



Test Report

Applicant : Arduino S.r.l.
Address : Via Andrea Appiani, 25
20900 MONZA (Italy)

Manufacturer : Arduino S.r.l.
Address : Via Andrea Appiani, 25
20900 MONZA (Italy)

Sample Name : Portenta Machine Control
Sample Model : AKX00032
Sample Brand : Arduino

Received Date : June 10, 2021
Testing Period : June 10, 2021 ~ June 25, 2021

Sample Weight : 186.63 g
Sample Size : 16.8 cm × 3.8 cm × 8.9 cm
Category under the : 5th category
WEEE Directive (Small equipment)
Test Results : Please refer to next page(s).

Result of Reuse/Recycling/Recovery Assessment

Recycling/Recovery	Recycling (%)	Recovery (%)
Recycling/Recovery Targets under the 2012/19/EU WEEE Directive	55	75
Result of Assessment	89.73	89.73
WEEE requirement compliance	OK	OK

CCIC (Shenzhen) Environmental Service Co., Ltd.

Completed by:

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Reviewed by:

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Approved by:

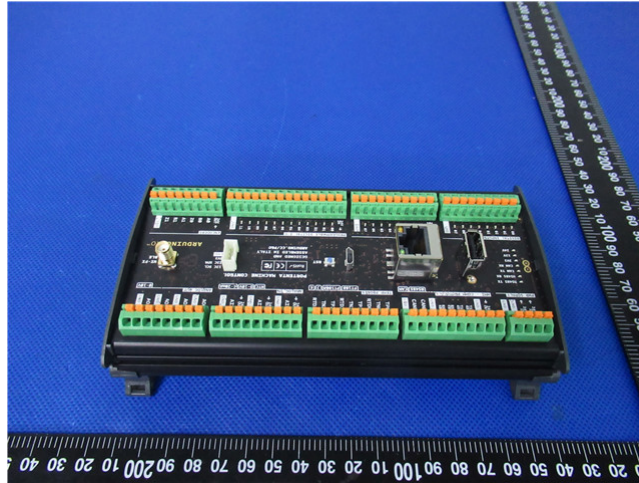
Renyou.yang

Renyou.yang





1. Appearance of the Product



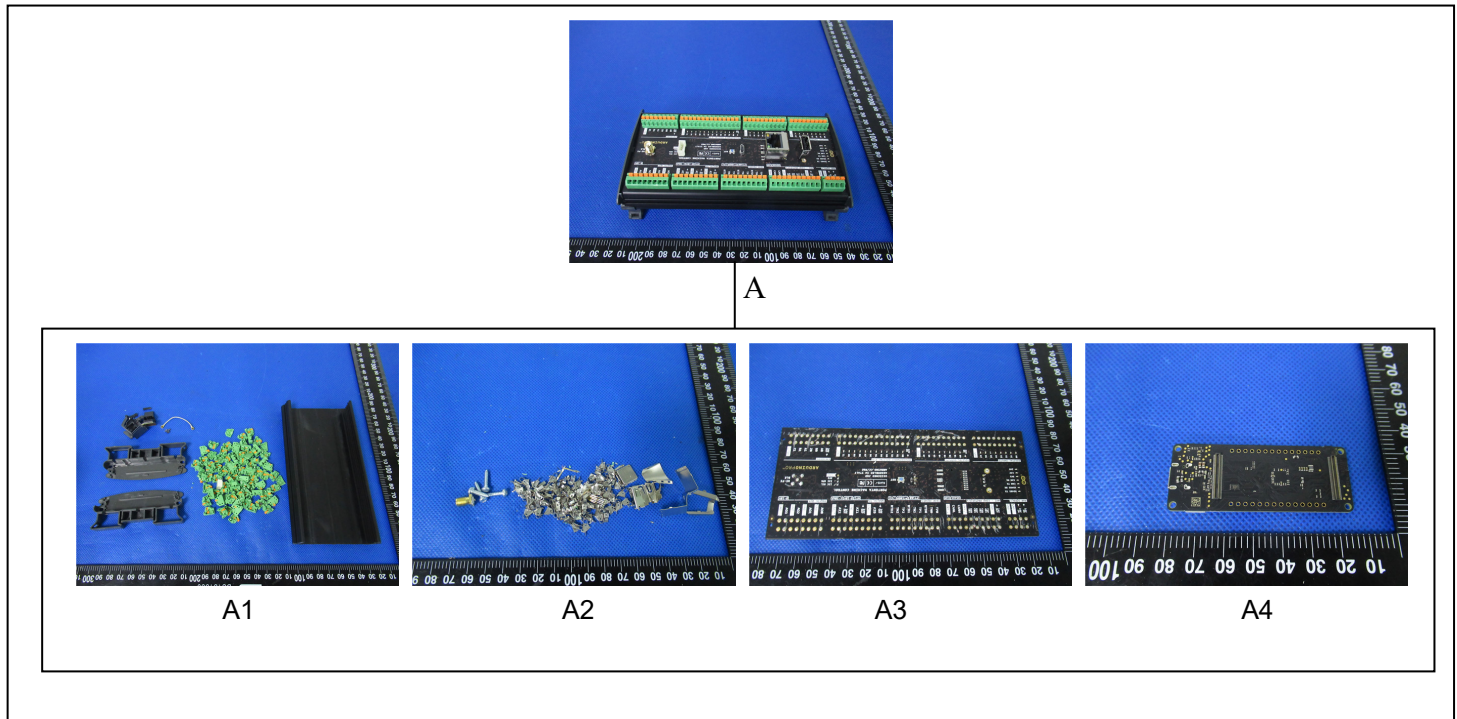
2. Selective Treatment for Materials and Components

According to Articles 6(1) and the Annex II of the WEEE Directive, this product contains components and material items are described in the following table.

Component/Material	Photo No.	Size & Quantity	Weight (g)
Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres	A3	118.08 cm ² × 1	54.80
	A4	17.16 cm ² × 1	8.30



3. Disassembly Tree



4. Disassembly Procedure

The disassembly procedure taken here is in accordance with the treatment requirements under the Annex VII of the WEEE Directive. In addition, to consider economic and efficiency factors, manual operation and disassembly tools have been applied to separate the components and materials from this product in order to simulate the scenario at the treatment facility, and to achieve the objective that the separated components and materials can be recycled and recovered.

(1) Connection technique:

For this product, the connection technology including as following:
 Screw and Welding

(2) Disassembly tool:

The disassembly tools used for this product show as following:

Disassembly Tool	Pictures	Disassembly Tool	Pictures
Cross screwdriver		Side Cutter Plier	

(3) Disassembly time:

10 minutes under one person



(4) Loss during disassembly

Product weight before disassembly: 186.63 g (A product and accessory)

Product weight after disassembly: 186.63 g (A product and accessory)

Lost rate: 0.00%

5. Material and Recycling Information

According to the information declared by the applicant company, the material and recycling information for this product is described in the following table.

The reuse, recycling and recovery assessment for this product is based upon economic and efficiency considerations, and the waste treatment technologies and equipment that are most frequently available to the market.

Photo No.	Component / Material Composition	Weight (g)	Percent Weight (%)	Reuse/ Recycling (%)	Energy Recovery (%)	Recovery (%)
A1	Plastic parts	103.88	55.66	48.98	--	48.98
A2	Metal parts	19.65	10.53	10.32	--	10.32
A3, A4	Printed circuit boards	63.10	33.81	30.43	--	30.43
Total		186.63	100	89.73	--	89.73

6. Recycling and Recovery Rate Calculation

Reuse Recycling & Recovery Rate using in the report are calculated as following formulas:

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

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

Total weigh of the product is including the main product and accessories.

7. ANNEX II of WEEE Directive

Selective treatment for materials and components of waste electrical and electronic equipment:

- Polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (1),



- Mercury containing components, such as switches or backlighting lamps,
- Batteries,
- Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- Toner cartridges, liquid and pasty, as well as colour toner,
- Plastic containing brominated flame retardants,
- Asbestos waste and components which contain asbestos,
- Cathode ray tubes,
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
- Gas discharge lamps,
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps,
- External electric cables,
- Components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress Council Directive 67/548/EEC relating to the classification, packaging and labelling of dangerous substances ,
- Components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation ,
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)

8. Recommendations for WEEE Directive Compliance

- In order to avoid the product not meeting the reuse/recycling/recovery targets regulated under the WEEE Directive and the regulations of EU countries, the applicant company should, when selecting material and components design, consider they can be easy to reuse and recycle. This consideration will lessen the impact of the required international environmental directives and also improve the product's competitiveness.
- It is recommended that the applicant company, when designing new product, especially where components and materials have a large weight ratio, should consider using recyclable materials in order to increase the product's reuse/recycling/recover ratio.
- The product should apply to the RoHS Directive (Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronics equipment). The hazardous substance specification in the Directive



should be controlled in the homogenous material of this product.

If a product has changed its product design, or materials or components employed, then the product should be reassessed and retested in accordance with the WEEE Directive for reuse/recycling/recovery assessment and RoHS for restricted/ banned substances requirements.

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*****End of Report*****