



**DOC**  
Declaration Of Conformity

We

**Smartron Power Co., Ltd.**

**#210 #307 #308, 61, Ganam-ro, Seo-gu, Incheon,  
Korea**

DECLARE ON OUR SOLE RESPONSIBILITY THAT THE PRODUCT

**KIND OF EQUIPMENT : LED CONVERTER**

**TYPE-DESIGNATION : SPLW80-36,**

**SPLW25-30, SPLW50-60, SPLW75-90, SPLW30-24, SPLW30-36, SPLW30-48,  
SPLW40-24, SPLW40-36, SPLW40-48, SPLW60-24, SPLW60-36, SPLW60-48,  
SPLW80-24, SPLW80-48, SPL40-12RE, SPL40-24RE, SPL60-12RE, SPL60-24RE,  
SPL100-12R, SPL100-24R, SPL150-12R, SPL150-24R, SPL40PFC-12R, SPL40PFC-24R,  
SPL60PFC-12R, SPL60PFC-24R, SPL100PFC-12R, SPL100PFC-24R, SPL150PFC-12R,  
SPL150PFC-24R, SPLW15-20, SPLW60-24F, SPLW60-36F, SPLW60-48F, SPLW80-24F,  
SPLW80-36F, SPLW80-48F, SPLW25-30D, SPLW50-60D, SPLW75-90D, SPLW60-36D,  
SPLW60-48D, SPLW80-36D, SPLW80-48D, SPLW60-36G, SPLW80-36G,  
SPLW25-24T, SPLW75-24T, SPLW100-24T, SPLW50-48S, SPLW75-70S**

This EC-Declaration of conformity is following the provisions of RoHS DIRECTIVE 2011/65/EU and 2015/863/EU.

It is confirmed that a sample of the product has been tested and found in conformity with below standard(s):

**RoHS EN 50581: 2012**  
**IEC 62321-3-1 : 2013**  
**IEC 62321-8 : 2017**

Detailed specification of the tested product shown in the following test report(s):

**RoHS Test Report : CA19RoHS051**

**Date of issue :** 2019 / 10 / 04  
**Authorized By :** HY Lim (President)

**Smartron Power Co., Ltd.**  
#210 #307 #308, 61, Ganam-ro, Seo-gu,  
Incheon, Korea

# RoHS TEST REPORT

European Directive 2011/65/EU, 2015/863/EU

Evaluation of RoHS Requirements for Electrical and Electronic Equipment

Test report No..... : CA19RoHS051  
Date of receipt ..... : Jun 14, 2019  
Date of issue ..... : Jul 19, 2019  
Test of period ..... : Jun 17 ~ Jul 18, 2019

Applicant's name ..... : Smartron Power Co., Ltd.  
Address..... : #210 #307 #308, 61, Ganam-ro, Seo-gu, Incheon, Korea  
Manufacturer name ..... : The same as above  
Address..... : The same as above  
Factory name ..... : The same as above  
Address..... : The same as above

Product name ..... : LED CONVERTER  
Basic Model..... : SPLW80-36  
Multiple Model(s)..... : Refer to the page 8.

Test Specifications :  
Directive..... : 2011/65/EU, 2015/863/EU  
Test Standard(s)..... : EN 50581 : 2012, IEC 62321-3-1 : 2013, IEC 62321-8 : 2017  
Type of Category..... : Category 5. Lighting equipment.

Test Result : The equipment which was evaluated has fulfilled with requirement of  
2011/65/EU, 2015/863/EU Directive for the materials :  
Pb, Cd, Hg, Cr(VI), PBBs, PBDEs, DEHP, BBP, DBP, DIBP  
**Final test result ; PASS**

# RoHS TEST REPORT

European Directive 2011/65/EU, 2015/863/EU

Evaluation of RoHS Requirements for Electrical and Electronic Equipment

Trade mark .....



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Also this publication represent for the evaluation results of the issued test item only - any type of EEE, i.e. full product, module assembly, component or material including RoHS test result.

The evaluation results means only the tested item is complied with RoHS requirement according to the evaluation procedures which is described in this publication.

Project Engineer : Jung-Hyuk, Choi

Project Reviewer : Myung-Lyul, Lee



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Clause	Requirement - Test	Result	Verdict
1	RoHS Compliance based on test reports		
1.1	Review of component's test reports according to BOM	Checked	P
1.1.1	Dose evaluated product is composed by components which is listed in BOM?	Checked	P
1.1.2	Dose each components is complied with the requirement of employed directive or manufacturer declared limits?	Checked	P
1.2	Review of verification test reports according to sampling	Checked	P
1.2.1	If it was performed the item 1.1, did sampling was performed in appropriate?	Refer to Appendix III	P
1.2.2	If it was not performed the item 1.1, did it was fully considered the materials of component and does it was performed the sampling which is enough to represent the characteristics of population?		N/A
1.2.3	Is it complied with the requirements of employed directive or manufacturer declares limits for sample tested?		P
1.3	Requirements of test report		P
1.3.1	Is it included the information of manufacturer, sample, test lab or etc?	Refer to Appendix II	P
1.3.2	Is it clearly specified the test object as the port of components or product?		P
1.3.3	Is it described the information of directive or standards of test methods?		P
1.3.4	Is it described the results with accurately for interpretation, using or etc?		P
1.3.5	Is it confirmed the validity of test equipment and information of calibration?		P
1.4	Other information		
	Directive 2011/65/EU Directive 2015/863/EU EN 50581 : 2012 IEC 62321-3-1 : 2013 IEC 62321-8 : 2017 EN 62474 : 2012 IEC/TR 62476 : 2010		

## Appendix I

### Photos of product



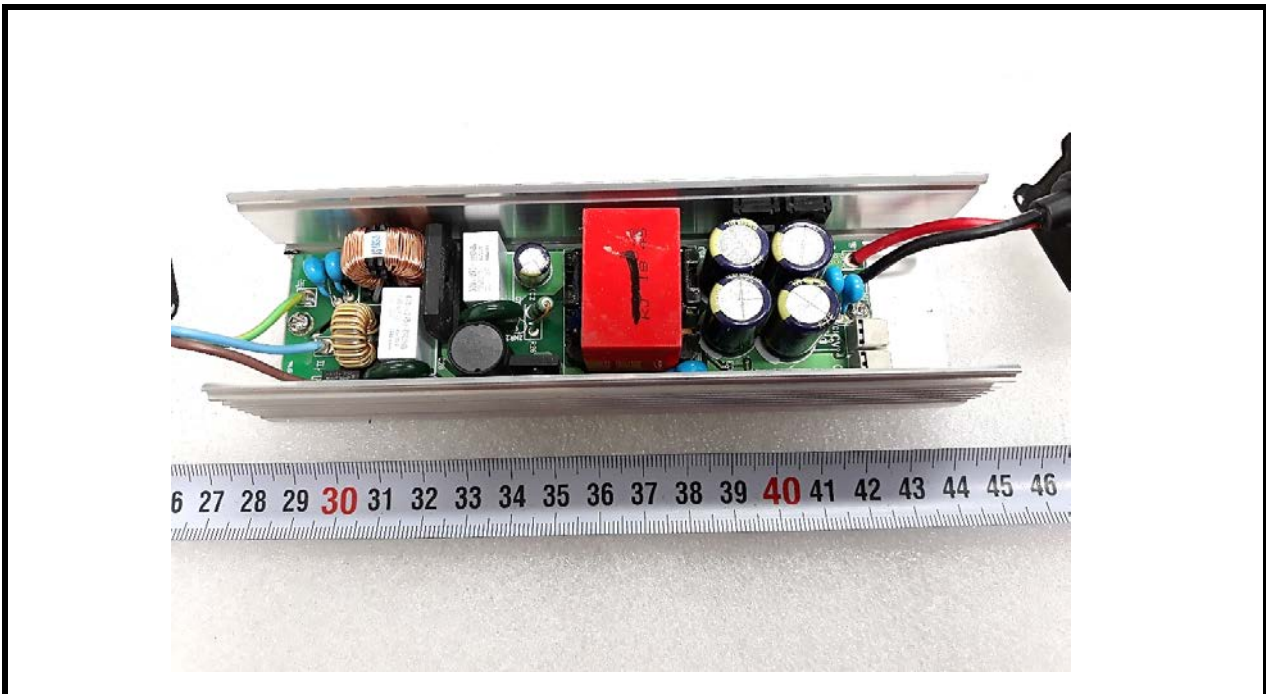
Front view



Rear view

## Appendix I

### Photos of product



Inner view

## Appendix II

### Test method & Lab information

#### 1. General

1.1 Employed standard : EN 50581 : 2012, IEC 62321-3-1 : 2013, IEC 62321-8 : 2017

1.2 Applied sampling criteria

- Kind of components could be disassembled mechanically by using disassembly tools
- High risk components

#### 2. Laboratory Information

- Laboratory's Name : Kiwa Korea Ltd.
- Address : #411, SJ Technoville, 278, Beotkkot-ro, Geumcheon-gu, Seoul, Korea
- Facilities used : ED-XRF (EA1000AIII, HITACHI), GC-MS (Subcontracted lab used)

#### 3. Product Remark

- Kiwa Korea Ltd. tested the LED CONVERTER which was selected by applicant.
- The model SPLW80-36 is the basic model that was tested.
- The multi model type configuration see the following information.



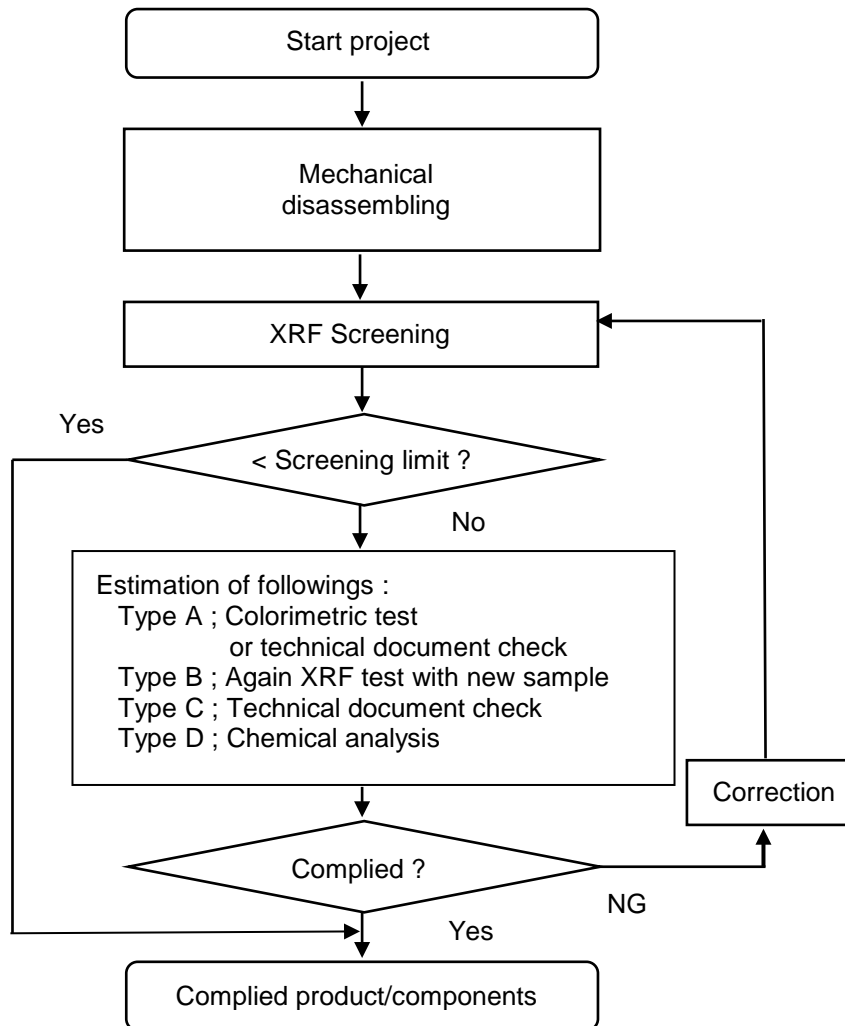
## Appendix II

### Test method & Lab information

#### 4. The multi model type configuration

Basic model	Multi models
SPLW80-36	SPLW25-30, SPLW50-60, SPLW75-90, SPLW30-24, SPLW30-36, SPLW30-48, SPLW40-24, SPLW40-36, SPLW40-48, SPLW60-24, SPLW60-36, SPLW60-48, SPLW80-24, SPLW80-48, SPL40-12RE, SPL40-24RE, SPL60-12RE, SPL60-24RE, SPL100-12R, SPL100-24R, SPL150-12R, SPL150-24R, SPL40PFC-12R, SPL40PFC-24R, SPL60PFC-12R, SPL60PFC-24R, SPL100PFC-12R, SPL100PFC-24R, SPL150PFC-12R, SPL150PFC-24R, SPLW15-20, SPLW60-24F, SPLW60-36F, SPLW60-48F, SPLW80-24F, SPLW80-36F, SPLW80-48F, SPLW25-30D, SPLW50-60D, SPLW75-90D, SPLW60-36D, SPLW60-48D, SPLW80-36D, SPLW80-48D, SPLW60-36G, SPLW80-36G, SPLW25-24T, SPLW75-24T, SPLW100-24T, SPLW50-48S, SPLW75-70S

## Appendix III Verification XRF Test Results



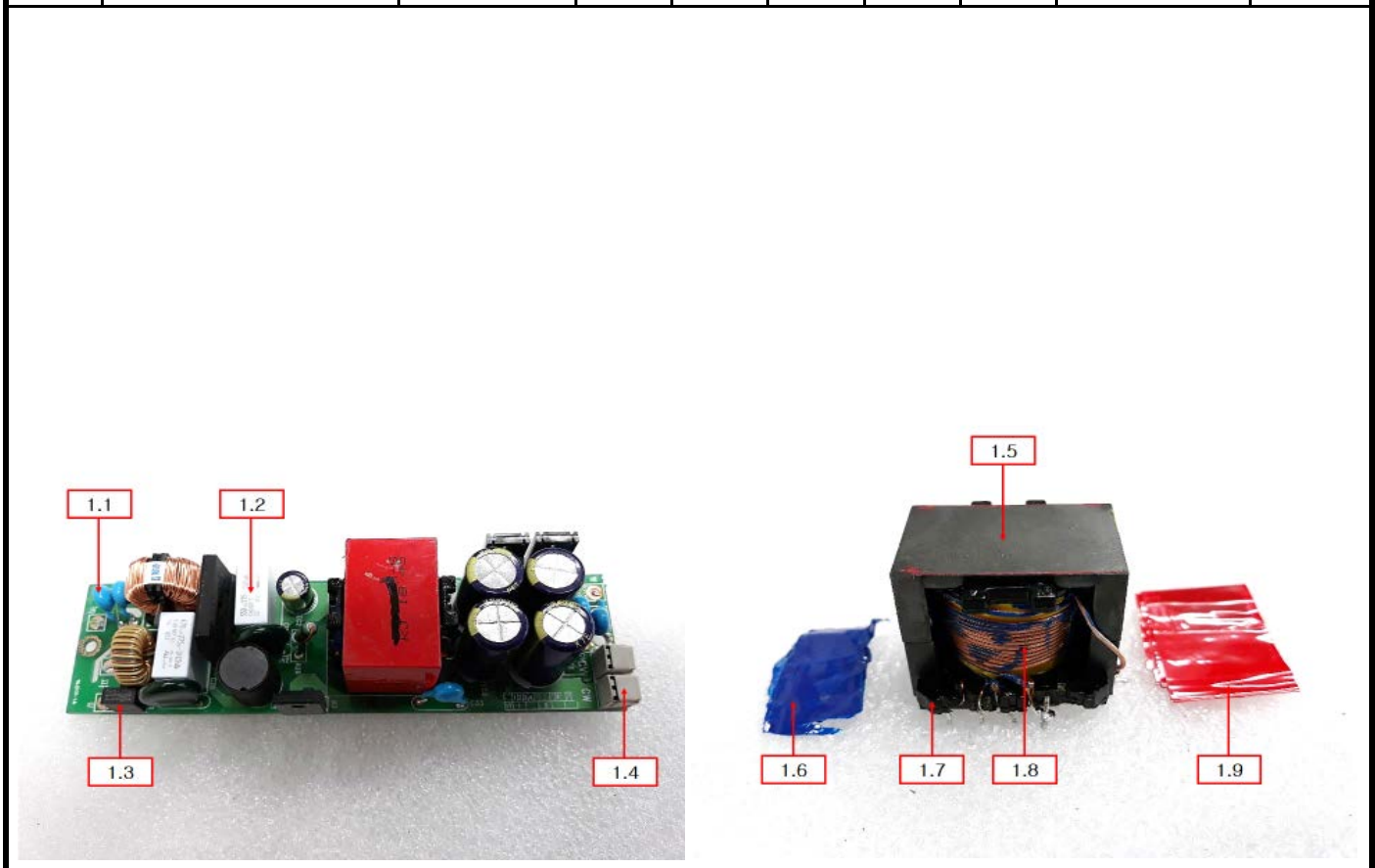
Note : 1. Basic acceptance criteria of XRF screening is IEC 62321-3-1 ; 2013 Annex A  
( Screening limit refer to Appendix IV, 3 clause )

2. The additional investigation procedures are taken where doubtful test result for XRF screening

3. For maintaining product quality, the comparison and verification are required between analytical test reports and XRF screening results if possible

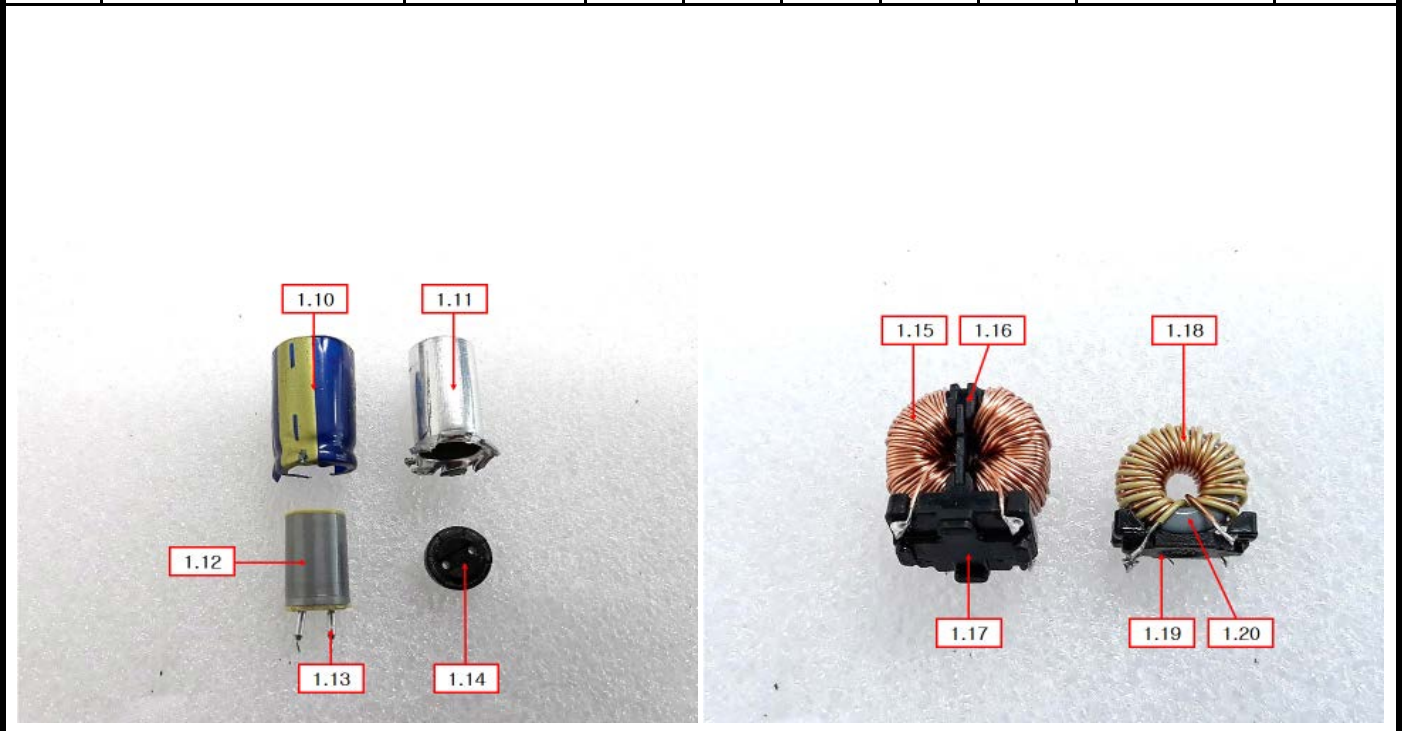
## Appendix III Verification XRF test results

No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
1.1	Y-CAP.	NETRON TECH	BL	BL	BL	BL	BL	N.A.	Pass
1.2	BOX-CAP	SUNIL	BL	BL	BL	120389	BL	Br - Type C	Pass
1.3	FUSE	BUSSMAN	BL	BL	BL	BL	BL	N.A.	Pass
1.4	VR	COPAL	BL	BL	BL	61484	BL	Br - Type C	Pass
1.5	TRANS.	COT TRANS	BL	BL	BL	N.A.	BL	N.A.	Pass
1.6			BL	BL	BL	BL	BL	N.A.	Pass
1.7			BL	BL	BL	BL	BL	N.A.	Pass
1.8			BL	BL	BL	N.A.	BL	N.A.	Pass
1.9			BL	BL	BL	BL	BL	N.A.	Pass



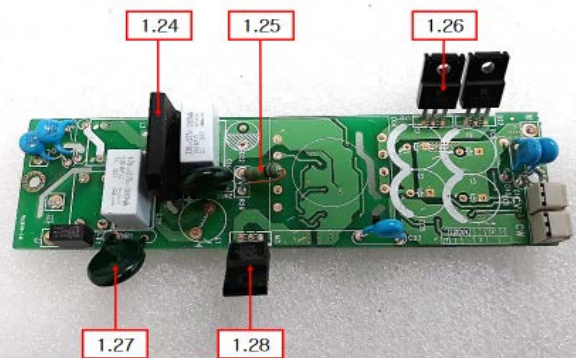
## Appendix III Verification XRF test results

No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
1.10	ELEC_CAP	SAMHWA	BL	BL	BL	BL	BL	N.A.	Pass
1.11			BL	BL	BL	N.A.	BL	N.A.	Pass
1.12			BL	BL	BL	BL	BL	N.A.	Pass
1.13			BL	BL	BL	N.A.	BL	N.A.	Pass
1.14			BL	BL	BL	BL	BL	N.A.	Pass
1.15	FILTER COIL	TNC	BL	BL	BL	N.A.	BL	N.A.	Pass
1.16			BL	BL	BL	BL	BL	N.A.	Pass
1.17			BL	BL	BL	BL	BL	N.A.	Pass
1.18	FILTER COIL	TNC	BL	BL	BL	N.A.	BL	N.A.	Pass
1.19			BL	BL	BL	BL	BL	N.A.	Pass
1.20			BL	BL	BL	N.A.	BL	N.A.	Pass



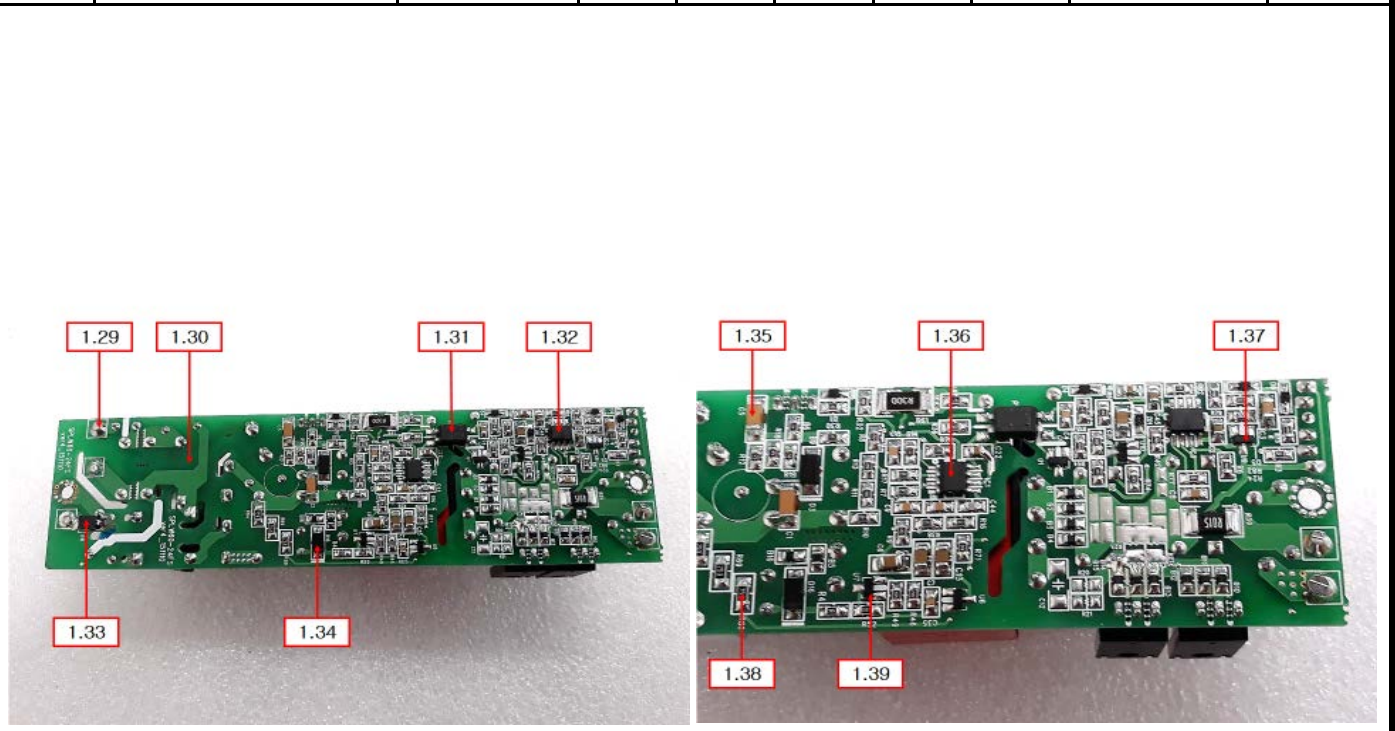
## Appendix III Verification XRF test results

No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
1.21	CHOKE COIL	COT TRANS	BL	BL	BL	N.A.	BL	N.A.	Pass
1.22			BL	BL	BL	N.A.	BL	N.A.	Pass
1.23			BL	BL	BL	BL	BL	N.A.	Pass
1.24	BRIDGE DIODE	LRC	BL	BL	BL	7819	BL	Br - Type C	Pass
1.25	RESISTOR	RESCO	BL	BL	BL	BL	5825	Cr - Type A	Pass
1.26	DIODE DIP	ROHM	BL	BL	BL	4774	BL	Br - Type C	Pass
1.27	VARISTOR	NICON CAMICON	BL	BL	BL	24387	BL	Br - Type C	Pass
1.28	FET	ST	BL	BL	BL	BL	BL	N.A.	Pass



## Appendix III Verification XRF test results

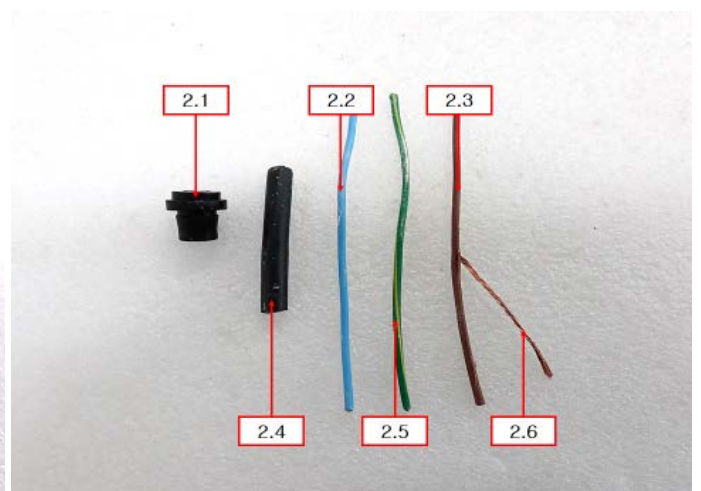
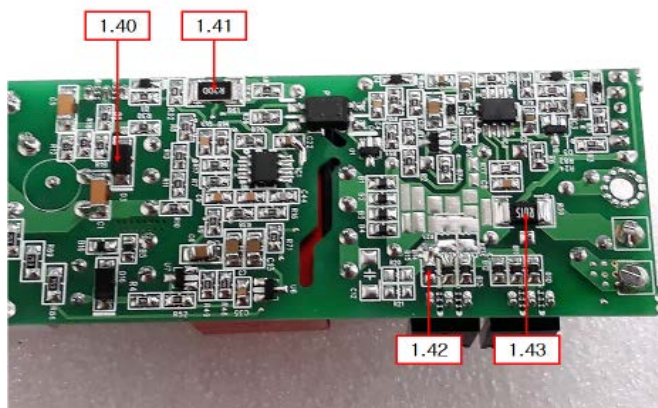
No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
1.29	REDERS PCB	CS ELEC.	BL	BL	BL	N.A.	BL	N.A.	Pass
1.30			BL	BL	BL	45033	BL	Br - Type C	Pass
1.31	Phototransistor	KODENSHI AUK	BL	BL	BL	BL	BL	N.A.	Pass
1.32	LM2904DR	TI	BL	BL	BL	BL	BL	N.A.	Pass
1.33	CHIP-BEAD	Laird	BL	BL	BL	BL	BL	N.A.	Pass
1.34	EFM108	LRC	BL	BL	BL	BL	BL	N.A.	Pass
1.35	CER-CHIP	WALSIN	BL	BL	BL	BL	BL	N.A.	Pass
1.36	L6562ADTF	ST	BL	BL	BL	BL	BL	N.A.	Pass
1.37	Voltage Reference	HTC KOREA	BL	BL	BL	BL	BL	N.A.	Pass
1.38	RES-CHIP	VIKING	BL	BL	BL	BL	1832	Cr - Type A	Pass
1.39	NPN TR	KEC	BL	BL	BL	5462	BL	Br - Type C	Pass



## Appendix III

### Verification XRF test results

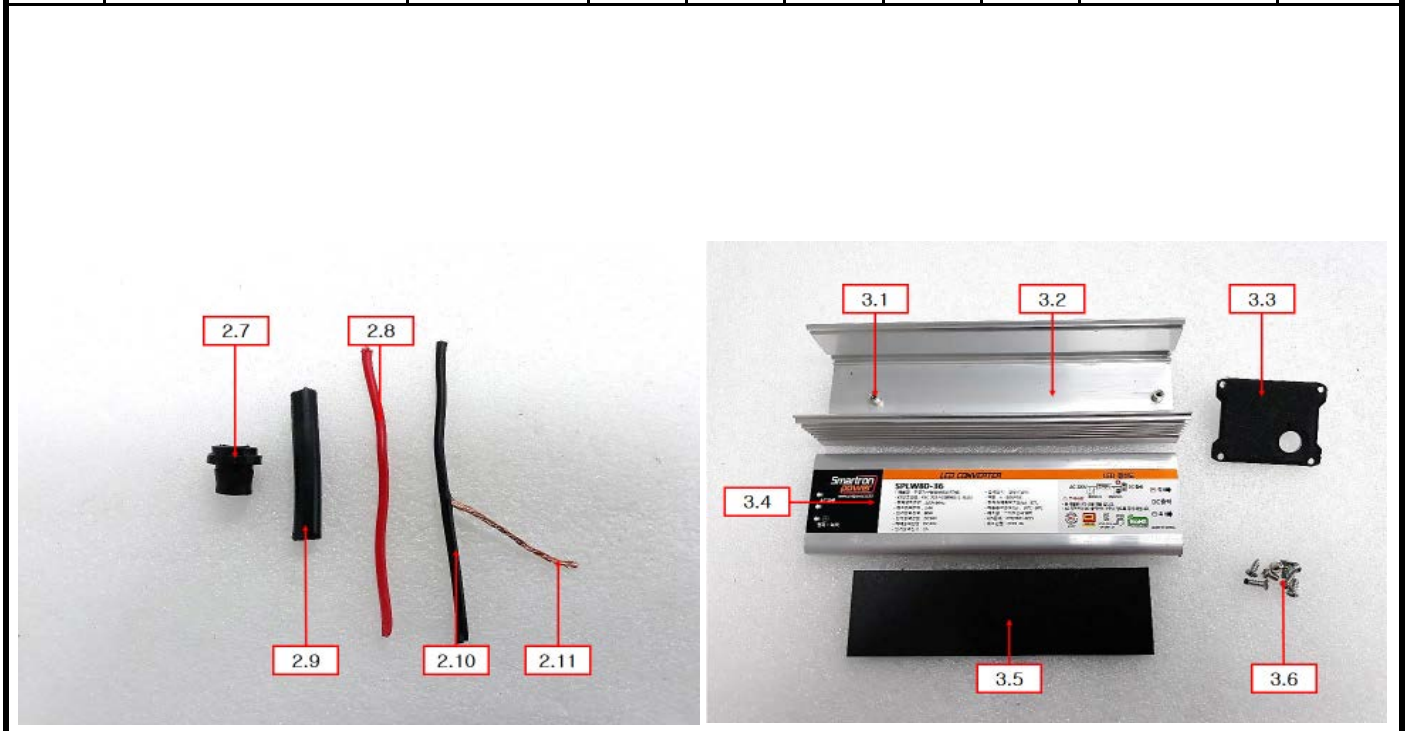
No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
1.40	HFM108	LRC	BL	BL	BL	BL	BL	N.A.	Pass
1.41	RES-CHIP	WALSIN	BL	BL	BL	BL	4249	Cr - Type A	Pass
1.42	CHIP-BEAD	SAMHWA	BL	BL	BL	BL	BL	N.A.	Pass
1.43	RES-CHIP	RARA	BL	BL	BL	BL	4252	Cr - Type A	Pass
2.1	AC CABLE	GSE	BL	BL	BL	BL	BL	N.A.	Pass
2.2			BL	BL	BL	BL	BL	Type B	Pass
2.3			BL	BL	BL	BL	BL	Type B	Pass
2.4			BL	BL	BL	BL	BL	Type B	Pass
2.5			BL	BL	BL	BL	BL	Type B	Pass
2.6			BL	BL	BL	N.A.	BL	N.A.	Pass



## Appendix III

### Verification XRF test results

No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
2.7	DC CABLE	GSE	BL	BL	BL	BL	BL	N.A.	Pass
2.8			BL	BL	BL	BL	BL	N.A.	Pass
2.9			BL	BL	BL	BL	BL	N.A.	Pass
2.10			BL	BL	BL	BL	BL	N.A.	Pass
2.11			BL	BL	BL	N.A.	BL	N.A.	Pass
3.1	Machine Screw	TAEYUNG METAL	BL	BL	BL	N.A.	BL	N.A.	Pass
3.2	Case Bottom	UNI-WORLD	BL	BL	BL	N.A.	BL	N.A.	Pass
3.3	GASKET	A-TEX	BL	BL	BL	BL	BL	N.A.	Pass
3.4	LABEL	SUNTECH	BL	BL	BL	BL	BL	N.A.	Pass
3.5	INSULATION SHEET	A-TEX	BL	BL	BL	BL	BL	N.A.	Pass
3.6	Tapping Screw	TAEYUNG METAL	BL	BL	BL	N.A.	BL	N.A.	Pass





## Appendix III Verification XRF test results

No	Part name	Supplier	XRF Data (mg/kg)					Evaluation	Result
			Cd	Pb	Hg	Br	Cr		
3.7	URETHANE Molding	ESP CAM.	BL	BL	BL	BL	BL	N.A.	Pass
3.8			BL	BL	BL	BL	BL	N.A.	Pass



## Appendix III

### Verification XRF test results

1. Results are obtained by ED XRF in regulated substances according to IEC 62321-3-1 ; 2013 Annex A.
2. It is the result on total Br while test item on restricted substances is PBBs & PBDEs.  
Also, it is the result on total Cr while test item on restricted substance is hexavalent chromium.
3. Screening limits in mg/kg for regulated elements in various matrices

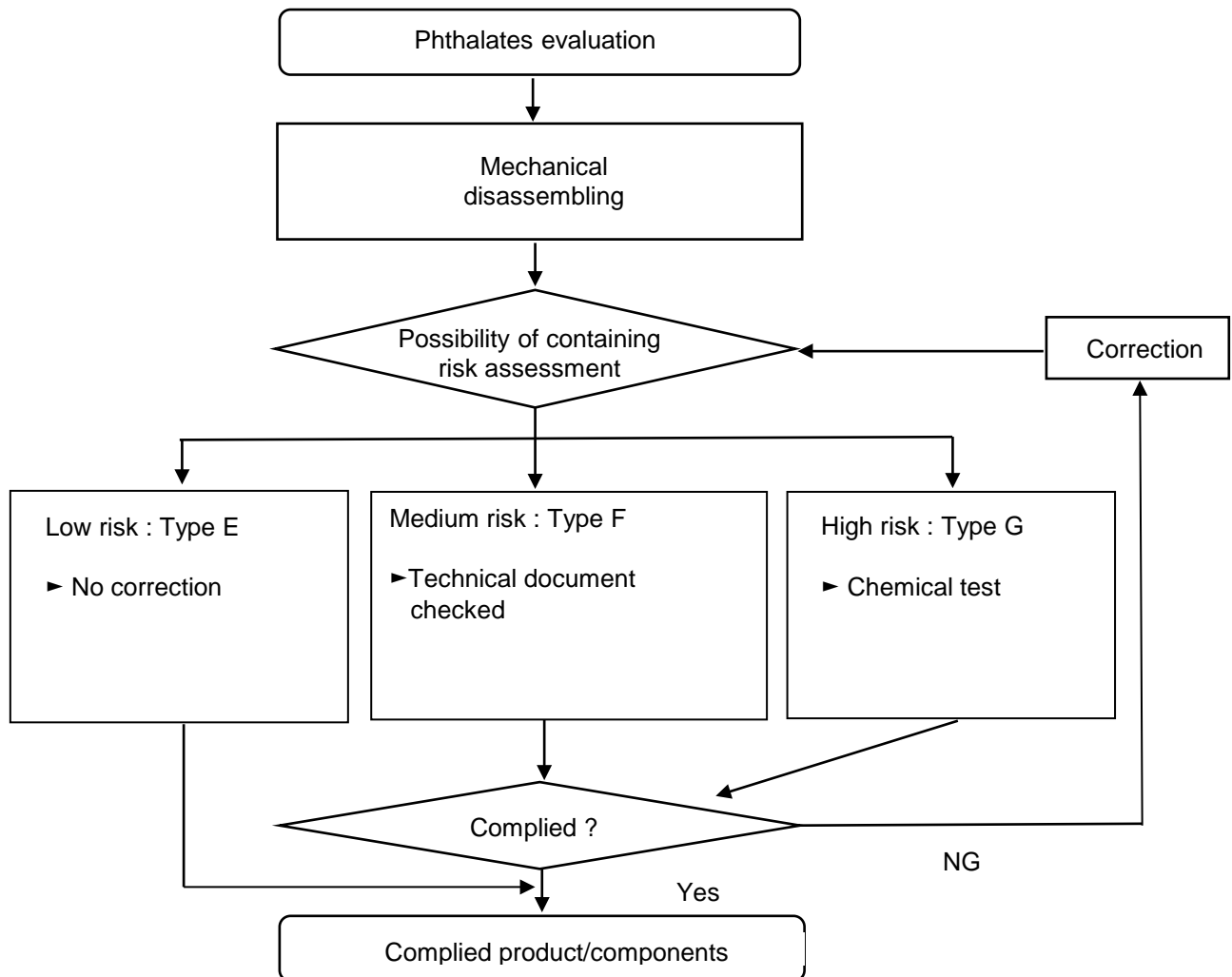
Element	Polymers	Metals	Composite material
Cd	X < 50 (BL) 50 < X < 150 (IN) 150 < X (OL)	X < 50 (BL) 50 < X < 150 (IN) 150 < X (OL)	X < 50 (BL) 50 < X < 150 (IN) 150 < X (OL)
Pb	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)
Hg	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)	X < 500 (BL) 500 < X < 1500 (IN) 1500 < X (OL)
Br	X < 500 (BL) 500 < X (IN)	N.A.	X < 500 (BL) 500 < X (IN)
Cr	X < 500 (BL) 500 < X (IN)	X < 500 (BL) 500 < X (IN)	X < 500 (BL) 500 < X (IN)

4. Abbreviation :
- |  |                       |
|--|-----------------------|
| Pb = Lead                                    | N.A. = Not Applicable |
| Cd = Cadmium                                 | N.D. = Not Detected   |
| Hg = Mercury                                 | BL = Below limit      |
| Cr = Chromium                                | OL = Over limit       |
| Cr (VI) = Chromium (VI)                      | IN = Inconclusive     |
| PBBs = Total Polybrominated Biphenyls        |                       |
| PBDEs = Total Polybrominated Diphenyl Ethers |                       |

5. The type of estimation

Type A	Detected more than screening limits on total Cr and confirmed absence of Cr <sup>6+</sup> by diphenylcarbazide reagent.
Type B	Primary test result failed and replaced new sample. Finally confirmed through again XRF test.
Type C	Detected more than screening limits on total Br and confirmed absence PBBs/PBDEs through technical document of detected parts or material.
Type D	Detected components/materials was tested by chemical analysis

## Appendix IV Phthalates evaluation



Note : 1. Basic acceptance criteria for possibility of containing phthalate is the following.

- If the XRF test result detected the Cl, the part is doubted to be PVC containing phthalate
- Polymer with elasticity and flexibility
- Kind of foreseeable skin-contact materials such as case, cable, rubber.
- Component / materials known to contain materials of high concern

2. Phthalates are materials that help to increase elasticity and flexibility when processing plastics.

3. For maintaining product quality, the comparison and verification are required between analytical test reports and risk assessment if possible

## Appendix IV Phthalates evaluation

No	Part name	Supplier	XRF Data CI	Possibility of containing phthalate	Evaluation	Result
1.1	Y-CAP.	NETRONTECH	BL	Low Risk	Type E	Pass
1.2	BOX-CAP	SUNIL	BL	Low Risk	Type E	Pass
1.3	FUSE	BUSSMAN	BL	Low Risk	Type E	Pass
1.4	VR	COPAL	BL	Low Risk	Type E	Pass
1.5	TRANS.	COT TRANS	N.A.	N.A.	N.A.	Pass
1.6			BL	High Risk	Type G	Pass
1.7			BL	Low Risk	Type E	Pass
1.8			N.A.	N.A.	N.A.	Pass
1.9			BL	High Risk	Type G	Pass
1.10	ELEC_CAP	SAMHWA	BL	Medium Risk	Type F	Pass
1.11			N.A.	N.A.	N.A.	Pass
1.12			BL	Medium Risk	Type F	Pass
1.13			N.A.	N.A.	N.A.	Pass
1.14			BL	Medium Risk	Type F	Pass
1.15	FILTER COIL	TNC	N.A.	N.A.	N.A.	Pass
1.16			BL	Low Risk	Type E	Pass
1.17			BL	Low Risk	Type E	Pass
1.18	FILTER COIL	TNC	N.A.	N.A.	N.A.	Pass
1.19			BL	Low Risk	Type E	Pass
1.20			N.A.	N.A.	N.A.	Pass

## Appendix IV Phthalates evaluation

No	Part name	Supplier	XRF Data CI	Possibility of containing phthalate	Evaluation	Result
1.21	CHOKE COIL	COT TRANS	N.A.	N.A.	N.A.	Pass
1.22			N.A.	N.A.	N.A.	Pass
1.23			BL	High Risk	Type G	Pass
1.24	BRIDGE DIODE	LRC	BL	Low Risk	Type E	Pass
1.25	RESISTOR	RESCO	BL	Low Risk	Type E	Pass
1.26	DIODE DIP	ROHM	BL	Low Risk	Type E	Pass
1.27	VARISTOR	NICON CAMICON	BL	Low Risk	Type E	Pass
1.28	FET	ST	BL	Low Risk	Type E	Pass
1.29	REDERS PCB	CS ELEC.	N.A.	N.A.	N.A.	Pass
1.30			BL	Medium Risk	Type F	Pass
1.31	Phototransistor	KODENSHI AUK	BL	Low Risk	Type E	Pass
1.32	LM2904DR	TI	BL	Low Risk	Type E	Pass
1.33	CHIP-BEAD	Laird	BL	Low Risk	Type E	Pass
1.34	EFM108	LRC	BL	Low Risk	Type E	Pass
1.35	CER-CHIP	WALSIN	BL	Low Risk	Type E	Pass
1.36	L6562ADTF	ST	BL	Low Risk	Type E	Pass
1.37	Voltage Reference	HTC KOREA	BL	Low Risk	Type E	Pass
1.38	RES-CHIP	VIKING	BL	Low Risk	Type E	Pass
1.39	NPN TR	KEC	BL	Low Risk	Type E	Pass

## Appendix IV Phthalates evaluation

No	Part name	Supplier	XRF Data CI	Possibility of containing phthalate	Evaluation	Result
1.40	HFM108	LRC	BL	Low Risk	Type E	Pass
1.41	RES-CHIP	WALSIN	BL	Low Risk	Type E	Pass
1.42	CHIP-BEAD	SAMHWA	BL	Low Risk	Type E	Pass
1.43	RES-CHIP	RARA	BL	Low Risk	Type E	Pass
2.1	AC CABLE	GSE	Detected	High Risk	Type G	Pass
2.2			Detected	High Risk	Type B Type G	Pass
2.3			Detected	High Risk	Type B Type G	Pass
2.4			Detected	High Risk	Type B Type G	Pass
2.5			Detected	High Risk	Type B Type G	Pass
2.6			N.A.	N.A.	N.A.	Pass
2.7	DC CABLE	GSE	Detected	High Risk	Type G	Pass
2.8			Detected	High Risk	Type G	Pass
2.9			Detected	High Risk	Type G	Pass
2.10			Detected	High Risk	Type G	Pass
2.11			N.A.	N.A.	N.A.	Pass
3.1	Machine Screw	TAEYUNG METAL	N.A.	N.A.	N.A.	Pass
3.2	Case Bottom	UNI-WORLD	N.A.	N.A.	N.A.	Pass
3.3	GASKET	A-TEX	BL	High Risk	Type G	Pass
3.4	LABEL	SUNTECH	BL	High Risk	Type G	Pass

## Appendix IV Phthalates evaluation

No	Part name	Supplier	XRF Data Cl	Possibility of containing phthalate	Evaluation	Result
3.5	INSULATION SHEET	A-TEX	BL	High Risk	Type G	Pass
3.6	Tapping Screw	TAEYUNG METAL	N.A.	N.A.	N.A.	Pass
3.7	URETHANE Molding	ESP CAM.	BL	High Risk	Type G	Pass
3.8			BL	High Risk	Type G	Pass

## Appendix V Phthalates Chemical test result

No	Part name	Test method	Chemical analysis data (mg/kg)				Evaluation	Result
			DEHP	BBP	DBP	DIBP		
1.1	Tape - Blue	IEC 62321-8 ; 2017 GC/MS	N.D.	N.D.	N.D.	N.D.	Type G Chemical test	Pass
1.2	Tape - Red		N.D.	N.D.	N.D.	N.D.		Pass
2.2	Shrinkerble tube		N.D.	N.D.	N.D.	N.D.		Pass

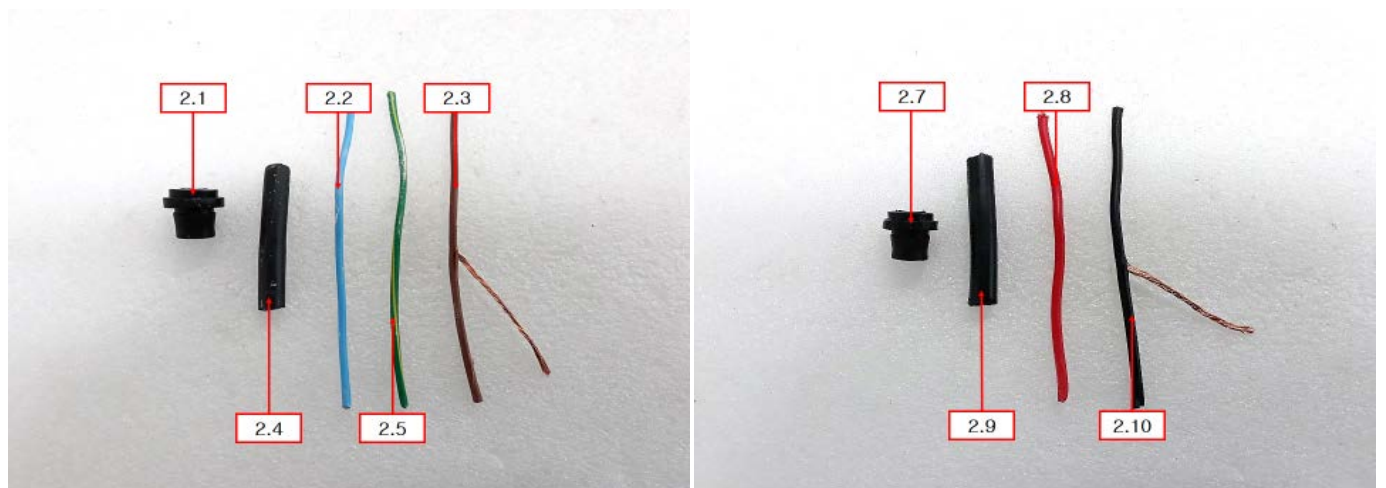




## Appendix V

### Phthalates Chemical test result

No	Part name	Test method	Chemical analysis data (mg/kg)				Evaluation	Result
			DEHP	BBP	DBP	DIBP		
2.1	AC Cable molding	IEC 62321-8 ; 2017 GC/MS	N.D.	N.D.	N.D.	N.D.	Type G Chemical test	Pass
2.2	AC Cable Blue		N.D.	N.D.	N.D.	N.D.		Pass
2.3	AC Cable Brown		N.D.	N.D.	N.D.	N.D.		Pass
2.4	AC Cable Outer		N.D.	N.D.	N.D.	N.D.		Pass
2.5	AC Cable Green		N.D.	N.D.	N.D.	N.D.		Pass
2.7	DC Cable Molding		N.D.	N.D.	N.D.	N.D.		Pass
2.8	AC Cable Red		N.D.	N.D.	N.D.	N.D.		Pass
2.9	AC Cable Outer		N.D.	N.D.	N.D.	N.D.		Pass
2.10	AC Cable Black		N.D.	N.D.	N.D.	N.D.		Pass



## Appendix V Phthalates Chemical test result

No	Part name	Test method	Chemical analysis data (mg/kg)				Evaluation	Result
			DEHP	BBP	DBP	DIBP		
3.3	GASKET	IEC 62321-8 ; 2017 GC/MS	N.D.	N.D.	N.D.	N.D.	Type G Chemical test	Pass
3.4	LABEL		N.D.	N.D.	N.D.	N.D.		Pass
3.5	INSULLATION SHEET		N.D.	N.D.	N.D.	N.D.		Pass
3.7	URETHANE Molding - White		N.D.	N.D.	N.D.	N.D.		Pass
3.8	URETHANE Molding - Black		N.D.	N.D.	N.D.	N.D.		Pass



## Appendix V

### Phthalates Chemical test result

1. Chemical test results are obtained by GC/MS in regulated substances according to IEC 62321-8; 2017.

2. Phthalates are materials that help to increase elasticity and flexibility when processing plastics. Especially, PVC(Polyvinyl chloride) material is likely to contain phthalate.

- If the XRF test result detected the Cl, the part is doubted to be PVC containing phthalate
- There is at least a few percent of Cl in the PVC material  
Therefore, XRF screen test results were recorded 'Detected' only at detection of at least 1 %.
- Other components/materials, including plastics, were evaluated according to a risk assessment of the possibility of containing phthalates.
- The following materials are not likely to contain phthalates.  
Metal (Copper alloy, Steel alloy, Aluminum alloy etc), Ceramic, Glass, Paper, Wood

3. Abbreviation :

DEHP = Bis(2-ethylhexyl)phthalate	BL = Below limit
BBP = Butyl benzyl phthalate	Detected = Cl > 1%
DBP = Dibutyl phthalate	Cl = Chlorine
DIBP = Diisobutyl phthalate	
N.A. = Not Applicable	
N.D. = Not Detected	

4. The type of comprehension

Type E	It was evaluated no exist or remarkable low risk of the possibility for containing phthalates. Applied parts/materials were not required the corrective action
Type F	It was evaluated maybe of the possibility of containing phthalates. Applied parts/materials were confirmed absence phthalates through technical document
Type G	It was evaluated high risk of the possibility of containing phthalates. Applied parts/materials were tested by chemical analysis

## Appendix VI

### Reference document

1. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
2. EN 50581 : 2012  
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
3. IEC 62321-3-1 : 2013  
Determination of certain substances in electrotechnical products - Part 3-1 : Screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry.
4. IEC 62321-8 : 2017  
Determination of certain substances in electrotechnical products – Part 8: Phthalates in polymers by gas chromatography-mass spectrometry(GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory (Py/TD-GC-MS)
5. IEC 62474 : 2018  
Material declaration for products of and for the electrotechnical industry.
6. IEC/TR 62476 : 2010  
Guidance for evaluation of products with respect to substance use restrictions in electrical and electronic products.
7. Directive 2015/863/EU of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

~~ THE END ~~