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Applicant : HYSO LLC

Address : 746 GOTHAM PARKWAY | CARLSTADT, NJ 07072 USA

Sample Name : Electronic Fragrance dispenser

Style/Item No. : Stealth

Manufacturer: Hana Electronic LtdSample Received Date: August 25, 2017Testing Completed Date: September 13, 2017

**Test Requested**: As requested by client, to evaluate the compliance of the submitted sample

with the Directive 2011/65/EU and amendment directive 2015/863/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.

Test Method : 1. Review was performed for the sample and the related Bill of Material

submitted by the Applicant.

2. a) To refer to the standard IEC 62321-3-1:2013: Screening by XRF

Spectroscopy.

b) Wet chemical test

1) to refer to IEC 62321-5: 2013, determine the Cadmium, Lead  $\,$ 

content by ICP-OES.

2) to refer to IEC 62321-4: 2013, determine the Mercury content by

ICP-OES.

3) to refer to IEC 62321-7-1:2015 & IEC 62321-7-2:2017, determine

the Hexavalent Chromium content by UV-VIS.

4) to refer to IEC 62321-6:2015, determine the Polybrominated

Biphenyls and Polybrominated Diphenyl Ethers by GC-MS.

**Test Results** : Please refer to next page (s).





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#### Conclusion:

Basing on the test results obtained from the homogenous materials, the submitted sample **COMPLIES** with the requirements stated in the Annex II of RoHS Directive 2011/65/EU and amendment directive 2015/863/EU.

Signed for and on behalf of EMTEK (Dongguan) Co., Ltd.

Prepared by:

Cherry Zhu Report Engineer

Zhu / Carri

Carrie Zhang Supervisor Approved by:

Lainey Qin

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Reviewed by:



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#### **Test Results:**

No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
ANTER A		Pb	BL		
		Cd	BL		
1	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		
2	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
ALLER OF ST		Cd	BL		Non comment
3	White hard plastic	Hg	BL	NA	
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		
4	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
VIETER VI		Pb	BL		
		Cd	BL		
5	White hard plastic	Hg	BL	NA	Non comment
STANKE L		Cr	BL		
VITER EN VI		Br	BL		
		Pb	BL		
Viet fer V		Cd	BL		
6	White hard plastic	Hg	BL	NA	Non comment
ALLER EN V		Cr	BL		
FERNIEL C		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
A COLONIA		Pb	BL		
		Cd	BL		
7	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
E STATE		Pb	BL		
		Cd	BL		
8	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
A THE LET !		Pb	BL		
		Cd	BL		Non comment
9	White hard plastic	Hg	BL	NA	
ELENATED		Cr	BL		
		Br	BL		
		Pb BL			
CANTER CO		Cd	BL		
10	Silver metal with black coating	Hg	BL	NA	Non comment
A VIET C	ocaling	Cr	BL		
LEFELY Y		Br	NA		
ed Victory		Pb	BL		
		Cd	BL		
11	White hard plastic	Hg	BL	NA	Non comment
ALLE EN		Cr	BL		
ELECTRICAL VIEW		Br	BĹ		
Victorial Control		Pb	BL		
TEFER VIEW		Cd	BL	NA Non co	
12	White hard plastic	Hg	BL		Non comment
THE BUTTE		Cr	BL		
Willet E		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
the Taylor		Pb	BL		
		Cd	BL		
13	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL	NA NA	
E STATE		Pb	BL		
		Cd	BL		
14	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
A VERTER A		Pb	BL		
		Cd	BL		Non comment
15	White hard plastic	Hg	BL	NA	
ELECTIVE C		Cr	BL		
		Br	BL		
		Pb	BL		Non comment
		Cd	BL		
16	White hard plastic	Hg	BL	NA	
te ay year		Cr	BL		
LEFEN Y		Br	BL		
		Pb	BL		
		Cd	BL		
17	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
STATE OF THE		Br	BL		
A VIET E		Pb	BL		
TELEVICE TELEVICE		Cd	BL	NA NA	
18	Silver metal with black coating	Hg	BL		Non comment
THE BUTTE	Coding	Cr	BL		
EN VIET E		Br	NA		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
A TO A VIEW		Pb	BL		
		Cd	BL		
19	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
+		Pb	BL		
		Cd	BL		
20	White hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
er Vieren		Pb	BL		
		Cd	BL		Non comment
21	Silver hard plastic	Hg	BL	NA NA	
		Cr	BL		
		Br	BL		
VERTON V		Pb	BL		
		Cd	BL		
22	Pink soft plastic	Hg	BL	NA NA	Non comment
		Cr	BL		
		Br	BL		
Ed Vict		Pb	BL		
		Cd	BL		
23	Glass with black coating	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
A VISE E		Pb	BL		
TELEFANTE		Cd	BL	NA NA	
24	Yellow soft plastic	Hg	BL		Non comment
STATE OF STATE		Cr	BL		
ANTEST E		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
		Pb	BL		
		Cd	BL		
25	Black soft plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
Telly let to		Pb	BL		
		Cd	BL		
26	White foam	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
YIEFEE A		Pb	BL		
		Cd	BL		Non comment
27	Silver metal	Hg	BL	NA	
E TO THE T		Cr	BL	NA NA PBBs:ND PBDEs:ND	
		Br	NA		
		Pb	BL		
		Cd	BL		
28	Black hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
Victorial Vi		Br	BL		
EL VILLE E		Pb	BL		
		Cd	BL		
29	Green PCB	Hg	BL		Non comment
ALTER OF A		Cr	BL		
A CONTRACTOR		Br	X		
With the stand		Pb	BL		
EFERTY ST		Cd	BL		
30	SMD audion	Hg	BL	NA	Non comment
ELECTION OF		Cr	BL		
Chief &		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
CATAL STAN		Pb	BL		
		Cd	BL		
31	Silver metal	Hg	BL	NA	Non comment
A NOTE OF B		Cr	BL		
A COLOR OF THE A		Br	NA		
A LYTHE		Pb	BL		
VIET ENV		Cd	BL		
32	Black solid	Hg	BL	NA	Non comment
THE FELL		Cr	BL		
		Br	BL		
e Viete		Pb	BL		
		Cd	BL		Non comment
33	Silver metal	Hg	BL	NA NA	
		Cr	BL		
		Br	NA		
WEEL BY YE		Pb	BL	NA	Non comment
		Cd	BL		
34	Black hard plastic	Hg	BL		
		Cr	BL		
Vieterer Gereger		Br	BL		
FERNINE L		Pb	BL		
		Cd	BL		
35	SMD capacitor	Hg	BL	NA	Non comment
Mark Co.		Cr	BL		
		Br	BL		
STATE OF STA		Pb	BL		
		Cd	BL	NA	
36	Black soft plastic with white printing	Hg	BL		Non comment
ET GEN	Pinting	Cr	BL		
ELVIET E		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
		Pb	BL		
		Cd	BL		
37	Dull silver metal	Hg	BL	NA	Non comment
		Cr	BL		
		Br	NA		
- Tel YVEFFE		Pb	BL		
		Cd	BL		
38	Brown paper	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
Y LEFEN Y		Pb	BL		
		Cd	BL		Non comment
39	Silver metal	Hg	BL	NA	
		Cr	BL		
		Br	NA		
		Pb	BL		
		Cd	BL		
40	Black soft plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
STANTE S		Pb	BL		
		Cd	BL		
41	Silver metal	Hg	BL	NA	Non comment
ALTER EN		Cr	BL		
		Br	NA		
A KINE OF S		Pb	BL		
CALLET CALL		Cd	BL	NA NA	
42	Silver metal	Hg	BL		Non comment
CATALON CO		Cr	BL		
STATE OF		Br	NA		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
		Pb	BL		
		Cd	BL		
43	Brown solid	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		
44	Black hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		Non comment
45	Silver metal	Hg	BL	NA	
		Cr	BL		
		Br	NA		
		Pb	BL		
		Cd	BL		
46	Silver metal	Hg	BL	NA NA	Non comment
		Cr	BL		
		Br	NA		
EL LA VIET E		Pb	BL		
		Cd	BL		
47	Brown PCB	Hg	BL	PBBs:ND PBDEs:ND	Non comment
		Cr	BL		
		Br	X		
A VIET OF		Pb	BL		
		Cd	BL		
48	Brown solid	Hg	BL	NA	Non comment
LET ENVIEW		Cr	BL		
ALLEY EN		Br	BL		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
HE BANK		Pb	BL		
		Cd	BL		
49	SMD crystal oscillator	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
A CANTER		Pb	BL		
		Cd	BL		
50	Black hard plastic	Hg	BL	NA	Non comment
A TATE OF THE		Cr	BL		
		Br	BL		
A VIETERA		Pb	BL		
		Cd	BL		Non comment
51	Silver metal	Hg	BL	NA	
TE STATE		Cr	BL		
CANTER CAN		Br	NA		
VIET BY VE		Pb	BL		
		Cd	BL		
52	SMD IC	Hg	BL	NA	Non comment
		Cr	BL		
V.V.E.F.E.V.V.		Br	BL		
EL LAVEL		Pb	BL		
		Cd	BL		
53	SMD capacitor	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
LEE GAY		Cd	BL	NA NA	
54	Silver metal	Hg	BL		Non comment
THE THE A		Cr	BL		
ENTREE E		Br	NA		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
		Pb	BL		
		Cd	BL		
55	Black soft plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL	PBBs:ND 1-9 BDEs:ND 10 BDE: 119 PBBs:ND PBDEs:ND	
Tel Vite		Pb	BL		
		Cd	BL		
56	Silver metal	Hg	BL	NA	Non comment
		Cr	BL		
		Br	NA		
ALERT BY		Pb	BL		Non comment
		Cd	BL	PBBs:ND	
57	Black hard plastic	Hg	BL	1-9 BDEs:ND	
		Cr	BL	10 BDE: 119	
		Br	X		
		Pb	BL		
		Cd	BL		
58	White PCB	Hg	BL		Non comment
TO A LITTER OF		Cr	BL		
		Br	X		
A CANAGE		Pb	BL		
		Cd	BL		
59	Black hard plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
Wilet B		Pb	BL		
		Cd	BL	NA NA	
60	Copper metal with red coating	Hg	BL		Non comment
ELECTION OF	3231119	Cr	BL		
With the se		Br	NA		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
HE FEYLER		Pb	BL		
		Cd	BL		
61	Silver metal	Hg	BL	NA	Non comment
		Cr	BL		
		Br	NA		
+		Pb	BL		
		Cd	BL		
62	Black soft plastic	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		Non comment
63	Red soft plastic	Hg	BL	NA NA	
		Cr	BL		
		Br	BL		
		Pb	BL		
		Cd	BL		
64	Silver metal	Hg	BL	NA NA	Non comment
		Cr	BL		
V KERELY K		Br	NA		
		Pb	BL		
		Cd	BL		
65	Black soft plastic	Hg	BL	NA	Non comment
		Cr	BL		
EFERTAL S		Br	BL		
A VIET A		Pb	BL		
Mark and Mark		Cd	BL	NA NA	
66	Silver metal	Hg	BL		Non comment
THE BUYER		Cr	BL		
ALLET E		Br	NA		





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No.	Sample description	Restricted substances	Results of EDXRF <sup>(1)</sup>	Results of Chemical Testing <sup>(2)</sup> (mg/kg)	Remark
		Pb	BL		
		Cd	BL		
67	Black hard plastic	Hg	BL	PBBs:ND PBDEs:ND	Non comment
		Cr	BL	, 55 25.115	
		Br	X		
		Pb	BL		
		Cd	BL		
68	Black solid	Hg	BL	NA	Non comment
		Cr	BL		
		Br	BL		
		Pb	BL	NA NA	
		Cd	BL		
69	Silver metal	Hg	BL		Non comment
		Cr	BL		
		Br	NA		
		Pb	BL		
		Cd	BL		
70	Silver metal	Hg	BL	NA	Non comment
		Cr	BL		
		Br	NA		
		Pb	BL		
		Cd	BL	NA	
71	Silver metal	Hg	BL		Non comment
		Cr	BL		
		Br	NA		





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- Remark: (1) ① Results are obtained by XRF for primary screening, and further wet chemical testing by ICP-OES / AAS (for Cd, Pb, Hg), UV-VIS (for Cr(VI)) and GC/MS (for PBBs, PBDEs) is recommended to be performed, if an inconclusive result was found (as "X" in below table) (unit: mg/kg).
  - ② OL = Over Limit, BL = Below Limit, X = Inconclusive, NA= Not Applicable.
  - ③ The XRF screening test for RoHS elements The reading may be different to the actual content in the sample be of non-uniformity composition.

Element	Polymer	Metal	Composite Materials  LOD < X <(150+3 σ )≤ OL	
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$		
Pb	BL $\leq$ (700-3 $\sigma$ ) < X < (1300+3 $\sigma$ ) $\leq$ OL	BL $\leq$ (700-3 $\sigma$ ) < X <(1300+3 $\sigma$ ) $\leq$ OL	BL $\leq$ (500-3 $\sigma$ )< X <(1500+3 $\sigma$ ) $\leq$ OL	
Hg	BL $\leq$ (700-3 $\sigma$ ) < X < (1300+3 $\sigma$ ) $\leq$ OL	BL $\leq$ (700-3 $\sigma$ ) < X <(1300+3 $\sigma$ ) $\leq$ OL	BL $\leq$ (500-3 $\sigma$ )< X <(1500+3 $\sigma$ ) $\leq$ OL	
Br	BL ≤ (300-3 <i>σ</i> )< X	NA	BL ≤ (250-3 <i>σ</i> )< X	
- Cr	BL ≤ (700-3 <i>σ</i> )< X	BL ≤ (700-3 σ)< X	BL ≤ (500-3 <i>σ</i> )< X	

- (2) ① mg/kg = ppm = 0.0001%, ND = Not Detected (Less than reporting limit value.).
  - 2 Unit, Reporting Limit (RL) and Requirement limit in wet chemical test.

Test items	Pb	Cd	Hg	Cr6+(Non-metal)	Cr6+(metal)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
RL	2	2	2	2	2	5	5
Requirement Limit	1000	100	1000	1000	Negative	1000	1000

- 3 According to IEC 62321-7-1:2015 & IEC 62321-7-2:2017, result on Cr<sup>6+</sup> for metal sample is shown as Positive/Negative.
  - Negative = Absence of Cr<sup>6+</sup> coating, Positive = Presence of Cr<sup>6+</sup> coating. Storage condition and production date of the tested sample are unavailable and thus results of Cr<sup>6+</sup> represent status of the sample at the time of testing.
- According to IEC 62321-3-1:2013, this column represents the results of wet chem test. And "NA" means no need to perform wet chem test, when the XRF sereening results are qualified.





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Photo Appendix

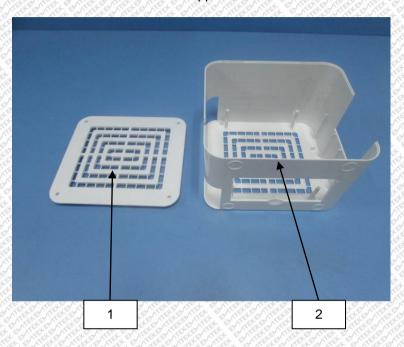


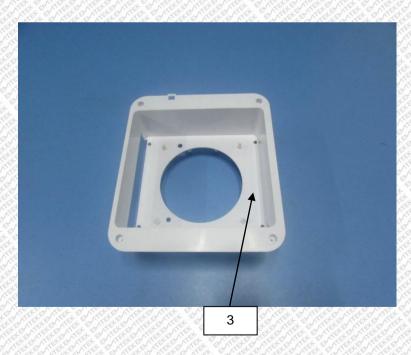




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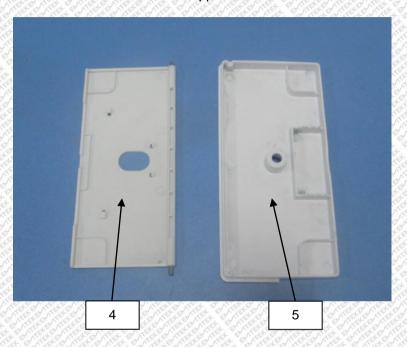


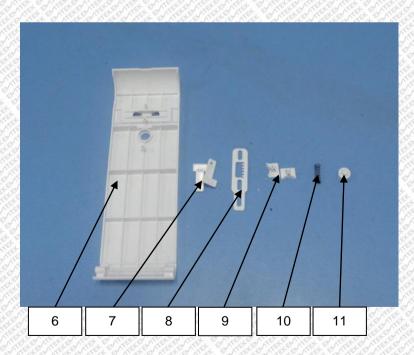




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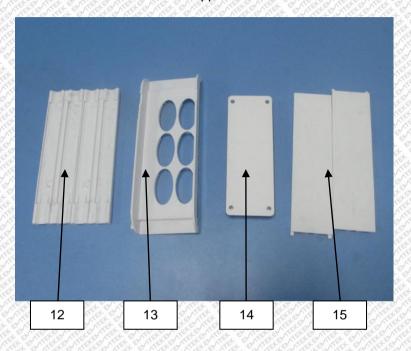


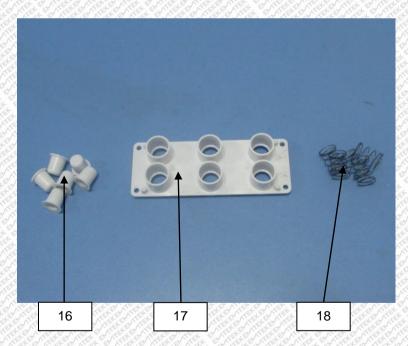




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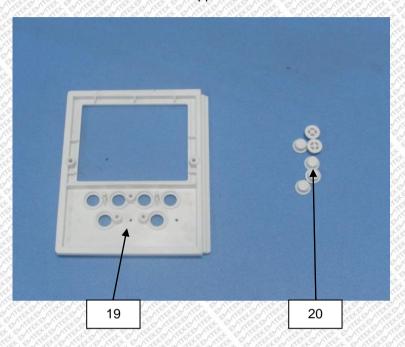


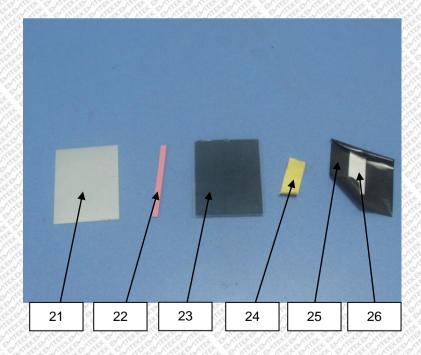




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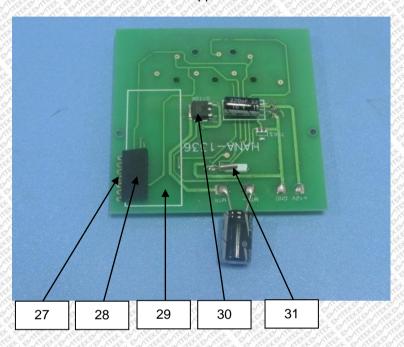


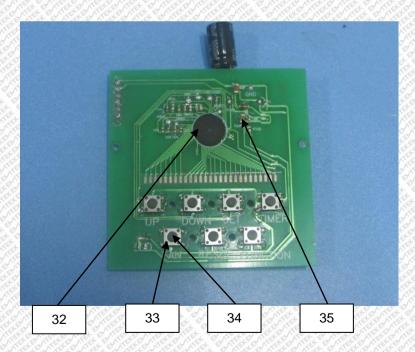




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#### Photo Appendix



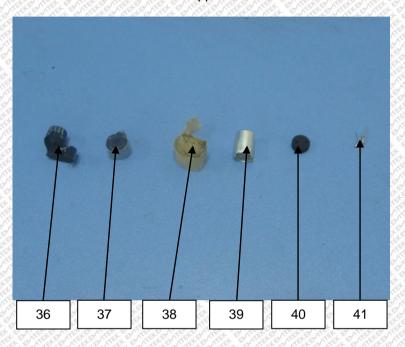


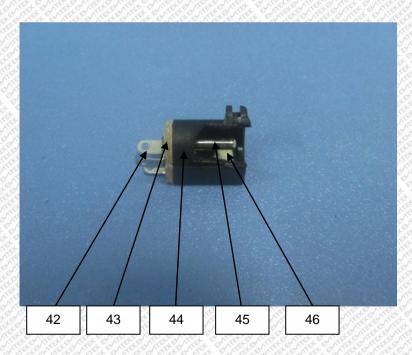




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#### Photo Appendix



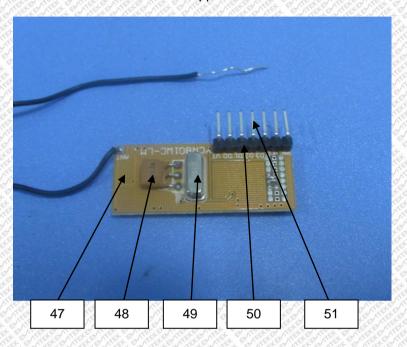


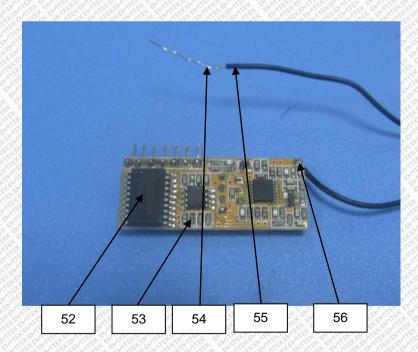




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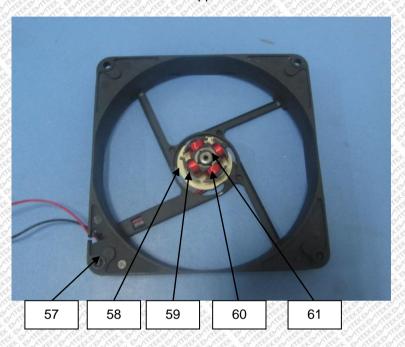


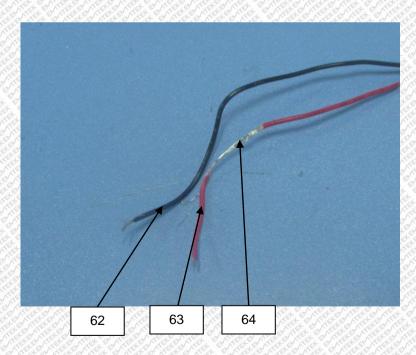




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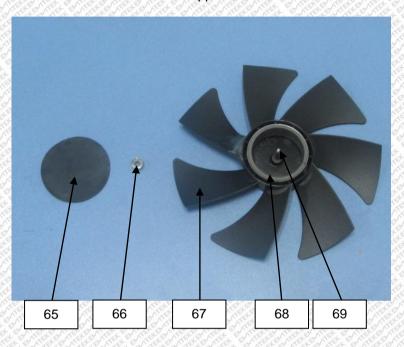


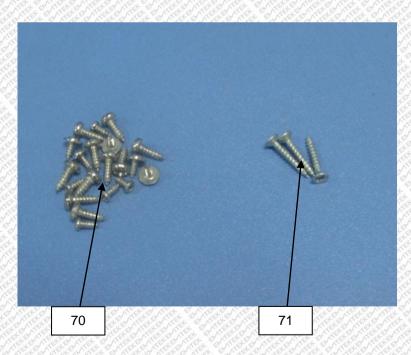




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Photo Appendix





\* \* \* \* \* \* The End \* \* \* \* \* \*





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#### ANNEX

#### **EXEMPTION LIST**

- 1 Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):
- 1(a) For general lighting purposes < 30W: 5mg (expires on 31 December 2011; 3.5mg may be used per burner after 31 December 2011 until 31 December 2012; 2.5mg shall be used per burner after 31 December 2012)
- 1(b) For general lighting purposes ≥ 30W and <50W: 5mg (expires on 31 December 2011; 3.5mg may be used per burner after 31 December 2011)
- 1(c) For general lighting purposes ≥ 50W and <150W: 5mg
- 1(d) For general lighting purposes ≥ 150W: 15mg
- 1(e) For general lighting purposes with circular or square structural shape and tube diameter ≤17mm (no limitation of use until 31 December 2011; 7mg may be used per burner after 31 December 2011)
- 1(f) For special purposes: 5mg
- 1(g) For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg (Expires on 31 December 2017)
- 2(a) Mercury in double-capped linear fluorescent lamps for general lighting purples not exceeding (per lamp):
- 2(a)(1) Tri-band phosphor with normal lifetime and a tube diameter < 9mm (e.g. T2): 5mg (expires on 31 December 2011; 4mg may be used per lamp after 31 December 2011)
- 2(a)(2) Tri-band phosphor with normal lifetime and a tube diameter ≥ 9mm and ≤ 17mm (e.g. T5): 5mg (expires on 31 December 2011; 3mg may be used per lamp after 31 December 2011)
- 2(a)(3) Tri-band phosphor with normal lifetime and a tube diameter > 17mm and ≤ 28mm (e.g. T8): 5mg (expires on 31 December 2011; 3.5mg may be used per lamp after 31 December 2011)
- 2(a)(4) Tri-band phosphor with normal lifetime and a tube diameter > 28mm (e.g. T12): 5mg (expires on 31 December 2012; 3.5mg may be used per lamp after 31 December 2012)
- 2(a)(5) Tri-band phosphor with long lifetime (≥ 25000h): 8mg (expires on 31 December 2011; 5mg may be used per lamp after 31 December 2011)
- 2(b) Mercury in other fluorescent lamps not exceeding (per lamp):
- 2(b)(2) Non-linear halophosphate lamps (all diameters): 15mg (expires on 13 April 2016)
- 2(b)(3) Non-linear tri-band phosphor lamps with tube diameter > 17mm (e.g. T9) (no limitation of use until 31 December 2011; 15mg may be used per lamp after 31 December 2011)
- 2(b)(4) Lamps for other general lighting and special purposes (e.g. induction lamps) (no limitation of use until 31 December 2011; 15mg may be used per lamp after 31 December 2011)
- 3 Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):
- 3(a) Short length (≤ 500mm) (No limitation of use until 31 December 2011; 3.5mg may be used per lamp after 31 December 2011)
- 3(b) Medium length (> 500m and ≤ 1500mm) (No limitation of use until 31 December 2011; 5mg may be used per lamp after 31 December 2011)
- 3(c) Long length (> 1500mm) (No limitation of use until 31 December 2011; 13mg may be used per lamp after 31 December 2011)
- 4(a) Mercury in other low pressure discharge lamps (per lamp) (no limitation of use until 31 December 2011; 15mg may be used per lamp after 31 December 2011)
- 4(b) Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:
- 4(b)-l P ≤ 155W (no limitation of use until 31 December 2011; 40mg may be used per burner after 31 December 2011)
- 4(b)-II 155W < P ≤ 405W (no limitation of use until 31 December 2011; 40mg may be used per burner after 31 December 2011)
- 4(b)-III P > 405W (no limitation of use until 31 December 2011; 40mg may be used per burner after 31 December 2011)
- 4(c) Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):
- 4(c)-I P≤ 155W (no limitation of use until 31 December 2011; 25mg may be used per burner after 31 December 2011)
- 4(c)-II 155W < P ≤405W (no limitation of use until 31 December 2011; 30mg may be used per burner after 31 December 2011)
- 4(c)-III P > 405W (no limitation of use until 31 December 2011; 40mg may be used per burner after 31 December 2011)
- 4(d) Mercury in High Pressure Mercury (vapour) lamps (HPMV) (expires on 13 April 2015)
- 4(e) Mercury in metal halide lamps (MH)
- 4(f) Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex
- 4(g) Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (Expires on 31 December 2018)
  - (a) 20 mg per electrode pair + 0,3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 ° C:
  - (b) 15 mg per electrode pair + 0,24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.





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#### **ANNEX**

#### **EXEMPTION LIST**

#### Continued

5(a)	Lead in glass of cathode ray tubes
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2% by weight
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight
6(b)	Lead as an alloying element in aluminium containing up to 0.4% lead by weight
6(c)	Copper alloy containing up to 4% lead by weight.
7(a)	Lead in high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead)
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications
7(c)-l	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125V AC or 250V DC (expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013).
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs (expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012)
8(b)	Cadmium and its compounds in electrical contacts
9	Hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications
11(b)	Lead used in other than C-press compliant pin connector systems (expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013)
13(a)	Lead in white glasses used for optical applications
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight (expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011)
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip
VIETERV.	Chip packages
17	Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications
18(b)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi <sub>2</sub> O <sub>5</sub> :Pb)
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glass
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring
29	Lead bound in crystal glass as defined in Annex 1 (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers
34	Lead in cermet-based trimmer potentiometer elements
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide
39	Cadmium in colour converting II-VI LEDs (< 10 μg Cd per mm² of light- emitting area) for use in solid state illumination or display systems (expires on 1 July 2014)
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in

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ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of



the European Parliament and of the Council (2)) (Expires on 31 December 2018)