



SPECIFICATIONS FOR LCD MODULE

CUSTOMER	
MODEL	WW-F2432VN-7FLWb VER. 1
CUSTOMER APPROVED	

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APPROVAL FOR SPECIFICATIONS AND SAMPLE

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■ General specifications

Item	Description	Unit
Display Size (Diagonal)	2.8	Inch
Number of Dots	240RGB x 320	Dot
Outline Dimension (H x V x T)	50.0X69.2X2.6	mm
Active Area (H x V)	43.2X57.6	mm
Pixel Pitch (H x V)	0.18 X0.18	mm
Color Depth	262K	-
LED Numbers	4LEDs	pcs
Driver IC	ILI9325C	-

(1) Electronic Units

1.1 Absolute Maximum Ratings

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Operating Temperature	TOP	-20	-	+70	
Storage Temperature	TST	-30	-	+80	
Supply Voltage for Analog	VCI-VSS	-0.3	-	4.6	V
Supply Voltage for Digital	VDD-VSS	-0.3	-	4.6	V
Input Power Supply	VDDP-VSS	0.3	-	VDD+0.3	V
Static Electricity	Be sure that you are grounded when handing LCM.				

1.2 Electrical Characteristics

(Ta=25)

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage for Analog	VCI	-	2.7	2.8	2.9	V
Supply Voltage for Digital	VDD	-	2.7	2.8	2.9	V
Input Signal High Voltage	VIH	VDD=1.8~3.3 V	0.8*VD D	-	VDD	V
Input Signal Low Voltage	VIL	VDD=1.8~3.3 V	-0.3	-	0.2*VD D	V
Output Signal High Voltage	VOH	IOH=-0.1mA	0.8*VD D	-	VDD	V
Output Signal Low Voltage	VOL	VDD=1.65~3. 3V	-	-	0.2*VD D	V
Supply Current for Analog	*ICI	-	-	6	7.8	mA
Supply Current for Digital	*IDD	-	-	0.02	0.026	mA
Used IC	ILITEK ILI9325C					

*ICI Measurement condition is for all pixels on

*IDD Measurement condition is for all pixels on

1.3 Interface Pin Function

CN1:

NO	SYMBOL	I / O	FUNCTION
1.	DB0	I/O	Data bus. (Unused pins must be fixed to GND level.)
2.	DB1	I/O	Data bus. (Unused pins must be fixed to GND level.)
3.	DB2	I/O	Data bus. (Unused pins must be fixed to GND level.)
4.	DB3	I/O	Data bus. (Unused pins must be fixed to GND level.)
5.	GND1	P	Ground.
6.	VCC1	P	Power supply for LCD. 2.8V
7.	/CS	I/O	Chip selection.
8.	RS	I/O	Command / data select pin.
9.	/WR	I/O	Write signal.
10.	/RD	I/O	Read signal.
11.	IM0	I/O	NC
12.	XR	-	Touch panel coordinate in the right side of envisage drawing
13.	YD	-	Touch panel coordinate in the down side of envisage drawing
14.	XL	-	Touch panel coordinate in the left side of envisage drawing
15.	YU	-	Touch panel coordinate in the up side of envisage drawing
16.	LEDA	I/O	LED light anode.
17.	LEDK1	I/O	LED light cathode.
18.	LEDK2	I/O	LED light cathode.
19.	LEDK3	I/O	LED light cathode.
20.	LEDK4	I/O	LED light cathode.
21.	IM3	I/O	NC
22.	DB4	I/O	Data bus. (Unused pins must be fixed to GND level.)
23.	DB10	I/O	Data bus. (Unused pins must be fixed to GND level.)

24.	DB11	I/O	Data bus. (Unused pins must be fixed to GND level.)
25.	DB12	I/O	Data bus. (Unused pins must be fixed to GND level.)
26.	DB13	I/O	Data bus. (Unused pins must be fixed to GND level.)
27.	DB14	I/O	Data bus. (Unused pins must be fixed to GND level.)
28.	DB15	I/O	Data bus. (Unused pins must be fixed to GND level.)
29.	DB16	I/O	Data bus. (Unused pins must be fixed to GND level.)
30.	DB17	I/O	Data bus. (Unused pins must be fixed to GND level.)
31.	/RESET	I/O	Reset signal.
32.	VCI	P	Analog power supply. Typ.=2.8V
33.	VCC2	P	Power supply for LCD. 2.8V
34.	GND	P	Ground.
35.	DB5	I/O	Data bus. (Unused pins must be fixed to GND level.)
36.	DB6	I/O	Data bus. (Unused pins must be fixed to GND level.)
37.	DB7	I/O	Data bus. (Unused pins must be fixed to GND level.)

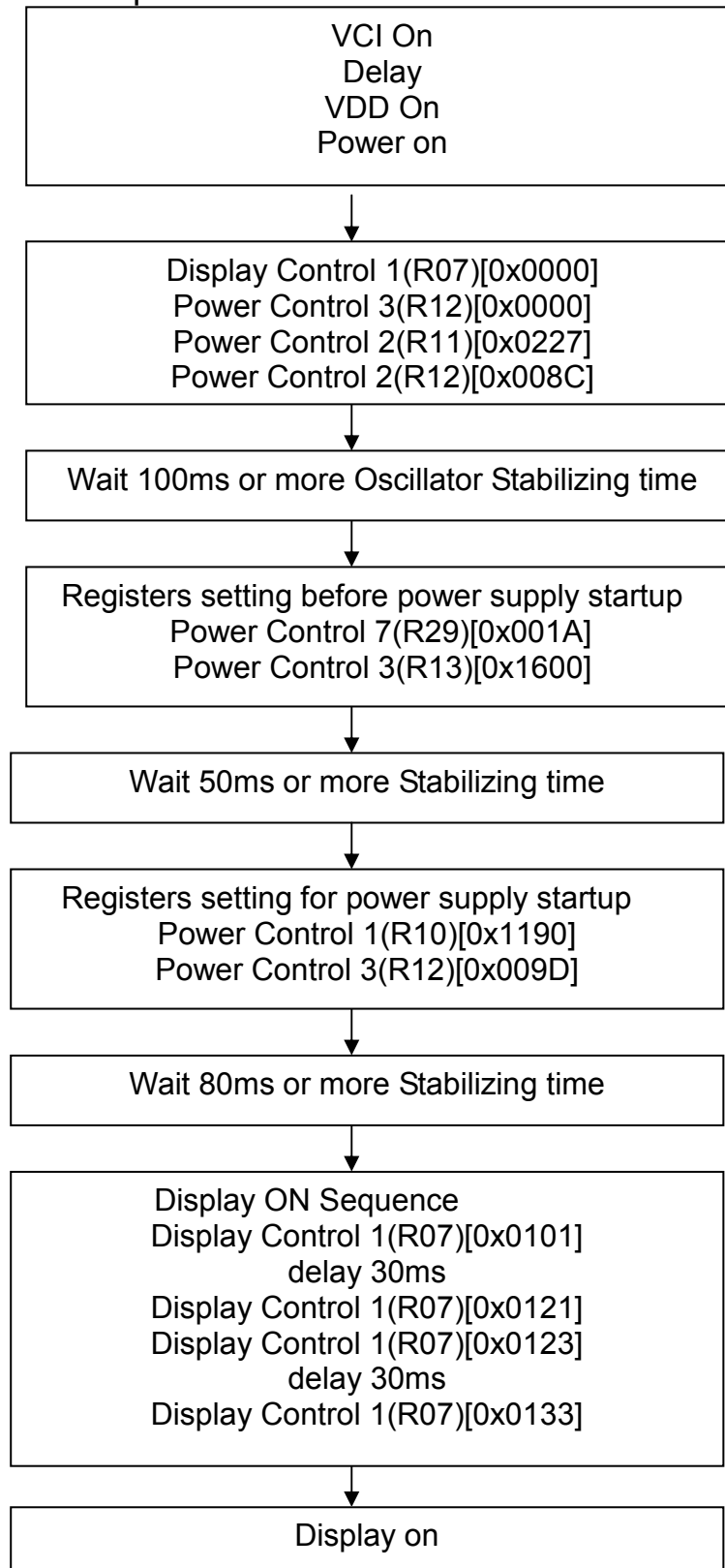
1.4 Initialization Table:

項目	指令	設定值	說明
Initialization Table:			
1	Driver Output Control 1	0001H 0100H	set SS and SM bit
2	LCD Driving Control	0002H 0700H	set 1 line inversion
3	Entry Mode	0003H 1030H	set GRAM write direction and BGR=1.
4	Display Control 2	0008H 0207H	set the back porch and front porch
5	Power Control 1	0010H 1190H	Power Control 2 (R11)
6	Power Control 2	0011H 0227H	DC1[2:0], DC0[2:0], VC[2:0]
7	Power Control 3	0012H 009DH	VREG1OUT voltage
8	Power Control 4	0013H 1600H	VDV[4:0] for VCOM amplitude
9	Power Control 7	0029H 001AH	VCOMH
10	Frame Rate and Color Control	002BH 000BH	Frame Rate
11	Gamma Control 1	0030H 0000H	Gamma Setting
12	Gamma Control 2	0031H 0707H	
13	Gamma Control 3	0032H 0407H	
14	Gamma Control 4	0035H 0407H	
15	Gamma Control 5	0036H 0404H	
16	Gamma Control 6	0037H 0003H	

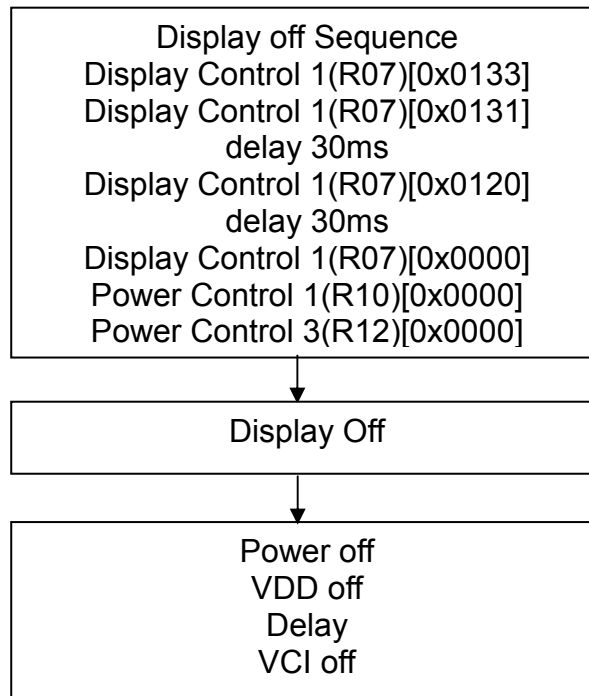
17	Gamma Control 7	0038H 0000H	Gamma Setting
18	Gamma Control 8	0039H 0707H	
19	Gamma Control 9	003CH 0704H	
20	Gamma Control 10	003DH 0006H	
21	Horizontal Address Start Position	0050H 0000H	Horizontal GRAM Start Address
22	Horizontal Address End Position	0051H 00EFH	Horizontal GRAM End Address
23	Vertical Address Start Position	0052H 0000H	Vertical GRAM Start Address
24	Vertical Address End Position	0053H 013FH	Vertical GRAM Start Address
25	Driver Output Control 2	0060H A700H	Gate Scan Line
26	Base Image Display Control	0061H 0001H	NDL,VLE, REV
27	Display Control 1	0007H 0101H	GON=0 DTE=0 D[1:0]=1
28	Display Control 1	0007H 0121H	GON=1 DTE=0 D[1:0]=1
29	Display Control 1	0007H 0123H	GON=1 DTE=0 D[1:0]=1 1
30	Display Control 1	0007H 0133H	262K color and display ON
31	OTP VCM	00A2H 0001H	Enable OTP VCM data to replace R29h VCM value.

1.5 Power ON/OFF SEQUENCE

1.5.1 Power ON Sequence



1.5.2 Power OFF Sequence



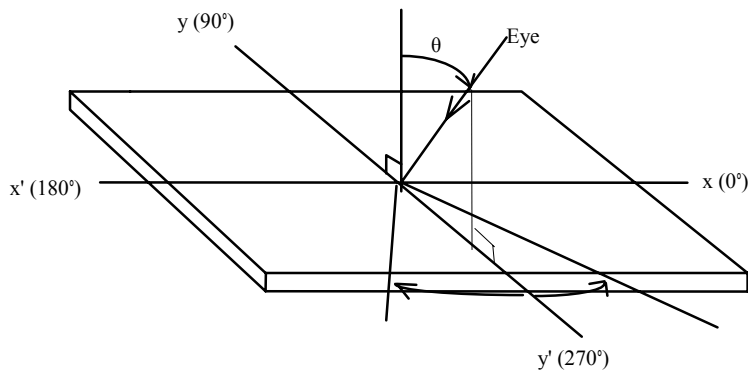
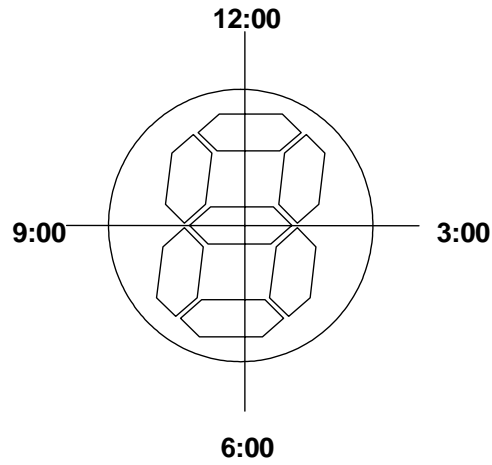
(2) Electro-optical Units

2.1 Electro-optical Characteristics

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
View Angle	$\psi = 90^\circ$ (12H)	CR \geq 10	55	60	-	deg.
	$\psi = 270^\circ$ (6H)		15	20	-	deg.
	$\psi = 180^\circ$ (9H)		45	50	-	deg.
	$\psi = 0^\circ$ (3H)		45	50	-	deg.
Contrast Ratio	CR	Ta=25	200	250	-	-
Response Time	Tr+Td	Ta=25	-	24	-	ms
Color Coordinate	Rx	Ta=25	0.54	0.60	0.66	-
	Ry		0.29	0.35	0.41	
	Gx		0.28	0.34	0.40	
	Gy		0.54	0.60	0.66	
	Bx		0.08	0.14	0.20	
	By		0.03	0.09	0.15	
	Wx		0.26	0.32	0.38	
	Wy		0.28	0.34	0.40	
LCD Type	TFT , (POSITIVE / Transmissive)					
Viewing Direction	12:00					

Notes : All the optical data should be measured when the display's driven under the TYP. condition.

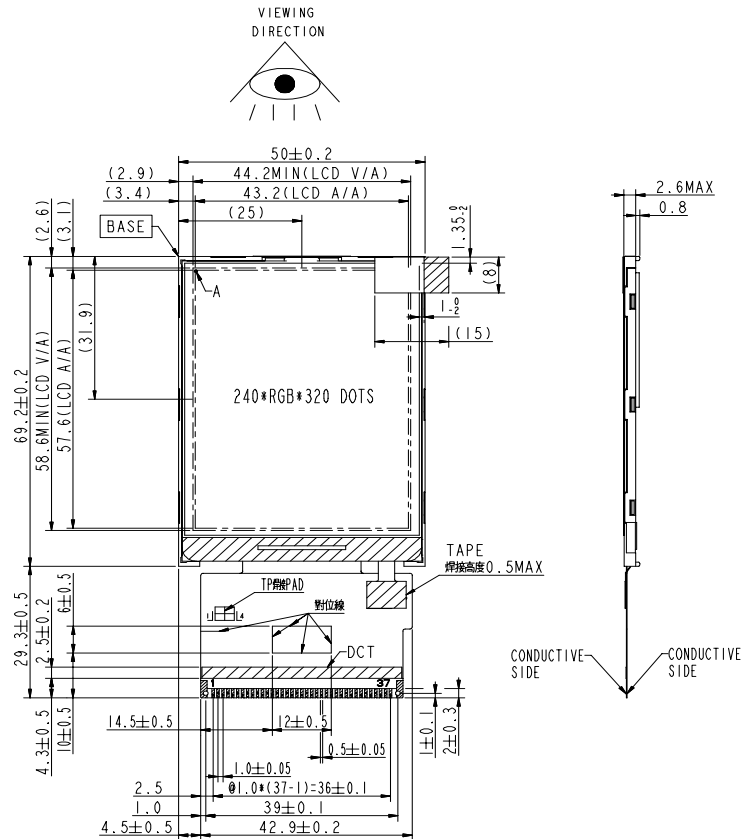
2.2 Optical Definitions



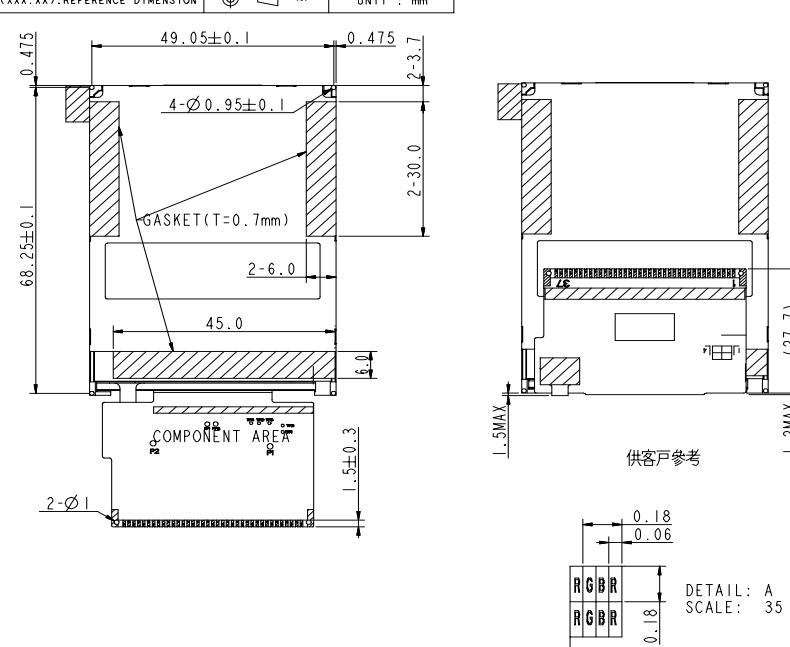
View Angle

(3) Mechanical Units

3.1 Mechanical Diagram



TOLERANCES NOT SPECIFIED: .X=±0.3 .XX=±0.30 .X*=±2° .XK*=±0.5°
 (XXX.XX): REFERENCE DIMENSION UNIT: mm



Notes: 1. "()" Means reference dimension.
 2. Dimensions that are not toleranced shall follow basic tolerance
 3. "⊠" Means important dimension.

3.2 Back-light Specification

LED Backlight Styles:

The LED chips are distributed over the whole light area of the illumination unit, which gives the most uniform light.

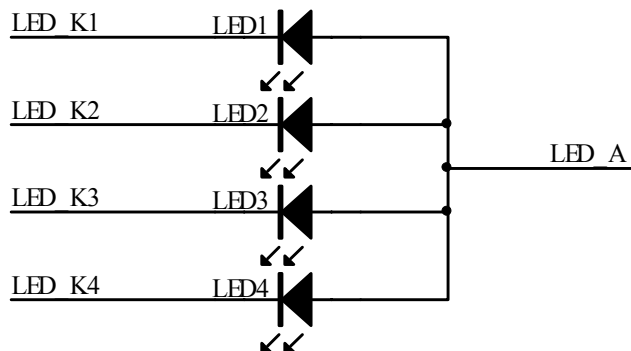
3.2-1. Data About LED Backlight

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
Backlight Type	LED / WHITE						-
Supply Current	I _{LED}	-	80	-	mA	V _{LED} ≤ 4.4V	-
Reverse Voltage (Single chip)	V _R	-	-	5.0	V	-	-
Luminous Intensity	I _V	220	270	-	cd/m ²	I _{AK1} = I _{AK2} = I _{AK3} = I _{AK4} = 20mA	1
Luminous Intensity Ratio	-	-	-	30	%	I _{AK1} = I _{AK2} = I _{AK3} = I _{AK4} = 20mA	2

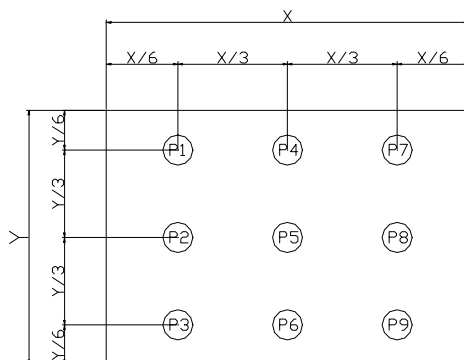
NOTE : 1. Average Luminous Intensity of P1 – P9

2. Luminous Intensity Ratio = (MAX-MIN)/ MAX.

3.2-2. Internal Circuit Diagram



3.2-3. MEASURED METHOD (X*Y: Light Area)



(Effective spatial Distribution)

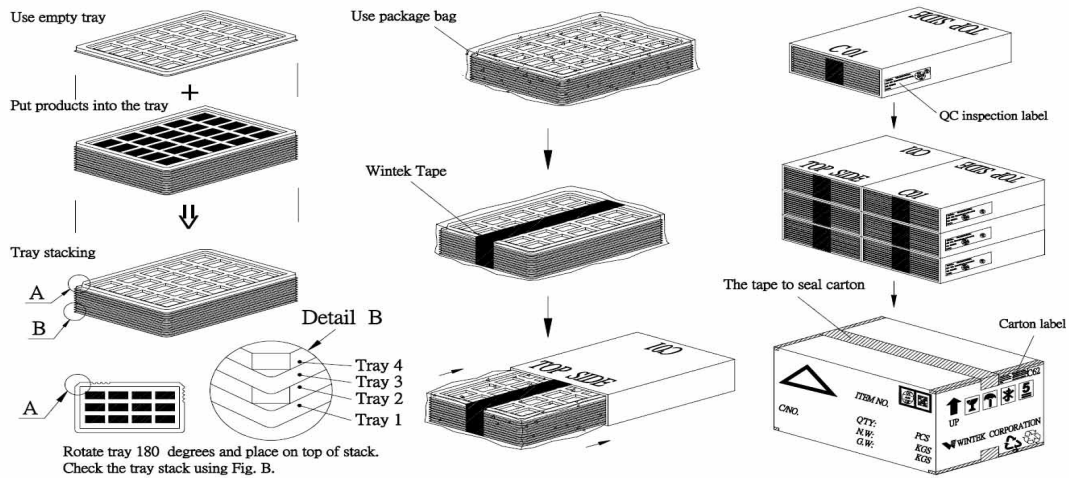
Hole Diameter ϕ 3mm; 1 to 9 per Position Measured Luminous Intensity Ratio

3.3 Packing Method

1.Packaging Material : (per carton)					
Item	Model		Dimensions(mm)	Unit Weight(kg)	Quantity
LCM Module	WW-F2432VN		50.0*69.2	0.0164	384
Tray	VK76	PET	320*217*12	0.04	54
Package Bag	C5		467*321*0.08	0.023	6
Product Box	C01		320*219*70	0.131	6
Carton	C62		475*345*250	0.857	1
Total Weight			10.2 Kg ± 5 %		

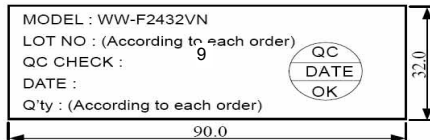
2.Packaging Specifications and Quantity :

- (1) LCM quantity per tray : no. per row 2 x no. per column 4 = 8
 (2) LCM quantity per box : quantity per tray 8 x no. of trays 8 = 64
 (3) Total LCM quantity in carton : quantity per box 64 x no. of boxes 6 = 384



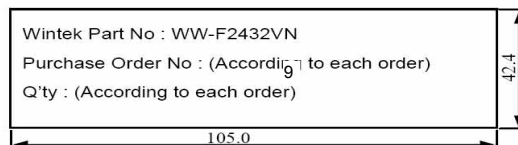
3.Label Specifications :

(1) QC Inspection Label



Label Color----Green

(2) Carton Label



Label Color----White

Remark

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(4) Substance Management Units

4.1 Product Substances Management Documentation

項次 No.	物質名稱 Substance Name	限值 Limits (ppm)	檢附報告 Test Report	參考文件 Reference Regulation	檢驗規範 Method Used & Regulation
1	Lead(Pb) and its compounds 鉛及其化合物	1,000	Y	2005/618/EC	USEPA3050B
2	Cadmium(Cd) and its compounds 鎘及其化合物	100	Y	2005/618/EC	EN1122-2001
3	Mercury(Hg) and its compounds 汞及其化合物	1,000	Y	2005/618/EC	US EPA 3052
4	Hexavalent chromium(Cr ⁶⁺) compounds 六價鉻化合物	1,000	Y	2005/618/EC	US EPA 3060A/7196A
5	Polybrominated biphenyls (PBBs) 聚溴聯苯	1,000	Y	2005/618/EC	US EPA 3540
6	Polybrominated biphenyl ethers(PBDEs) 聚溴二苯醚	1,000	Y	2005/618/EC	US EPA 3540