

SPECIFICATION FOR APPROVAL

CUSTOMER: _____

MODEL NO: 12738III(CeraDyna Fan)

PART NO: FD1213-A1251G

DATE : April 23, 2007

CUSTOMER APPROVAL

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CONTENTS

Contents Clause :

1. <u>SCOPE</u>	3
2. <u>ELECTRICAL</u>	3
3. <u>MATERIAL</u>	4
4. <u>MECHANICAL</u>	4
5. <u>MTBF</u>	4
6. <u>ORDERING AND OPERATING REMARKS</u>	4
7. <u>NOISE</u>	5
8. <u>RELIABILITY</u>	6
9. <u>PRODUCT LABEL</u>	7
10. <u>PERFORMANCE CHART</u>	7
11. <u>ASSEMBLY DIAGRAM</u>	8
12. <u>FREQUENCY GENERATOR SIGNAL (FG)</u>	9
13. <u>NOTES</u>	10
14. <u>SGS REPORT</u>	11~15

1. SCOPE

This document is a specification defining the electrical and mechanical characteristics of the CeraDyna fan.

2.ELECTRICAL

	Item	Specification	Test Condition
1	Rated Voltage	12V	DC power supply
2	Rated Current	1.2 Amp (Typical)	DC power supply
3	Max. Current	1.4 Amp(Safety)	DC power supply
4	Auto restart cycle time	1 Sec. ON , 6 Sec. OFF	At rated voltage
5	Rated Power	14.4 W	Under at rated voltage and rated current
6	Starting Voltage	7 V (Max.)	Connect DC power supply
7	Insulation Resistance	10 M Ω (Min.)	Input 500V(DC) between Lead wire(+) and housing
8	Speed (H)	3800 RPM (typical) ± 10 %	Measured at 5 minutes after starting under 25 $^{\circ}$ C 65%RH ambient
9	Acoustical Noise	59.00 dB(A)+1.5 dB(A)	Measured at typical speed with an acoustic microphone 1 meter away from the fan intake in a test chamber with background noise level below 20dB(A)
10	Static Pressure(H/M/L)	16.65 mm-H ₂ O (0.65 inch-H ₂ O)	At zero airflow ; rated voltage
11	Air Flow (H/M/L)	190.56 CFM (5.39 CMM)	At zero static pressure ; rated voltage
12	Direction of rotation	Counter-clockwise viewed from impeller	

3. MATERIAL

Impeller	PBT UL94-V0
Frame	PBT UL94-V0
Bobbin	PBT UL94-V0
Lead Wire	24 <input checked="" type="checkbox"/> UL 1007 AWG26 <input type="checkbox"/> or Equivalent 28 <input type="checkbox"/>
<input checked="" type="checkbox"/> + : Red <input checked="" type="checkbox"/> - : Black <input checked="" type="checkbox"/> O/P: <input checked="" type="checkbox"/> White <input type="checkbox"/> Yellow	

4. MECHANICAL

Dimensions	L * W * H =127*127*38 (mm)
Weight	270 grams
Operating temperature range	-10 °C ~ 75 °C
Storage temperature	-20 °C ~ 80 °C
Bearing system	Alloy Sleeve with Ceramic Shaft

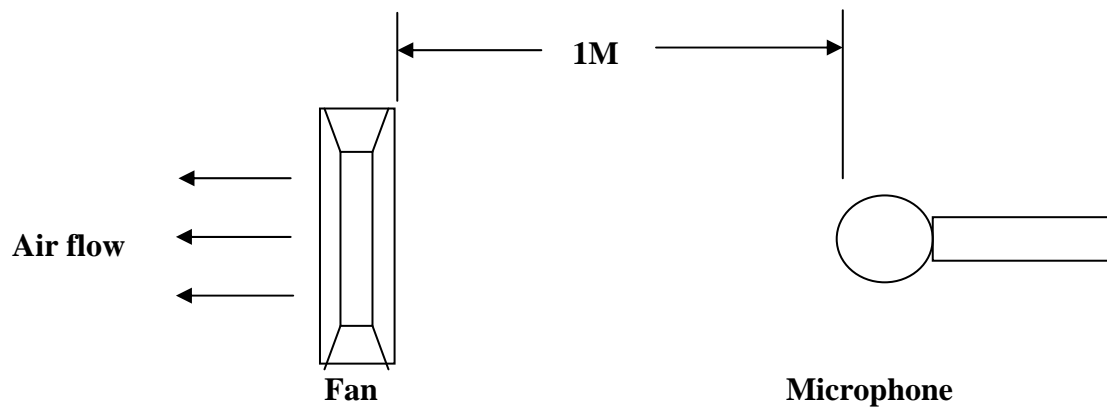
5. MEAN TIME BETWEEN FAILURE

At a common operating condition of +25°C, the expected reliability (expressed as Mean Time Between Failure) of fans are evaluated under the MIL-STD-781 Documentation Standard as below :

Alloy Sleeve with Ceramic Shaft : 300000 hrs , Continuous operating under 25°C 65%RH

6. ORDERING AND OPERATING REMARKS

- 6.1 For those not specified but vital to your requirement, ACT-RX is in full position to supply qualified substitutes.
- 6.2 Improper use may lead to malfunction. To ensure normal operation, avoid dipping the fan into watery and oily liquid, or exposing it to heat, etc.
- 6.3 All specifications subject to change without prior notice.
- 6.4 Please indicate Part No. on every order.
- 6.5 ACT-RX does not guarantee the product if applications exceed specified limitations.

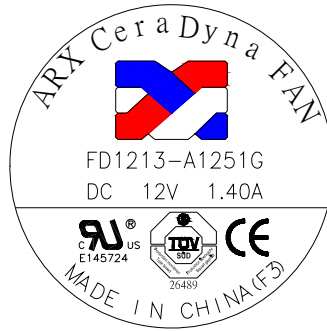
7. NOISE IS MEASURED :

Noise is measured rated voltage in free air in anechoic chamber with B & K Sound level meter with microphone at a distance of one meter from the fan intake. The background noise is 20dBA max under the CNS-8753 Documentation Standard

8.RELIABILITY

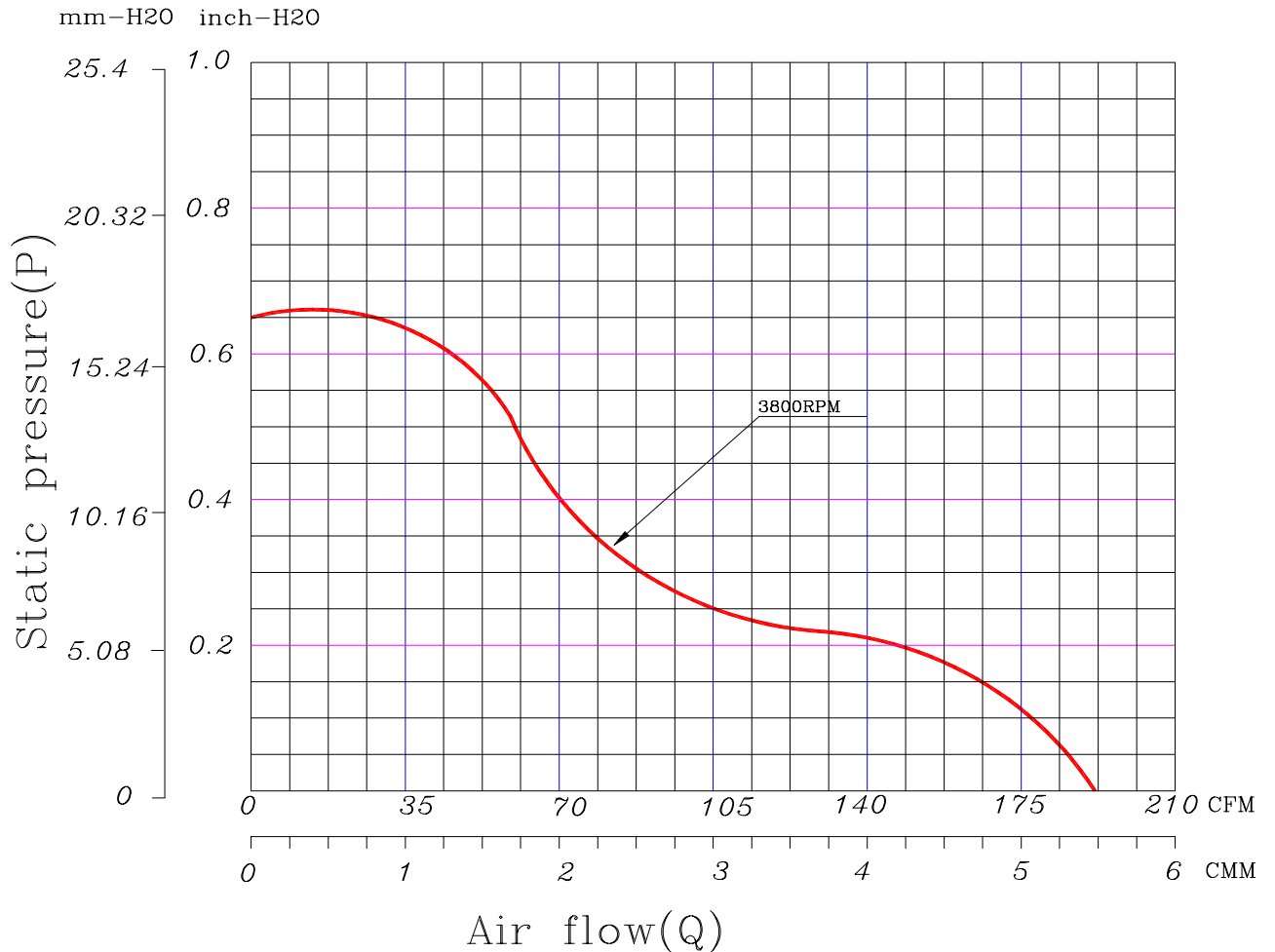
	Item	Specification	Test Condition
1	Locked Rotor Test	Flameproof and damage free	Rotor locked for 72 hrs with Rated Voltage
2	Reverse Volt Protection	Yes	Reverse voltage with 12V
3	Balance Test	No protruding beyond the circle within 10 seconds	The fan runs in a circle, scaled by fan radius plus 10mm, on a perfectly smooth plate for 10 seconds under the ISO 1940 G6.3 grade Documentation Standard.
4	Drop Test	All specified characteristics remain unchanged	Free drop in minimum package to an oak board of 10mm thickness at 30cm below. Individual X, Y, Z face tested under the NS-Z6012/ISTA-1A Documentation Standard.
5	Vibration Test	All specified characteristics remain unchanged	Ambient temp. : 25 °C±5 °C with 12V power supply Amplitude : 0.4-2.5 mm Acceleration : 14.7 S/m² Frequency : 10HZ-60HZ Sweeping period : 1 min 10HZ-60HZ : 30 seconds 60HZ-10HZ : 30 seconds Total : 10 cycles This is according to the CNS-C6016 Documentation Standard.
6	High/Low Temperature Cycling	All specified characteristics remain unchanged	20 minutes slew rate +80 °C (1 hr) , -20 °C (1 hr) Total : 36 cycles This is according to the CNS-C6335 Documentation Standard.
7	Low Temp. Storage	All specified characteristics remain unchanged	Tested under -20 °C for 500 hrs without power supply
8	High Temp. Storage	All specified characteristics remain unchanged	Tested under +80 °C for 500 hrs without power supply
9	Dielectric Strength	Max 1mA of leakage current	Input 500V(AC) for 1 second between lead (+/-) and cabinet

9. PRODUCT LABEL

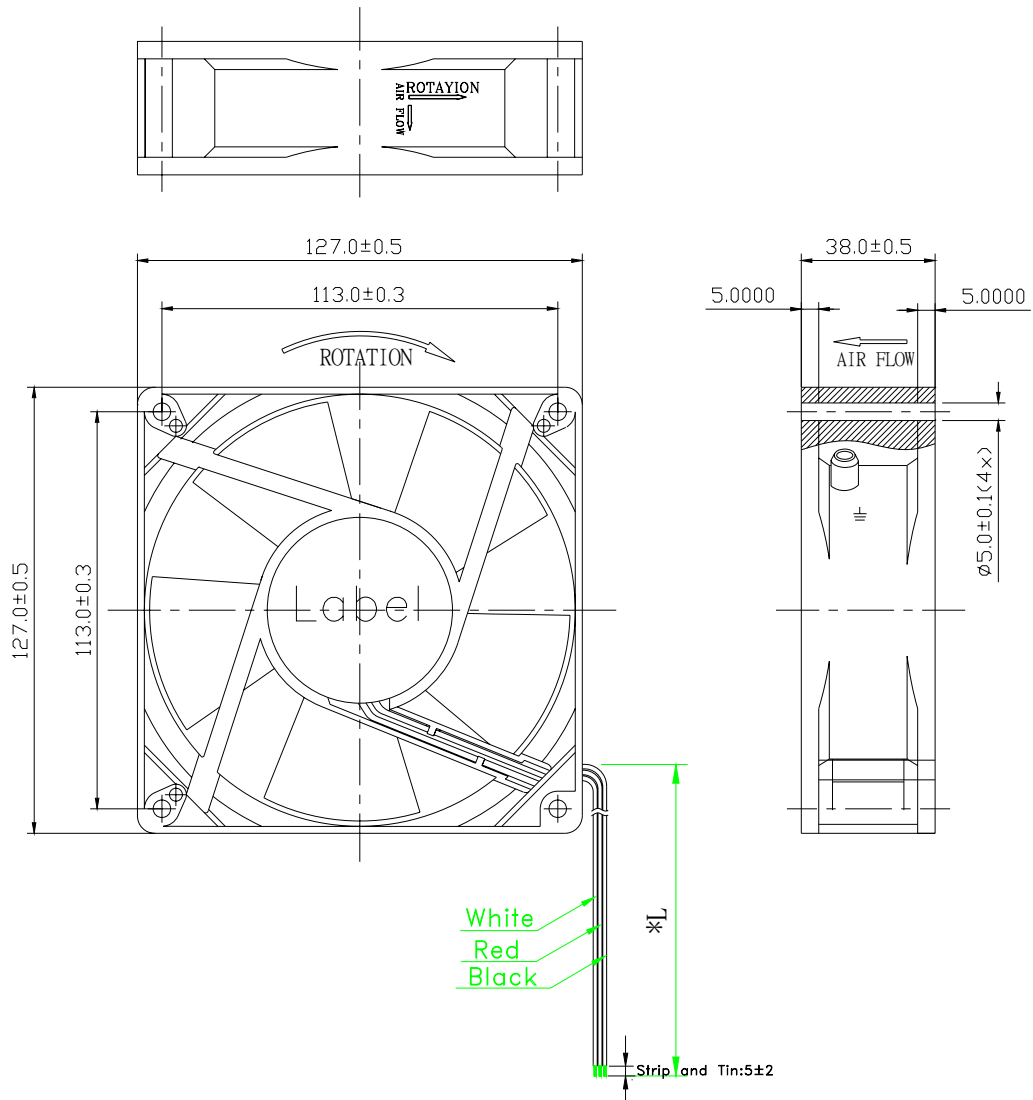


10. PERFORMANCE CHART

This measurement is under the AMCA 210-99 Documentation Standard.



11. ASSEMBLY DIAGRAM



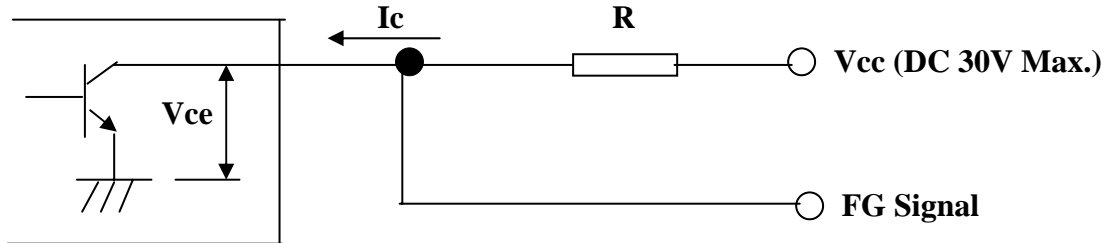
General Dimension Tolerances (Unit:mm)		
0-3	±	0.3
3-30	±	0.4
31-60	±	0.5
61-100	±	0.6
101 and Over	±	0.6
Angles	±	2°

1. L: Frame out: 245±10mm

2. Unit : mm

12. FREQUENCY GENERATOR(FG) SIGNAL :

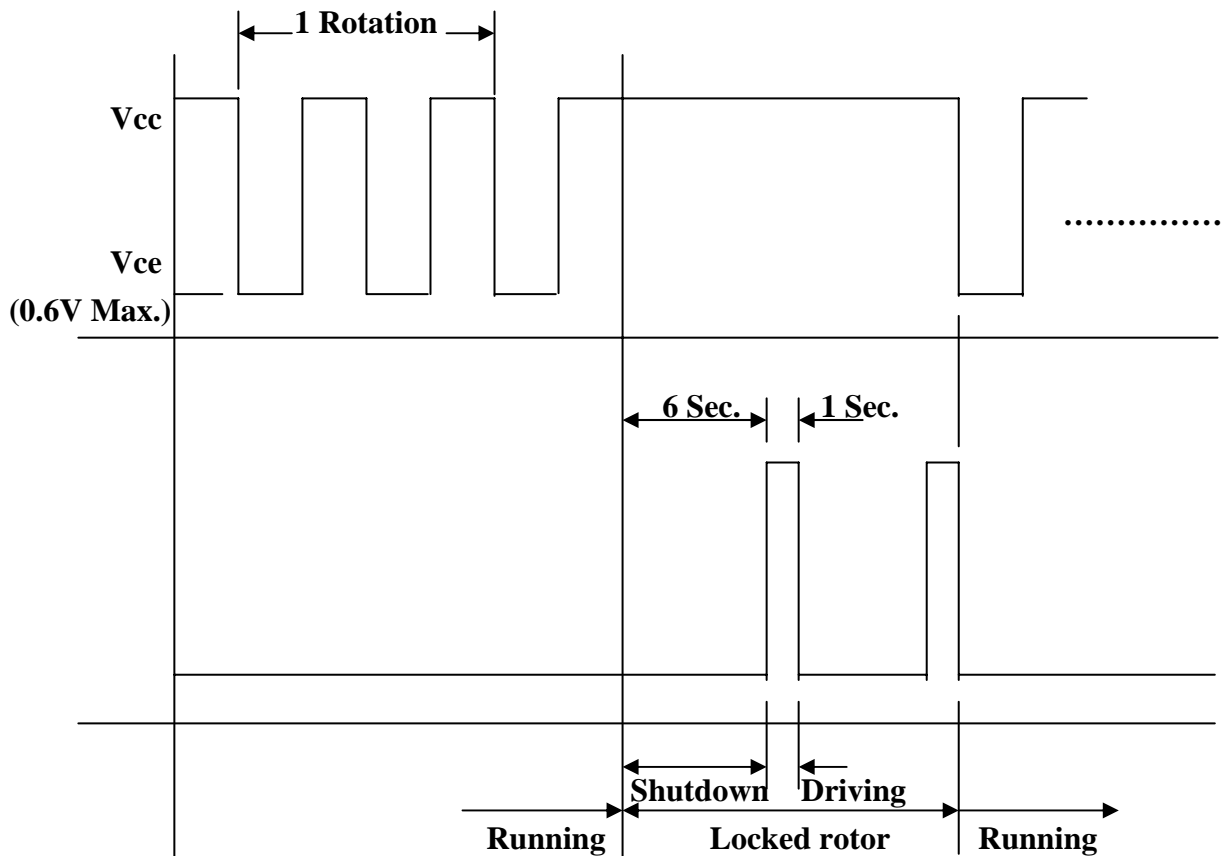
12.1 Output circuit : Open collector mode



12.2 $R = V/I$ (Out "R" value can be got by calculating)

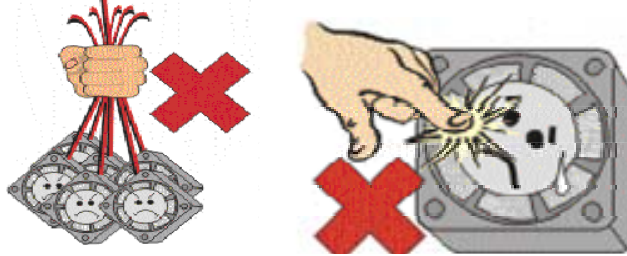
12.3 Specification : $I_c = 10\text{mA Max.}$

12.4 Frequency Generator Waveform :



13. NOTES

13.1 Please do not touch the impeller and never carry the fan the lead wires. The bearings and the lead wires may be damaged.



13.2 Please do not use the fan in the environment of corrosive gas or liquid.

13.3 Please do not store the fan in the environment of high humidity. Please avoid storage of the fan over 6 months . For long term storage, please connect power to the fan shortly every 6 months even through the fan is stored in room temperature.

13.4 While the fan which didn't have Auto Restart function is in operation, please do not lock the fan intentionally for a long period of time to prevent over heating which may cause permanent damage.

14.SGS REPORT

**Test Report**

ACT-RX TECHNOLOGY CORPORATION
2F, NO. 192, LIEN CHEN ROAD, CHUNG HO CITY, TAIPEI
HSIEN 235, TAIWAN, R. O. C.

Report No. : CE/2006/64775
Date : 2006/06/21
Page : 1 of 7

The following merchandise was (were) submitted and identified by the client as :

Type of Product : DC FAN
Sample Received : 2006/06/14
Testing Date : 2006/06/14 TO 2006/06/21

=====
Test Result : - Please see the next page -


Daniel Yen, M.R., Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

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SGS TAIWAN LIMITED NO. 136-1, Wu Kung Road, WuKu Industrial Zone, Taipei county, Taiwan.
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Report No. : CE/2006/64775
 Date : 2006/06/21
 Page : 2 of 7

Test Result

PART NAME NO.1 : MIXED ALL PLASTIC (WIRE, FAN FRAME, 扇葉, 線架, MAGNETIN STRIP)
 PART NAME NO.2 : MIXED ALL METAL (ENAMELE, BEARING, SILICON STEEL PLATE, SHAFT, MOTOR CASE, SPRING, PCB)

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Asbestos					
Amosite(CAS NO.012172-73-5)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---
Anthophyllite(CAS NO.017068-78-9)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---
Chrysotile(CAS NO.012001-29-5)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---
Tremolite(CAS NO.014567-73-8)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---
Crocidolite(CAS NO.012001-28-4)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---
Actinolite(CAS NO.013768-00-8)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative	---

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Chlorinated Paraffin (C10-C13) (CAS NO:010871-26-2)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by GC/MS or GC/ECD.	0.01	N.D.	---

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 Page : 3 of 7

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Monobromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	---
Dibromobiphenyl	%		0.0005	N.D.	---
Tribromobiphenyl	%		0.0005	N.D.	---
Tetrabromobiphenyl	%		0.0005	N.D.	---
Pentabromobiphenyl	%		0.0005	N.D.	---
Hexabromobiphenyl	%		0.0005	N.D.	---
Heptabromobiphenyl	%		0.0005	N.D.	---
Octabromobiphenyl	%		0.0005	N.D.	---
Nonabromobiphenyl	%		0.0005	N.D.	---
Decabromobiphenyl	%		0.0005	N.D.	---
Total PBBs (Polybrominated biphenyls)/ Sum of above	%		-	N.D.	---
Monobromobiphenyl ether	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	---
Dibromobiphenyl ether	%		0.0005	N.D.	---
Tribromobiphenyl ether	%		0.0005	N.D.	---
Tetrabromobiphenyl ether	%		0.0005	N.D.	---
Pentabromobiphenyl ether	%		0.0005	N.D.	---
Hexabromobiphenyl ether	%		0.0005	N.D.	---
Heptabromobiphenyl ether	%		0.0005	N.D.	---
Octabromobiphenyl ether	%		0.0005	N.D.	---
Nonabromobiphenyl ether	%		0.0005	N.D.	---
Decabromobiphenyl ether	%		0.0005	N.D.	---
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/ Sum of above	%		-	N.D.	---
Total of Mono to Nonabrominated biphenyl ether. (Note 4)	%	-	N.D.	---	

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 Date : 2006/06/21
 Page : 4 of 7

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Mirex(CAS NO:002385-85-5)	ppm	Analysis was performed by GC/MS.	4	N.D.	---

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
PCBs(Polychlorinated Biphenyls)(CAS NO:001336-36-3)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/MS or GC/ECD.	0.5	N.D.	---

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Polychlorinated Naphthalene	ppm	With reference to USEPA 8081B. Analysis was performed by GC/MS.	5	N.D.	---

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
PCTs(Polychlorinated Terphenyls)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/MS or GC/ECD.	0.5	N.D.	---

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
PVC (CAS No:9002-86-2)	%	Analysis was performed by FTIR/ATR and Pyrolyzer-GC/MS.	1	Negative	---

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 Page : 5 of 7

Test Item (s):	Unit	Method	MDL	Result	
				No.1	No.2
Chromium VI (Cr+6)	ppm	UV-VIS(US EPA 7196A) after reference to US EPA 3060A.	2	N.D.	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	N.D.	23.3

- NOTE: (1) N.D. = Not detected (<MDL)
 (2) ppm = mg/kg
 (3) MDL = Method Detection Limit
 (4) Decabromobiphenyl ether (DecaBDE) in polymeric applications is exempted by
 Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified
 under document 2005/717/EC.
 (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
 (6) " - " = Not Regulation
 (7) The MDL is 5ppm for the single compound of CP