Prüfbericht - Nr.: *Test Report No.:*	**50292576 001**	**Auftrags-Nr.:** *Order No.:*	156104781	**Seite 1 von 13** *Page 1 of 13*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	19.08.2019	
Auftraggeber: *Client:*	**Suprema-ID** 69, Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do,Rep.of Korea			
Prüfgegenstand: *Test Item:*	Fingerprint Scanner			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	BioMini Slim 3/BM-Slim3, BioMini Slim 3S / BM-Slim3S			
Auftrags-Inhalt: *Order content:*	Product Testing			
Prüfgrundlage: *Test Specification:*	WEEE Directive 2012/19/EU Article 11 – Recovery target			

Wareneingangsdatum: *Date of receipt:*	19.08.2019
Prüfmuster-Nr.: *Test sample No.:*	**156104781**
Prüfzeitraum: *Testing period:*	18.07.2019 - 11.09.2019
OrtderPrüfung: *Place of testing:*	TÜV Rheinland Korea Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland Korea Ltd.
Prüfergebnis*: *Test result*:*	Pass



geprüft von / *tested by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
11.09.2019	Narae Jeong / Test Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
11.09.2019	Seungyeop Lee / Reviewer	

Sonstiges / *Other.*

Zustand des Prüfgegenstandes bei Anlieferung:
Condition of the test item at delivery:
Prüfmuster vollständig und unbeschädigt
Test item complete and undamaged

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass)=entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getested
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m.test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfäktigt warden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only releates to the a.m test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Contents

1	**General Remarks**	3
1.1	Complementary Materials	3
2	**General Product Information**	3
2.1	Product Description	3
2.2	Submitted Document	3
3	**Assessment Description**	4
3.1	Disassembly, Recovery and Recycling Flow	4
3.2	Parameters	4
3.3	Definition	4
4.	**Assessment Results**	5
4.1	Assessment Summary	5
4.2	Product Derivative Table	6
4.3	Product Derivative Summary	7
4.4	Test Result	7
4.5	Product Component Disassembly Assessment Summary	8
4.6	Recommended Disassembly Sequence	13

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix.

Appendix 1: Photo of tested sample



Overall View

2. General Product Information

2.1 Product Description

The product is Fingerprint Scanner. It is classified as Category 5 under Annex III of Directive 2012/19/EU

2.2 Submitted Documents

Information of product provided by Suprema-ID.

3. Assessment Description

3.1 Disassembly, Recovery and Recycling Flow

The product is disassembled into different parts (clumps) and grouped by the type of material sharing common characteristic or physical relationship (waste fractions) primarily based on the treatment requirements as set out in the WEEE directive annex VII, followed by the current state of the art recycling and recovery technology available in Europe. Materials for which currently no recycling technology is available or where the recycling is economically not feasible, or which contain hazardous substances, are assumed to be shredded, incinerated or disposed of to landfill with out further use.

Only bigger clumps that can be easily separated and that share a common characteristics or physical relationships are included in the recycling and reuse calculation. Other parts, respectively materials that cannot be separated by e.g. standard tools are classified as either unspecified materials or distributed to the relative waste fraction with highest content of waste is expected with reduced recovery rate.

3.2 Parameters

The calculation is based on waste fractions consisting of a typical material or substance composition for typical materials. (e.g. a power cord consists of copper wire and PVC, where as the PVC consists of a PVC, polyamide and polyester blend). For every waste fraction a theoretical recovery share for recycling and for incineration respectively waste disposal is assumed based on information provide by recycling companies. The recovery share may change over time as the recycling technology advances. The current recovery shares are available upon request.

3.3 Definition

3.3.1 Regular

Reuse, Recycling and Recovery Rate: Applying commonly used recycling technology.

3.3.2 Ideal

Recycling Rate: Applying highest recycling technology.

3.3.3 Recycling Classification

A class： Common recycling technology and high market need

B class： Recycling technology not popular and high market need

C class： Common recycling technology and low market need

D class： Recycling technology not popular and low market need

4. Assessment Results

4.1 Assessment Summary

Product Name / No.	Fingerprint Scanner / BioMini Slim 3



Description	Content	Value
Total Weight, g		103.0
Connection Technique, ea	Screw Connection Wire Connection Snap Joint Glued Joint Distort Combination	4 4 6 4 3 6
Disassembly Time, sec		216
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Recommended Disassembly Sequence	See 4.6 Recommend Disassembly Sequence	
Derivative Summary	See 4.2 Product Derivative Table	
Derivative Rate	See 4.3 Product Derivative Summary	
Reuse/Recycling Rate	See 4.4 Test Result	
Recovery Rate	See 4.4 Test Result	

4.2 Product Derivative Table

Product Name / Type		Fingerprint Scanner / BioMini Slim 3						
Derivative		Weight (g)	Weight (%)		Reuse (%)	Recycling (%)	Incineration (%)	Disposal (%)
Cover Top Assembly	Plastic, PC	14.4	14.0			**v**		
Body Assembly	Metal	0.6	0.6			**v**		
	Glass	28.0	27.2			**v**		
	Plastic,PC	7.3	7.1			**v**		
	Mixed Plastic	0.1	0.1				**v**	
PCB Assembly	Mixed Metal	2.5	2.4			**v**		
	Fibreglass	5.9	5.7	Ideal		v (5.7)		
				Regular				v (5.7)
	Plastic, PC	11.0	10.7			**v**		
	Rubber	0.5	0.5				**v**	
USB Cable Assembly	Copper	11.0	10.7			**v**		
	Aluminium	0.5	0.5			**v**		
	Mixed Metal	3.0	2.9			**v**		
	Plastic, PVC	17.2	16.7				**v**	
	Mixed Plastic	1.0	0.9				**v**	
Total		**103.0**	**100**	Ideal	**0.0**	**81.8**	**18.2**	**0.0**
				Regular		**76.1**	**18.2**	**5.7**

4.3 Product Derivative Summary

	Fingerprint Scanner / BioMini Slim 3	
	Percentage of Weight (%)	
	Ideal	Regular
Reuse Weight	0.0	
Recycling Weight	81.8	76.1
Incineration Weight	18.2	18.2
Disposal Weight	0.0	5.7
Product Sample Weight	**100.0**	

4.4 Test Result

PASSED

	Fingerprint Scanner / BioMini Slim 3
Required Reuse / Recycling Rate (%)	Testing Reuse / Recycling Rate (%)
55	**76.1**
Required Recovery Rate (%)	Testing Recovery Rate (%)
75	**94.3**

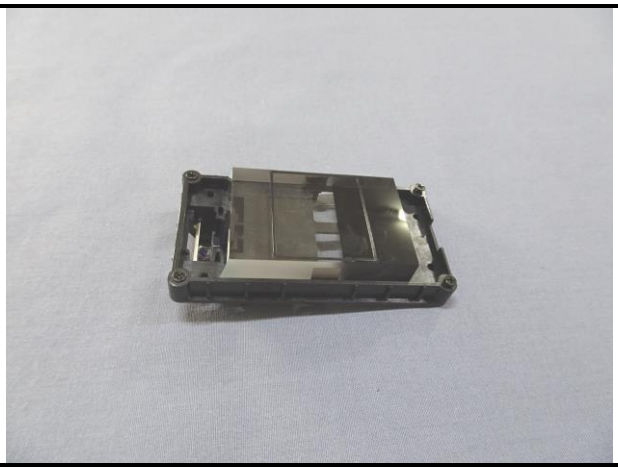
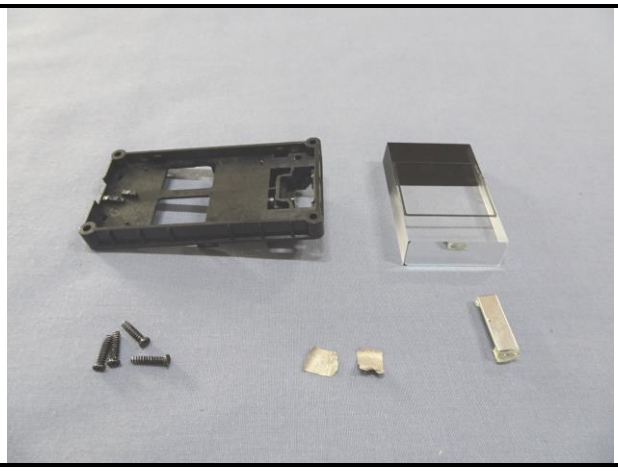
4.5 Product Component Disassembly Assessment Summary

Component Assessment - 1

Component Name	Cover Top Assembly
	

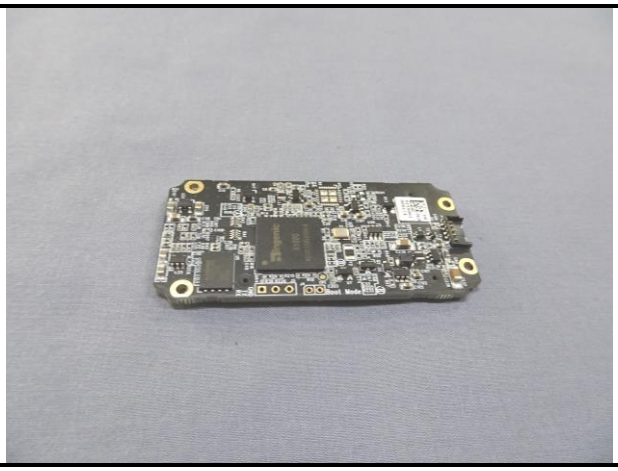
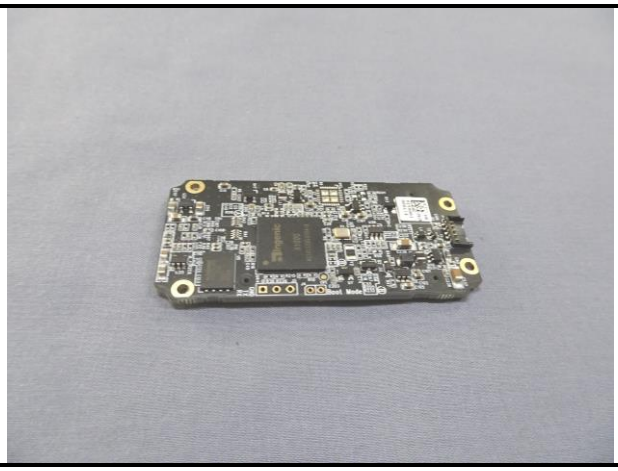
Description	Content	Value
Weight, g		14.4
Connection Technique, ea	Snap Joint Combination	1 1
Disassembly Time, sec		10
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Material, g	Plastic, PC	14.4
Recycling Evaluation, g	Reuse weight Recycling weight Incineration weight Disposal weight	- 14.4 - -
Recycling Potential*	Plastic, PC	A

Component Assessment - 2

Component Name	Body Assembly
	

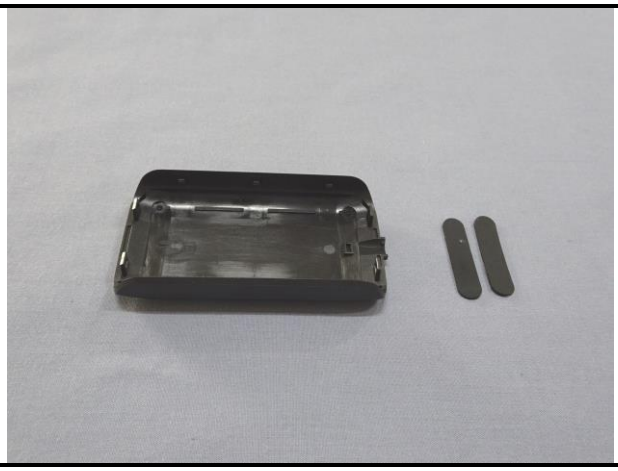
Description	Content	Value
Weight, g		36.0
Connection Technique, ea	Screw Connection Snap Joint Glued Joint Combination	4 2 2 2
Disassembly Time, sec		80
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Material, g	Metal Glass Plastic, PC Mixed Plastic	0.6 28.0 7.3 0.1
Recycling Evaluation, g	Reuse weight Recycling weight Incineration weight Disposal weight	- 35.9 0.1 -
Recycling Potential*	Metal	A
	Glass	A
	Plastic, PC	A
	Mixed Plastic	-

Component Assessment - 3

Component Name	PCB Assembly
	

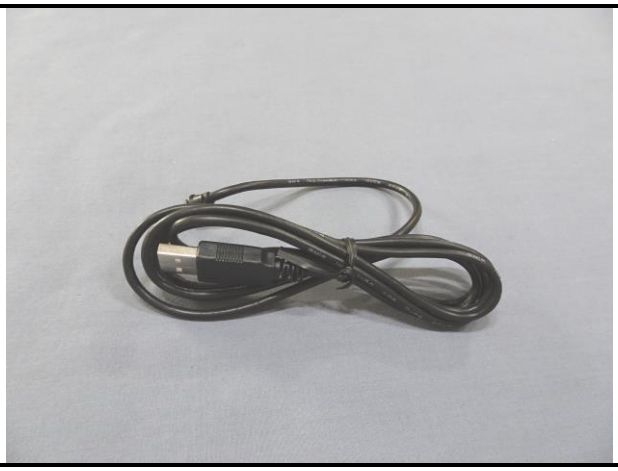
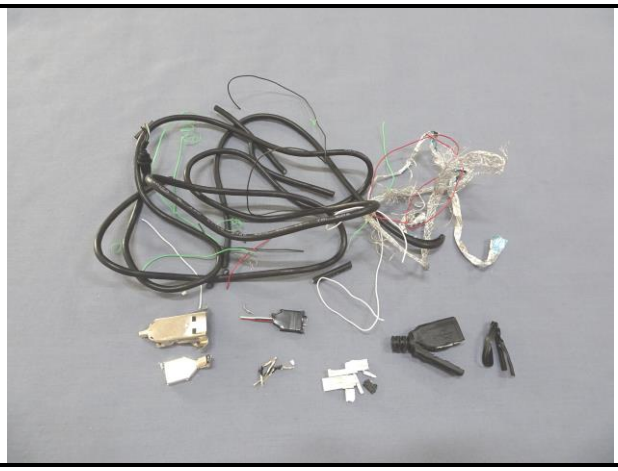
Description	Content	Value
Weight, g		8.4
Connection Technique, ea		
Disassembly Time, sec		
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Material, g	Mixed Metal Fibreglass	2.5 5.9
Recycling Evaluation, g	Reuse weight Recycling weight Incineration weight Disposal weight	- 2.5 - 5.9
Recycling Potential*	Mixed Metal	B
	Fibreglass	-

Component Assessment - 4

Component Name	Cover Bottom Assembly
	

Description	Content	Value
Weight, g		11.5
Connection Technique, ea	Snap Joint Glued Joint Combination	1 2 1
Disassembly Time, sec		30
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Material, g	Plastic, PC Rubber	11.0 0.5
Recycling Evaluation, g	Reuse weight Recycling weight Incineration weight Disposal weight	- 11.0 0.5 -
Recycling Potential*	Plastic, PC	A
	Rubber	-

Component Assessment - 5

Component Name	USB Cable Assembly
	

Description	Content	Value
Weight, g		32.7
Connection Technique, ea	Wire Connection Snap Joint Distort Combination	4 2 3 2
Disassembly Time, sec		96
Disassembly Tools	Philip Screwdriver Slotted Screwdriver Nipper Knife	
Material, g	Copper Aluminium Mixed Metal Plastic, PVC Mixed Plastic	11.0 0.5 3.0 17.2 1.0
Recycling Evaluation, g	Reuse weight Recycling weight Incineration weight Disposal weight	- 14.5 18.2 -
Recycling Potential*	Copper	A
	Aluminium	A
	Mixed Metal	B
	Plastic, PVC	-
	Mixed Plastic	-

4.6 Recommended Disassembly Sequence

Fingerprint Scanner / BioMini Slim 3



Cover Top Assembly → Body Assembly → PCB Assembly
→ Cover Bottom Assembly → USB Cable Assembly

- End of Test Report -