



YUWON ELECTRONICS

SPECIFICATION FOR APPROVAL

REMOCON ASS'Y

SPEC' NO YWM-SFA-0147

DATE 2008. 12/07

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YUWON ELECTRONICS

※ SPECIFICATION FOR APPROVAL

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* Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CUSTOMER MODEL NO. / TITLE REMOTE CONTROL	SPECIFICATION NO. WR730-RaySat	
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1. Scope

This specification is applied to the specified RF(Radio Frequency) remote control unit.

2. Appearance and structure

2-1 Appearance

Appearance shall comply with the specified sample, if any.

2-1-1 The specification shall comply with the applicable drawing, and also there shall be no remarkable irregular color, warp, sink mark, flash, scratch, deformation and dirt on the body.

2-1-2 Color and form of characters shall comply with the artwork or color samples.

2-1-3 All printing shall be made clearly without any blot.

2-2 Dimensions and structure

Dimensions and structure shall comply with the applicable drawing.

3. Components and materials

Components and materials shall comply with the applicable drawing.

Please see following table:

WR730 RaySat RCU material list :

Item	Ref no.	Description	Part number or material	Q' ty	DELIVERY	NOTE
1		PCB	YEPBAF017F	1	30DAY	
2		IC	ATmega88v-10mu32	1	70DAY	
3		RF	Nrf24l01	1	84DAY	
4		DC/DC	S-8351A30	1	30DAY	
5		ANT	CHIP ANT	1	30DAY	
6		LED	CHIP RED LED	2	30DAY	
7		CHIP DIODE	SS14	1	30DAY	
8		CRYSTAL	8M	1	30DAY	
9		CRYSTAL	16M	1	30DAY	
10		CHIP C/CAP	104. 50V	5	30DAY	

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4.Characteristics

4-1 Measurement Voltage : 3 Volt.

4-2 Measurement Temperature : $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$
TEST $20^{\circ} \sim 80^{\circ}$

4-3 Measurement humidity : $65\% \pm 10\%$

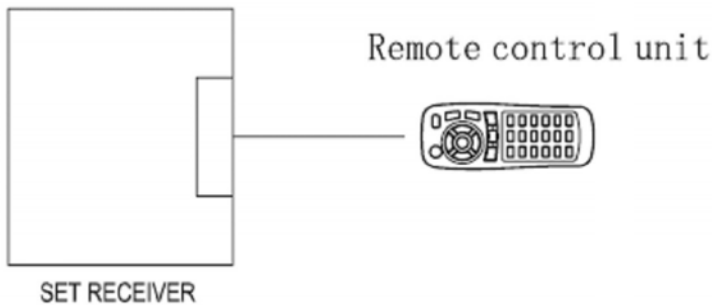
4-4 Resonator : 8MHZ

4-5 Operational Frequency : 2.4GHZ

4-6 Distance & direction :

4-6-1 Horizontal (Battery voltage: 3 volt)

Distance: More than 15 M.



4-8. Operating Voltage range : 1.9 V ~ 3.6 V

4-9. Storage Temperature : 20 years at 85°C / 100 years at 25°C

4-10. Operating Temperature : -20 to $+50$

4-11. RF Output power : 0 dBm

4-11-1. Modulation Method : GFSK.

4-11-2. Channel : 6 CH

CH1:2.402GHz CH2:2.415GHz CH3:2.428GHz

CH4:2.442GHz CH5:2.458GHz CH6:2.473GHz

4-12 Function test

4-12-1. Pairing test : ok

4-12-2. Key test : ok

4-13-3. HW Reset function test : ok

4-13-4. Pairing stationay function test : ok

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4-13. Key press test : The normal condition time(6 Hour)

4-13.1. Transmitter, Reciver stability : 3 Day

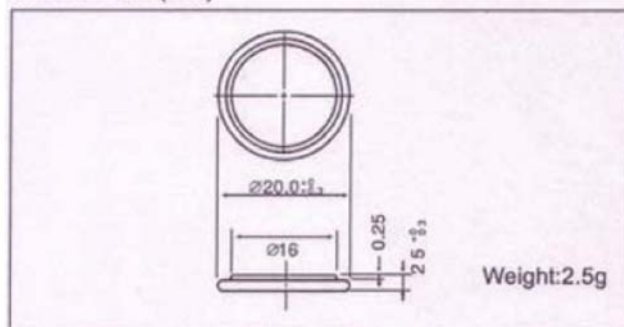
4-14. Battery (CR2025)

4-14 -1. 5 month based on 250 presses a day.

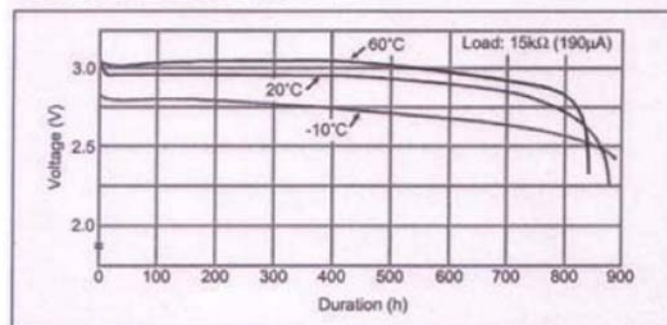
Specification

Nominal voltage(V)	3
Nominal capacity(mAh)	165
Continuous standard Ioda(mA)	0.2
Operating temperature(C)	-30 ~ +60

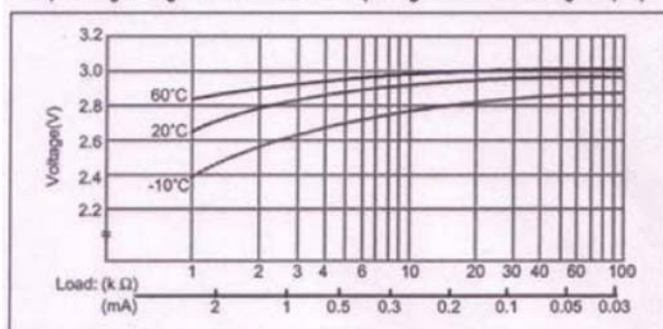
■ Dimensions(mm)



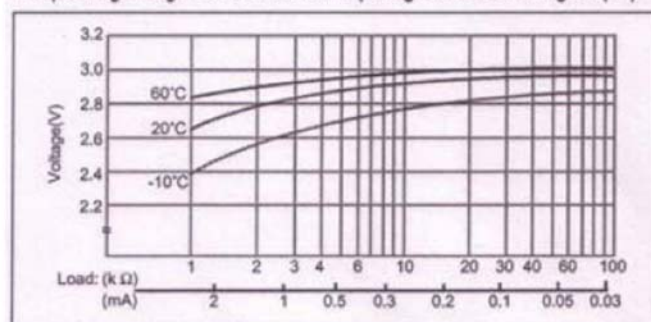
■ Temperature Characteristics



■ Operating voltage vs. load resistance (voltage at 50% discharge depth)



■ Operating voltage vs. load resistance (voltage at 50% discharge depth)



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5. UART PROTOCOL

③ Structure of Protocol between RF module and Main CPU

- Size of transfer packet : 6 byte

Start Code	Command	DATA	Checksum	End Code
:1byte	:1byte	:2byte	:1byte	:1byte

Start Code : RF MODULE => CPU(0xF6)

Command : 0xC0

Checksum : Command + DATA

End Code : RF MODULE => CPU(0x6F)

Repeat code : 300 ms

Date byte : First key(0xD1 + key code value(1byte) , Repeat key(0xD7 + key code value)

③ Structure of Protocol between remocon and RF MODULE

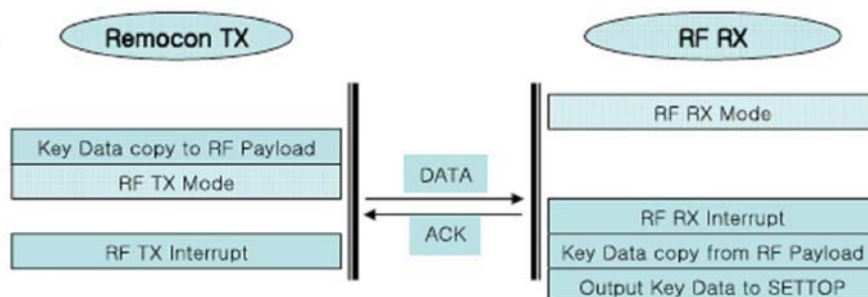
Preamble	Address	Packet Control Field	Start Code	Command	DATA	End Code	CRC
:1byte	:5byte	:9bit	:1byte	:1byte	:2byte	:1byte	: 2byte

③ UART SET

Properties	Setting Value
Baud Rate	9600bps
Data Bits	8 Bits
Stop Bits	1 Bit
Parity	No
Flow Control	None

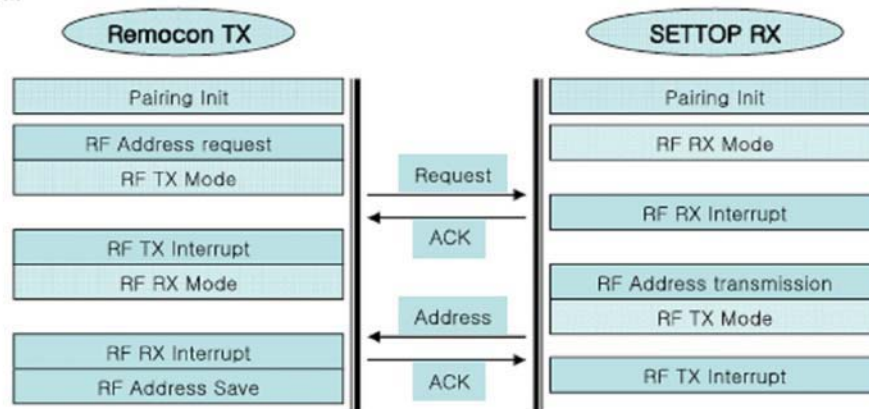
③ REMOCON Module ⇔ RF Reciver module

1. Data transmission.



③ Remocon ⇔ Reciver(Pairing)

1. RF Address transmission.



6. RCU CODESHEET

◎ Remocon Operation(Pairing)



TOP CASE COLOR

■ BLACK

TOP CASE PRINT COLOR

□ WHITE

■ PANTONE 2995 C

■ PANTONE COOL GRAY 9C

BOT CASE&BATTERY VOLOR

■ BLACK

RUBBER BUTTON FORMING COLOR

■ PANTONE 186C

■ PANTONE GREENC

■ PANTONE BLUE 072C

■ PANTONE COOL GRAY 9C

□ WHITE

□ WHITE CLEAR

RUBBER BUTTON PRINT COLOR

■ PANTONE 186C

□ WHITE

■ BLACK

■ PANTONE 2995 C

DECO PLATE COLOR

■ BLACK

Within 5 seconds operation completion after power on

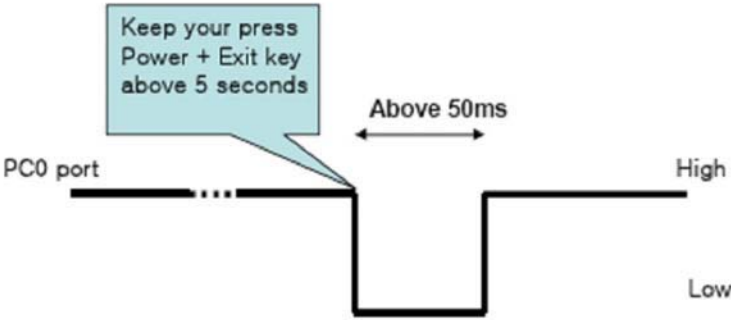
1. POWER + Mute press on 2 Seconds
2. Remocon LED ON (The Power button has LED)
3. RF Address Request send
4. RF RX(SET top box) module send ACK to remocon
5. RF RX(SET top box) module send RF Address to remocon
6. Remocon send ACK to RF RX
7. Remocond led on/off display 2 times.

◎ Remocon code value

Key name	Code value	Key name	Code Value
POWER	0x10	GUIDE	0x20
TV / Radio	0x11	BACK	0x21
UP	0x12	INFO	0x22
DOWN	0x13	0	0x30
LEFT	0x14	1	0x31
RIGHT	0x15	2	0x32
OK	0x16	3	0x33
CH +	0x17	4	0x34
CH -	0x18	5	0x35
VOL +	0x19	6	0x36
VOL -	0x1A	7	0x37
MUTE	0x1B	8	0x38
RED	0x1C	9	0x39
BLUE	0x1D	MENU	0x3A
GREEN	0x1E	EXIT	0x3B
Guide + info	0x3E	Mute + 5	0x3C
		Power + Exit	0x3D

⦿ HW Reset function

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⦿ pairing stationary function
.if PB2 port is logic low, pairing function is stop

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7. RCU SPECIFICATION



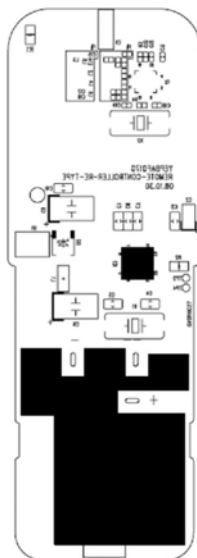
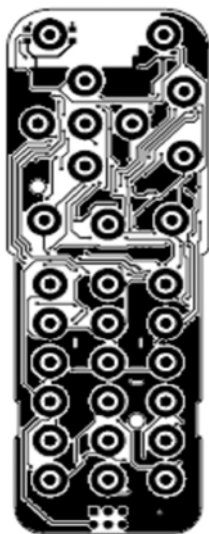
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REMOTE CONTROL

SPECIFICATION NO.
WR730-RaySat

8. REMOCON TEST DATA

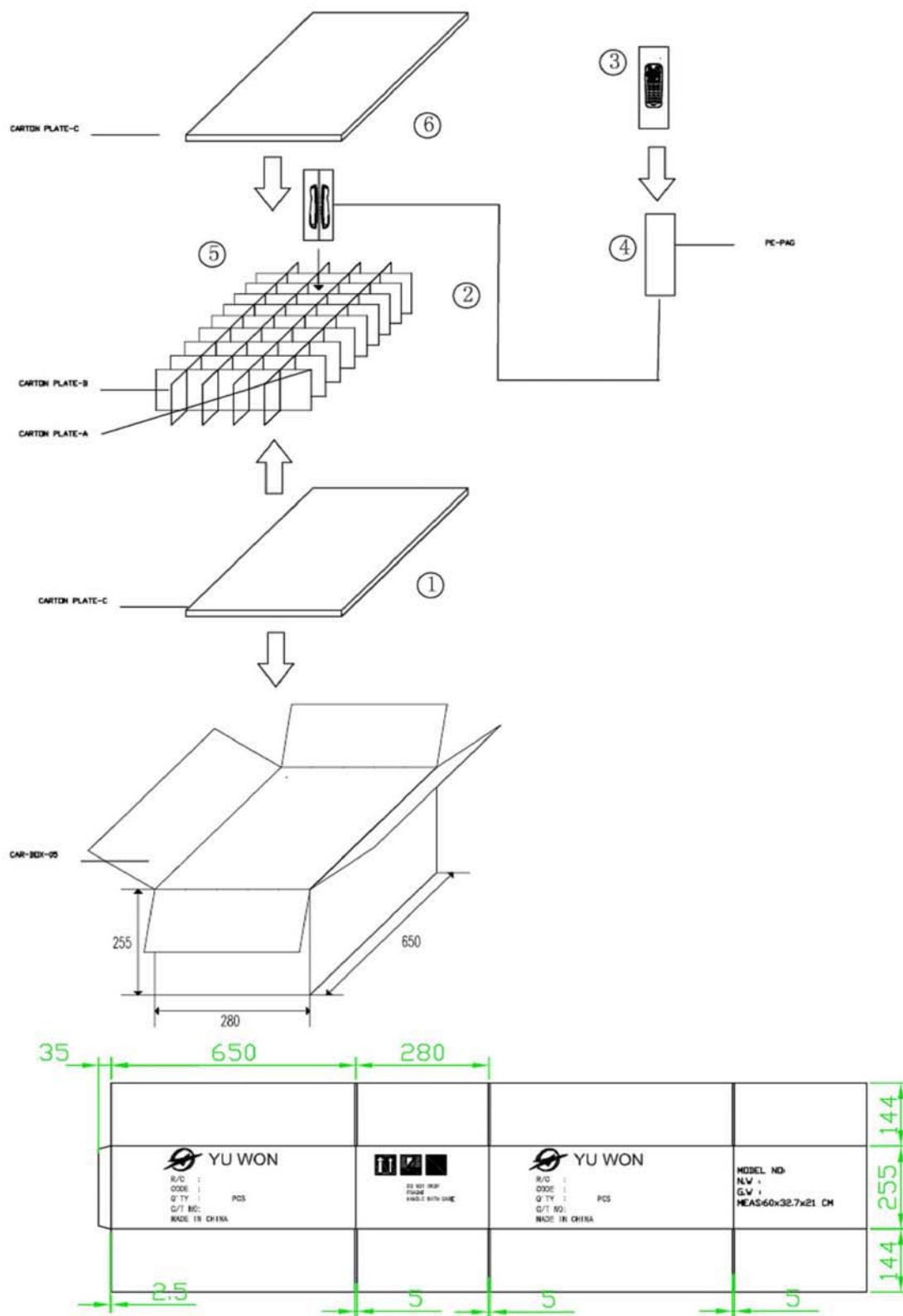
ITEM	MODEL NAME		DATE		TEST Q'TY			TEST VOLTAGE		
RCU	WR730 RaySat		2008.12.05					DC 3V		
TEST	TEST NAME	SPEC	TEST RESULT						OK/NG	NOTE
			SPL1	SPL2	SPL3	SPL4	SPL5			
ELECTRICAL	DISTANCE(M)	10M ↑	15	13	13	14	15		OK	
	ACTION VOLTAGE	DC 2.2V MAX	1.9	2	1.9	1.9	2		OK	
	HIGH VOLTAGE(V)	4.5V ↓	4.5	4.5	4.5	4.5	4.5		OK	
	LOW VOLTAGE(V)	2.3V ↓	OK	OK	OK	OK	OK		OK	
	CUNSUME CURRENT(μA)	20μA ↓	15	17	14	16	15		OK	
	ACTION VOLTAGE(mA)	40mA ↓	15	17	16	16	17		OK	
	ACTION FREQUENCY	INPUT	8MHz	8MHz	8MHz	8MHz	8MHz		OK	
	VOLTAGE LEVEL(V)	OUTPUT	3	3	3	3	3		OK	
		RIPPLE VOLTAGE								
	BACK UP									
NOTE										
NAME	PCB P/NO	RESONAOR								
	YEPBAF017G									
NOTE										
RESULT	OK <input checked="" type="checkbox"/> NG <input type="checkbox"/>									

9. PCB ASS'Y



Seq.	PCB Location	Part Name	Part No.		Qty.
1		PCB	YEPBAF017F	YEPBAF017F (FR4 , 1.2T , REV1.0)	1
2	IC1	IC	ATmega88v-32M1-A	ATmega88-32M1-A(32 CHIP 32Pin)	1
3	J2	RF	Nrf24l01	Nrf24l01 CHIP 20Pin	1
4	U1	IC	S-8351A30	SOT-89-3	1
5	ANT	ANT	CHIP ANT	6mm Chip Antenna	1
6	D1.3	LED	CHIP RED LED	CHIP RED LED (1608)	2
	D2	CHIP DIODE	B140	CHIP DIODE B140	1
7	X1	CRYSTAL	8M	49S.SMD 8.0000 MHz ±30ppm (20PF)	1
8	X2	CRYSTAL	16M	Quartz Tech(HC-49/S SMD Type)	1
9	C1.3.6.7.10	CHIP C/CAP	104.50V	104.50V.SMD2012	5
12	C2	CHIP TANTAL	10uF.6.3V	10uF.6.3V.SMD A-type	1
13	C8.9	CHIP TANTAL	220uF.6.3V	220uF.6.3V SMD D-type	2
	C4.5	CHIP C/CAP	20pF.50V	20pF.50V.SMD2012	2
14	C11	CHIP C/CAP	33nF.50V	33nF.50V.SMD1005	1
15	C12	CHIP C/CAP	10nF.50V	10nF.50V.SMD1005	1
16	C13	CHIP C/CAP	1nF.50V	1nF.50V.SMD1005	1
17	C14	CHIP C/CAP	1.0pF.50V	1.0pF.50V.SMD1005	1
18	C16	CHIP C/CAP	2.2nF.50V	2.2nF.50V.SMD1005	1
19	C17	CHIP C/CAP	4.7pF.50V	4.7pF.50V.SMD1005	1
	C18.19	CHIP C/CAP	20pF.50V	20pF.50V.SMD1005	2
20	R1	CHIP RESISTOR	330 ohm 1/10W	330 ohm 1/10W , 2012J	1
21	R2	CHIP RESISTOR	10K 1/10W	10K 1/10W , 2012J	1
22	R3	CHIP RESISTOR	22K 1/10W	22K 1/10W , 1005	1
23	R4	CHIP RESISTOR	1M 1/10W	1M 1/10W , 1005	1
24	L1	COIL INDUCTOR CHIP	100uH	100uH.3216J	1
26	L2	COIL INDUCTOR CHIP	3.9nH	3.9nH.1005	1
27	L3	COIL INDUCTOR CHIP	3.3nH	3.3nH.1005	1
25	L4	COIL INDUCTOR CHIP	4.7nH	4.7nH.1005	1
24	L5.L6	COIL INDUCTOR CHIP	5.6nH	5.6nH.1005	2
29	J1	CN	2.54 Pin X 6	2.54 Pin X 6	1

10. BOX PACKING



CUSTOMER MODEL NO. / TITLE
REMOTE CONTROL

SPECIFICATION NO.
WR730-RaySat

有元电子(惠州)有限公司RoHS履历表

Class Name		Remote controller			Contact Person		Jhgpark		Written	Checked	Approved
Part No.		Remote controller			TEL/FAX		0752-3868850/0752-3868852				
Maker Part No		Yu Won Electronics (HuiZhou) Co.,Ltd.			E-mail Address		jhgpark@yuwonelec.com		Kuangyi		Jhgpark
Maker Name		Remote controller			Date		2008.11.20				

1. 原材料组成表(Raw material list):

No.	Material Name	Material Type	1st Vendor	2nd Vendor	RoHS Test Data (ppm=mg/kg)										Test Date	Access ory	Remarks
					Cd	Pb	Hg	Cr6+	PBB	PBDE	Report No.						
1	Case	색분	WANDELING	RAINBOW	0	0	0	0	0	0	1436660		2008-02-26	(1)			
		(ABS)	MINGHUI		0	0	0	0	0	0	F690501/LF-CTSAYA07-29023		2008-01-03	(2)			
		printing ink	WANDELING		0	0	0	0	<50	<50	GZ0610153493/CHEM		2008-05-14	(3)			
		printing	WANDELING	MEITIAN	0	0	0	0	0	0	GZ0705074439/CHEM		2008-03-31	(4)			
2	PCB	FR4	BenLiDa								SHR07122930306001C		2007. 12. 29	(5)			
		HT-50	BenLiDa								CAENC0801142702		2008. 05. 28	(6)			
		ZTW-305	BenLiDa		0	0	0	0	0	0	CANEC0802521703		2008. 05. 26	(7)			
3	Led Free Solder Wire	혼합물	BoHui		0	149	0	0	0	0	CANEC0800413505		2008-02-27	(8)			
4	CHIP CAP	NFO	FeiYu	HUAWEI	0	0	0	0	0	0	FSR0805143879103		2008. 05. 14	(9)			
		X7R	FeiYu		ND	ND	ND	ND	ND	ND	FSR0805143879101		2008. 05. 14	(10)			
		Y5V	FeiYu		ND	ND	ND	ND	ND	ND	FSR08051479102		2008. 05. 14	(11)			
5	CHIP-RESISTOR	혼합물	FeiYu		0	0	0	0	0	0	GZ0801005488/CHEM		2008-01-15	(12)			
6	LED	혼합물	FeiYu		0	0	0	0	0	0	CANEC0801988101		2008-04-01	(13)			
7	COIL INDUCTOR CHIP	CHIP BEAD	FeiYu		ND	ND	ND	ND	ND	ND	CE/2008/35879		2008. 03. 25	(14)			
		EBLS1R0	FeiYu		ND	ND	ND	ND	ND	ND	CE/2008/34042		2008. 03. 19	(15)			
		HBLS	FeiYu		ND	ND	ND	ND	ND	ND	CE/2008/34044		2008. 03. 19	(16)			
		EBLS6R8	FeiYu		ND	ND	ND	ND	ND	ND	CE/2008. 34045		2008. 03. 19	(17)			
		EBLS DR10	FeiYu		ND	ND	ND	ND	ND	ND	CE/2008/34043		2008. 03. 19	(18)			
8	CHIP DIODE	혼합물	FeiYu		ND	ND	ND	ND	ND	ND	KA080421-Q		2008. 04. 03	(19)			
9	BAT	혼합물	AoQiLong		ND	ND	ND	ND	ND	ND	2006/66/EC		2008. 07. 03	(20)			
10	TANTAL	혼합물	FeiYu	MeiJi	ND	ND	ND	ND	ND	ND	CE/2007/A0901		2007. 10. 11	(21)			
11	Carton Box	cardboard	HuaFeng		0	8	0	0	0	0	CE/2008/71979		2008-07-16	(22)			
		Binding therad	HuaFeng	BAIYANGSHU	0	0	0	0	0	0	CANEC0701079801		2008-01-03	(23)			
		youmo	HuaFeng	YINGKE	0	0	0	0	0	0	CANEC0800358003		2008-02-26	(24)			
12	PE Bag	PE	LongSheng	BAOTHANE	0	0	0	0	0	0	SHS021729/CHEM		2008-03-01	(25)			
13	메탈돔	3M	JiuXing		ND	ND	ND	ND	ND	ND	CANEC0801058001		2007-12-29	(26)			
		잉크	JiuXing		ND	ND	ND	ND	ND	ND	SZR08032727011001		2008-3-24	(27)			
		PC	JiuXing		ND	ND	ND	ND	ND	ND	SHS128318/CHEM		2008-9-26	(28)			
		메탈돔	JiuXing		ND	ND	ND	ND	ND	ND	CANEC0805877801		2008-10-1	(29)			
		PASSED	JiuXing		ND	ND	ND	ND	ND	ND	SHS032078/CHEM		2008-3-18	(30)			
14	SPRING	혼합물	ZhiCheng		ND	ND	ND	ND	ND	ND	CANEC0800330603		2008-2-21	(31)			
15	RUBBER	RUBBER	MILINKING		ND	ND	ND	ND	ND	ND	SHS0809034/CHEM		2008-5-29	(32)			
		WHITE INK	MILINKING		ND	ND	ND	ND	ND	ND	CE/2008/37192		2008-3-28	(33)			
		YC-8	MILINKING		ND	ND	ND	ND	ND	ND	GZ0803208767		2008-3-20	(34)			
		HeiLi	MILINKING		ND	ND	ND	ND	ND	ND	CANEC0802638503		2008-6-2	(35)			
		black ink	MILINKING		ND	ND	ND	ND	ND	ND	CE/2008/37188		2008-3-28	(36)			
		red ink	MILINKING		ND	ND	ND	ND	ND	ND	GZ0803032292/CHEM		2008-3-7	(37)			
		C-5A	MILINKING		ND	ND	ND	ND	ND	ND	GZ0801003272/CHEM		2008-1-12	(38)			
		색분	MILINKING		ND	ND	ND	ND	ND	ND	CANEC0801852201		2008-6-19	(39)			
		투명 잉크	MILINKING		ND	ND	ND	ND	ND	ND	CE/2008/37193		2008-3-28	(40)			
		은색 잉크	MILINKING		ND	ND	ND	ND	ND	ND	GZ0803032284/CHEM		2008-3-10	(41)			
	잉크	MILINKING		ND	ND	ND	ND	ND	ND	CANEC0800718101		2008-6-19	(42)				