**Assessment Report of WEEE Recovery Rate** Number: 200601201SHA-002

Applicant: iRobot Corporation.
8 Crosby Drive,Bedford,MA 01730 USA.

Date: Jul. 15, 2020

## 1. Product Information

| | | |
|---|---|---|
| Product Name | : | **Vacuum Cleaner** |
| Test Style / item No. | : | RVF-Y1 |
| Date Sample Received | : | Jun 17, 2020 |
| Assessment Period | : | Jun 17, 2020 to Jun 28, 2020 |
| Product Size | : | Whole body: 34.0mmx34.0mmx7.5mm;<br>Charger seat: 165.0mmx3.4mmx1.2mm |
| Product Weight | : | 3791.78 g |
| Category under the WEEE Directive | : | The 5th category (Small equipment) |
| Photo: | : |  |

## 2. Result of Reuse/Recycling/Recovery Assessment

| | Rate of Reuse/Recycling (%) | Rate of Recovery (%) |
|---|---|---|
| Reuse/Recycling/Recovery Target under the 2012/19/EU WEEE Directive | 55% | 75% |
| Result of Assessment | 78.71% | 89.03% |
| WEEE Compliance | Pass | Pass |

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To be continued

Authorized By:
For Intertek Testing Services Ltd., Shanghai

Jonny Jing
Operation Manager

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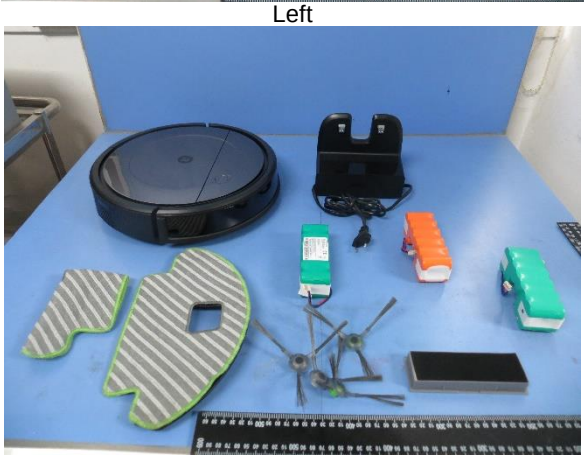
## 3. Product Overview


Front


Back


Left


Right


Top


Bottom

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## 4. Disassembly Assessment

4.1 Disassembly Method

The submitted sample is disassembled into different parts by using ordinary tools. Similar materials from each part were grouped and weighed. The recycling and recovery rates were calculated based on the treatment requirements as set up in the WEEE directive, followed by the best available technology for recycling and recovery technology. Materials for which currently no recycling technology is available or where the recycling is not economically feasible, or which contain hazardous substances, are assumed to be disposed of in landfills without further use.

4.2 Disassembly Tools

The disassembly tools used for this product show as following:

| Disassembly Tool | Picture | Disassembly Tool | Picture |
|---|---|---|---|
| Cross Screwdriver |  | Knife |  |
| Flat headed Screwdriver |  | Side Cutter Plier |  |
| Scissor |  | | |

4.3 Connection Technique

| | | |
|---|---|---|
| Wedge | : | 1 |
| Spring | : | 6 |
| Screw | : | 102 |
| Bolted Joint | : | 2 |
| Snap | : | 3 |
| Welding | : | 63 |

4.4 Disassembly Time

360 Minutes

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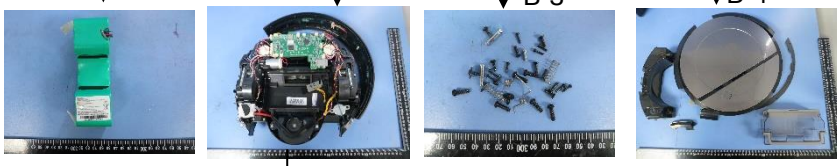
## 5. Disassembly Tree

A B C D E F G

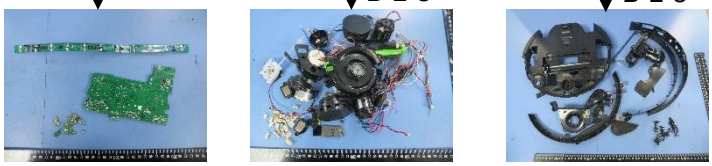
**Page 05**

B-1 B-2 B-3 B-4



B-2-2 B-2-4 B-2-6

B-2-1 B-2-3 B-2-5



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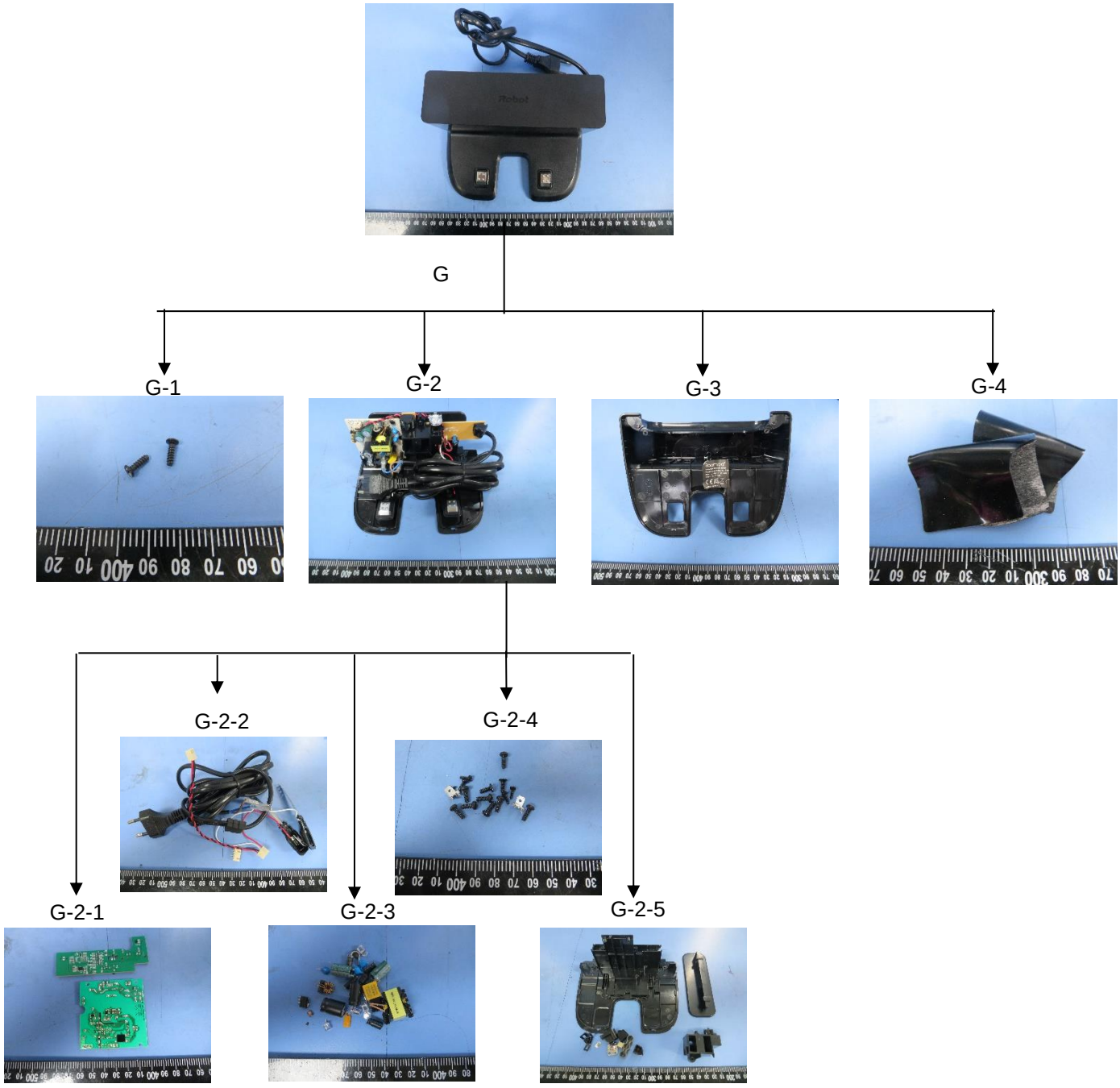
G
G-1
G-2
G-3
G-4
G-2-1
G-2-2
G-2-3
G-2-4
G-2-5

4.6 Selective Treatment for Materials and Components

Article 8(2) and the Annex VII of the WEEE Directive, this product contains following components and materials to be selective treated.

| Material /Component | 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 centimeters. | B-2-1, G-2-1 | 32.6cm×1.6cm; 15.0cm×11.0cm; 3.0cm×3.5cm; 6.2cm×6.0cm; 9.3cm×3.8cm | 5 | 74.85 |
| Battery | D, E, F, B-1 | 13.5cm×4.5cm; | 1 | 582.24 |

**6. Material Recycling Information**

Based on the information declared by the applicant, the material and recycling information for the product is described in the following table.
The assessment of reuse, recycling and recovery for this product is based on economic and efficiency considerations, and followed by the best available technology for recycling and recovery technology.

| Material Components | Photo No. | Weight | Percent Weight | Reuse/ Recycling Rate | Energy Recycling Rate | Recovery Rate |
|---|---|---|---|---|---|---|
| | | g | % | % | % | % |
| Printed circuit boards | B-2-1, G-2-1 | 74.85 | 1.97% | 1.78% | 0.00% | 1.78% |
| Plastic parts | C, B-4, B-2-5, G-3, G-2-5 | 1883.51 | 49.67% | 43.71% | 0.00% | 43.71% |
| Metals | B-3, B-2-2, G-1, G-2-4 | 238.73 | 6.30% | 6.17% | 0.00% | 6.17% |
| Metals with plastics | B-2-3, G-2-2 | 827.80 | 21.83% | 14.26% | 6.55% | 20.81% |
| ele-components | B-2-6, G-2-3 | 42.25 | 1.11% | 0.50% | 0.39% | 0.89% |
| Textile | A | 45.40 | 1.20% | 0.00% | 1.08% | 1.08% |
| Battery | D, E, F, B-1 | 582.24 | 15.36% | 12.28% | 0.00% | 12.28% |
| Rubber | B-2-4,G-4 | 97.00 | 2.56% | 0.00% | 2.30% | 2.30% |
| Total | | 3791.78 | 100.00% | 78.71% | 10.32% | 89.03% |

Note:
Due to the negligible weight and difficult separation by manual operation, surface coating, paint and printing, solder, sticker are not included in this assessment.

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## 7. Reuse/Recycling and Recovery Rate Calculation

Reuse/Recycling and Recovery Rate using in the report are calculated as follow formulas:

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

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

## 8. ANNEX VII of WEEE Directive (2012/19/EU)

Selective treatment for materials and components of waste electrical and electronic equipment:
As a minimum the following substances, preparations and components have to be removed from any separately collected WEEE:

- 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).
- 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 centimeters.
- 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 for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions 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 ionizing radiation.
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).

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## 9. Recommendations for WEEE Directive Compliance

- In order to make the product comply with the reuse/recycling/recovery target required under WEEE Directive (2012/19/EU) and the regulations of EU countries, the applicant company should consider the product they design can be easily reused and recycled by selecting recyclable materials and components.
- To make the product easily dismantled, less the disassembling time, the applicant company should design the product for easy disassembly by choosing easy separate techniques, avoiding the utilizing embedded components, designing the separable procedure.
- The product should comply with the RoHS Directive (2011/65/EC), restricting using specified hazardous substance in the homogenous material of the product.
- If a product has change the design, or employ materials or components, then the product should be reassessed and retested in accordance with the WEEE Directive for reuse/recycle/recycling target and RoHS for restricted substances requirement.
- The applicant company should take attention to the future possible update concerning the WEEE Directive and related requirement.

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End of Report