.


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

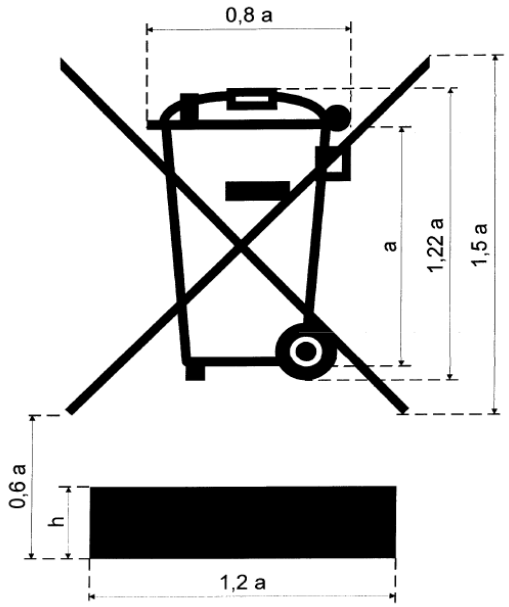



Figure 2 WEEE Symbol Requirements

9.2.2 Conclusion of WEEE Label Evaluation

As per the WEEE label on the product, the label was affixed on the product and the label passed the label test before its sales. From the WEEE label on product, the below evaluation results can be gotten in table below.

Table 15 Results of WEEE Label Evaluation

| No. | Label Requirements | Actual Status for Evaluated Product | Results |
|---|---|---|---|
| (a) | Symbol Position | Product, package and instruction | Yes |
| (b) | Size | The “a” was more than 3.333mm and the “h” was more than 1mm on label of product. | Yes |
| (c) | Visibly | The label passed the label test for visibly, legibly and indelibly. | Yes |
| (d) | Legibly | | Yes |
| (e) | Indelibly | | Yes |
| Conclusion | | **Complies** | |

# 10 Compliance Results in Other Countries

## 10.1 Restricted Substances Information in Product

According to China RoHS (Management measures for the restriction of hazardous substances in electrical and electronic products), the contents of restricted substances should be shown in the product documentation. As per the evaluation process and the data in Huawei InSight System (insight.huawei.com), the below table was made for the product and its fittings.

Table 16 Restricted Substances Table in Product

a) LUNA2000-5KW-C0, LUNA2000-5KW-NHC0

| Part Descriptions | Restricted Substances in Product |
|---|---|

| | Cd | Pb | Hg | Cr(VI) | PBB | PBDE |
|---|---|---|---|---|---|---|
| Shell | ○ | × | ○ | ○ | ○ | ○ |
| PCBA | ○ | × | ○ | ○ | ○ | ○ |
| Cable | ○ | × | ○ | ○ | ○ | ○ |
| Corollary Equipment | ○ | × | ○ | ○ | ○ | ○ |
| Accessories | ○ | × | ○ | ○ | ○ | ○ |

b) LUNA2000-5-E0, LUNA2000-5-NHE0

| Part Descriptions | Restricted Substances in Product | | | | | |
|---|---|---|---|---|---|---|
| | Cd | Pb | Hg | Cr(VI) | PBB | PBDE |
| Shell | ○ | × | ○ | ○ | ○ | ○ |
| PCBA | ○ | × | ○ | ○ | ○ | ○ |
| Cable | ○ | × | ○ | ○ | ○ | ○ |
| Corollary Equipment | ○ | × | ○ | ○ | ○ | ○ |
| Accessories | ○ | × | ○ | ○ | ○ | ○ |
| Battery | ○ | × | ○ | ○ | ○ | ○ |

Remark:

○ : It means that the content of the restricted substance in all materials of part is less than the limit defined in GB/T 26572 and other similar directives in other countries.

× : It means that the content of the restricted substance in at least one homogenous material of part is not less than the limit defined in GB/T 26572 and other similar directives in other countries.

The contents of restricted substances are more than the limits defined in standard, but they are exempted from the standard and can be used in product.

### 10.2 Restricted Substances Compliance Results in Other Countries

As per the above evaluation results and the laws / regulations / directives for prohibited substances in the world, the compliance results for restricted substances in different countries and regions as below in table below can be gotten.

Table 17 Evaluation of Huawei's Product in different countries and regions

| Region | Requirements of material / sample / product | Conclusion |
|---|---|---|
| **Global** | Montreal Protocol, Stockholm Convention | **Complies** |
| **EU and EEA Countries** | EU RoHS (2011/65/EU& (EU) 2015/863), REACH ((EC) No 1907/2006) SVHC, REACH Appendix XVII, POPs ((EU) 2019/1021), Battery Directive (2006/66/EC& 2013/56/EU), Packaging Directive (94/62/EC) | **Complies** |

| | | |
|---|---|---|
| **Turkey** | Turkey RoHS (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) No. 26891 | **Complies** |
| **Ukraine** | Ukraine RoHS (Technical Regulation for Restricting the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) No. 139 | **Complies** |
| **Germany** | EU RoHS, GS PAHs Requirement, REACH SVHC, REACH Appendix XVII, POPs, Battery Directive, Packaging Directive | **Complies** |
| **Serbia** | Serbia RoHS (Management of Waste from and Hazardous Substances in Electrical and Electronic Equipment) Regulation 99/2010-83 | **Complies** |
| **EAEU Countries** | EAEU RoHS (EAEU TR 037/2016) | **Complies** |
| **USA** | TPCH, CA 65 (California Proposition), CA RoHS (SB20/50) | **Complies** |
| **Canada** | SOR 2014-254, SOR 2012-286 | **Complies** |
| **China** | China RoHS (GB/T 26572) | **Complies** |
| **Taiwan, China** | Taiwan RoHS (CNS 15663) | **Complies** |
| **Japan** | Japan RoHS (Japan Waste Electrical and Electronic Equipment Management) | **Complies** |
| **Korea** | K-RoHS& WEEE& ELV (Act for Resource Recycling of Electrical and Electronic Equipment and Vehicles) | **Complies** |
| **India** | India RoHS (India E-Waste (Management) Rules, 2016 & E-Waste (Management) Amendment Rules, 2018) | **Complies** |
| **Thailand** | Thailand RoHS (TIS 2368-2551) | **Complies** |
| **Vietnam** | Vietnam RoHS (30/2011/TT-BCT) | **Complies** |
| **UAE** | UAE RoHS (UAE Regulation to Control Hazardous Materials in Electrical and Electronic Devices) Decision No.10 of 2017 | **Complies** |

Remark:

EU = Europe Union, including Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

EEA = European Economic Area, including Iceland, Liechtenstein, Norway and all EU countries.

EAEU = Eurasian Economic Union, including Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia.


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd

# Annex Ⅰ Configuration of Product

| Board list | | |
|---|---|---|
| Board Name | Description | Qty. |
| ENQ1PWRE | DCDC power board | 1 |
| ENQ1LEDE | LED Board | 1 |
| ENQ1PWRB | Pack power board | 1 |
| ENQ1CTLF | BMS control board | 1 |
| ENQ1CTLE | Signal transfer board | 1 |
| Subassembly list | | |
| Subassembly Name | Description | |
| Adapter | Use with Inverter<br>Input voltage: ⎓ 100V-1000V<br>Output voltage: ⎓ 350-1000V<br>Rate power: 5000W | |

END


Huawei Proprietary and Confidential Copyright © Huawei Technologies Co., Ltd