



TEST REPORT

Report No.: **TH2206053-C12-R01**

Product: **Stepper Servo Drives/Microstep Drives**

Model: **R86, R86Mini, R86-IO, R86-IR, R85, DM860, DM860H, 3R86, T42, T60, T60PLUS, T86, DS86**

Applicant: **Shenzhen Rtelligent Technology Co.,Ltd**

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Manufacturer: **Shenzhen Rtelligent Technology Co.,Ltd**

Address: **B301Room 301,B Building,Zhuangbian Industrial park,Nanchang Road,Gushu,Baoan District,Shenzhen,Guangdong China**

Sample Received Date: **2022-06-05**

Testing completed Date: **2022-06-17**

Test Method: **Please refer to next page(s)**

Test Conclusion: **Based on the performed tests on submitted sample(s), the results of lead,Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs),Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP),Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set byRoHS Directive (EU) 2015/863 amending Annex II to Directive (EU)2017/2102.**

Note **/**

Authorized by:
Shenzhen Tian Hai Test Technology Co.,Ltd.

Thomas Wong

Test data presented in this report are gathered and based on the test reports of separated parts supplied by the applicant. Shenzhen Tian Hai Test Technology Co.,Ltd. is not responsible for the authenticity of all the test data of these reports.

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Test Method :

1. With reference to IEC 62321-2:2013, review was performed for the samples disjoined from the submitted articles.
2. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report
 - a. With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES
 - b. With reference to IEC 62321-5:2013, determination of Lead by ICP-OES
 - c. With reference to IEC 62321-4:2013+A1:2017, determination of Mercury by ICP-OES
 - d. IEC 62321-1:2013,determination of Hexavalent Chromium by Colorimetric method.
 - e. With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.
 - f. IEC 62321-8:2018,determination of DEHP, BBP,DBP,DIBP by GC-MS.



In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified.

Part No.	Part Description.	Restricted Substances.	Results	Result of Testing (mg/kg)	Conclusion on EU RoHS
1	Enclosure Colour: Silver	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
2	Screws Colour: Silver	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
3	Terminal Colour: Green	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
4	Terminal Colour: Blue	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply



Part No.	Part Description.	Restricted Substances.	Results	Result of Testing (mg/kg)	Conclusion on EU RoHS
5	PCB Colour: Green	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
6	Painted words on enclosure Colour: Black	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
7	IC Colour: Black	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
8	Capacitors Colour: Black	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
9	Interfaces	Pb	BL	---	Comply
		Cd	BL	---	Comply



Part No.	Part Description.	Restricted Substances.	Results	Result of Testing (mg/kg)	Conclusion on EU RoHS
	Colour: Silver	Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply
10	FAN Colour: Black	Pb	BL	---	Comply
		Cd	BL	---	Comply
		Hg	BL	---	Comply
		Cr(VI)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
		DIBP	BL	---	Comply
		DEHP	BL	---	Comply
		DBP	BL	---	Comply
		BBP	BL	---	Comply

Remark:

- (1) (a) There are the results on total Br while test items on restricted substances are PBBs and PBDEs. There is the result on total Cr while test item on restricted substances is Cr(VI).
- (b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC62321-3-1:2013 (unit: mg/kg).



Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
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	$BL \leq (300-3\sigma) < X$	--	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

(c) BL = Below Limit, OL = Over Limit, IN = Inconclusive, LOD = Limit of Detection, -- = Not regulated.

(d) The XRF screening test for RoHS elements - The reading may be different to the Actual content in the sample be of non-uniformity composition.

(2) (a) mg/kg = 0.0001%, MDL = Method detection Limit, ND = Not Detected (<MDL), --- = Not conducted, - = Without BOM.

(b) Unit and MDL in wet chemical test

Test Item	Pb	Cd	Hg
Unit	mg/kg	mg/kg	mg/kg
MDL	10	10	10

The MDL for single compound of PBBs and PBDEs is 100 mg/kg.

MDL of Cr(VI) for polymer and composite sample is 10 mg/kg.

MDL of Cr(VI) for metal sample is 0.10 $\mu\text{g}/\text{cm}^2$.

(c) ▼ =Metal sample

a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 $\mu\text{g}/\text{cm}^2$.

The sample coating is considered to contain CrVI.

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 $\mu\text{g}/\text{cm}^2$).

The coating is considered a non-CrVI based coating.

c. The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive
- unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.



特特技术
TELLICENT
Microchip Driver
R86

Voltage
DC24-100V
AC 16-50V

Setting
A+
A-
B+
B-
AC
SW1

Signal
DIR+
DIR-
PUL+
PUL-
ENA+
SW1
SW2
SW3
SW4
SW5
SW6
SW7

Operating Voltage
100V 150V 180V 200V 220V 240V 250V 260V 270V 280V 290V 300V 310V 320V 330V 340V 350V 360V 370V 380V 390V 400V 410V 420V 430V 440V 450V 460V 470V 480V 490V 500V 510V 520V 530V 540V 550V 560V 570V 580V 590V 600V 610V 620V 630V 640V 650V 660V 670V 680V 690V 700V 710V 720V 730V 740V 750V 760V 770V 780V 790V 800V 810V 820V 830V 840V 850V 860V 870V 880V 890V 900V 910V 920V 930V 940V 950V 960V 970V 980V 990V 1000V 1010V 1020V 1030V 1040V 1050V 1060V 1070V 1080V 1090V 1100V 1110V 1120V 1130V 1140V 1150V 1160V 1170V 1180V 1190V 1200V 1210V 1220V 1230V 1240V 1250V 1260V 1270V 1280V 1290V 1300V 1310V 1320V 1330V 1340V 1350V 1360V 1370V 1380V 1390V 1400V 1410V 1420V 1430V 1440V 1450V 1460V 1470V 1480V 1490V 1500V 1510V 1520V 1530V 1540V 1550V 1560V 1570V 1580V 1590V 1600V 1610V 1620V 1630V 1640V 1650V 1660V 1670V 1680V 1690V 1700V 1710V 1720V 1730V 1740V 1750V 1760V 1770V 1780V 1790V 1800V 1810V 1820V 1830V 1840V 1850V 1860V 1870V 1880V 1890V 1900V 1910V 1920V 1930V 1940V 1950V 1960V 1970V 1980V 1990V 2000V 2010V 2020V 2030V 2040V 2050V 2060V 2070V 2080V 2090V 2100V 2110V 2120V 2130V 2140V 2150V 2160V 2170V 2180V 2190V 2200V 2210V 2220V 2230V 2240V 2250V 2260V 2270V 2280V 2290V 2300V 2310V 2320V 2330V 2340V 2350V 2360V 2370V 2380V 2390V 2400V 2410V 2420V 2430V 2440V 2450V 2460V 2470V 2480V 2490V 2500V 2510V 2520V 2530V 2540V 2550V 2560V 2570V 2580V 2590V 2600V 2610V 2620V 2630V 2640V 2650V 2660V 2670V 2680V 2690V 2700V 2710V 2720V 2730V 2740V 2750V 2760V 2770V 2780V 2790V 2800V 2810V 2820V 2830V 2840V 2850V 2860V 2870V 2880V 2890V 2900V 2910V 2920V 2930V 2940V 2950V 2960V 2970V 2980V 2990V 3000V 3010V 3020V 3030V 3040V 3050V 3060V 3070V 3080V 3090V 3100V 3110V 3120V 3130V 3140V 3150V 3160V 3170V 3180V 3190V 3200V 3210V 3220V 3230V 3240V 3250V 3260V 3270V 3280V 3290V 3300V 3310V 3320V 3330V 3340V 3350V 3360V 3370V 3380V 3390V 3400V 3410V 3420V 3430V 3440V 3450V 3460V 3470V 3480V 3490V 3500V 3510V 3520V 3530V 3540V 3550V 3560V 3570V 3580V 3590V 3600V 3610V 3620V 3630V 3640V 3650V 3660V 3670V 3680V 3690V 3700V 3710V 3720V 3730V 3740V 3750V 3760V 3770V 3780V 3790V 3800V 3810V 3820V 3830V 3840V 3850V 3860V 3870V 3880V 3890V 3900V 3910V 3920V 3930V 3940V 3950V 3960V 3970V 3980V 3990V 4000V 4010V 4020V 4030V 4040V 4050V 4060V 4070V 4080V 4090V 4100V 4110V 4120V 4130V 4140V 4150V 4160V 4170V 4180V 4190V 4200V 4210V 4220V 4230V 4240V 4250V 4260V 4270V 4280V 4290V 4300V 4310V 4320V 4330V 4340V 4350V 4360V 4370V 4380V 4390V 4400V 4410V 4420V 4430V 4440V 4450V 4460V 4470V 4480V 4490V 4500V 4510V 4520V 4530V 4540V 4550V 4560V 4570V 4580V 4590V 4600V 4610V 4620V 4630V 4640V 4650V 4660V 4670V 4680V 4690V 4700V 4710V 4720V 4730V 4740V 4750V 4760V 4770V 4780V 4790V 4800V 4810V 4820V 4830V 4840V 4850V 4860V 4870V 4880V 4890V 4900V 4910V 4920V 4930V 4940V 4950V 4960V 4970V 4980V 4990V 5000V 5010V 5020V 5030V 5040V 5050V 5060V 5070V 5080V 5090V 5100V 5110V 5120V 5130V 5140V 5150V 5160V 5170V 5180V 5190V 5200V 5210V 5220V 5230V 5240V 5250V 5260V 5270V 5280V 5290V 5300V 5310V 5320V 5330V 5340V 5350V 5360V 5370V 5380V 5390V 5400V 5410V 5420V 5430V 5440V 5450V 5460V 5470V 5480V 5490V 5500V 5510V 5520V 5530V 5540V 5550V 5560V 5570V 5580V 5590V 5600V 5610V 5620V 5630V 5640V 5650V 5660V 5670V 5680V 5690V 5700V 5710V 5720V 5730V 5740V 5750V 5760V 5770V 5780V 5790V 5800V 5810V 5820V 5830V 5840V 5850V 5860V 5870V 5880V 5890V 5900V 5910V 5920V 5930V 5940V 5950V 5960V 5970V 5980V 5990V 6000V 6010V 6020V 6030V 6040V 6050V 6060V 6070V 6080V 6090V 6100V 6110V 6120V 6130V 6140V 6150V 6160V 6170V 6180V 6190V 6200V 6210V 6220V 6230V 6240V 6250V 6260V 6270V 6280V 6290V 6300V 6310V 6320V 6330V 6340V 6350V 6360V 6370V 6380V 6390V 6400V 6410V 6420V 6430V 6440V 6450V





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