



LCD-TV

Chassis : GAM22SE*

Model :LE22A656A1C

SERVICEManual

TFT-LCD TV



LE22A656A1D

Contents

1. Precautions
2. Product specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. Exploded View & Part List
6. Wiring Diagram

Contents

1. Precautions	1-1
1-1. Safety Precautions	1-1
1-2. Servicing Precautions.....	1-2
1-3. Electrostatically Sensitive Devices (ESD) Precautions	1-2
1-4. Installation Precautions	1-3
2. Product specifications	2-1
2-1. Feature & Specifications.....	2-1
2-2. Spec Comparison to the Old Models.....	2-5
2-3. Accessories	2-6
3. Disassembly and Reassemble	3-1
3-1. Disassembly	3-1
4. Troubleshooting	4-1
4-1. Troubleshooting	4-1
4-2. Alignments and Adjustments	4-11
4-3. Factory Mode Adjustments	4-12
4-4. White Balance - Calibration	4-20
4-5. White Ratio (Balance) Adjustment.....	4-22
4-6. HOW TO UPGRADE	4-23
5. Exploded View & Part List	5-1
5-2. LE22A656A** Exploded View.....	5-3
5-4. LE22A656A** Parts List.....	5-31
6. Wiring Diagram	6-1
6-1. Wiring Diagram.....	6-1
6-2. Wiring Picture	6-4
6-3. Connector Functions	6-6
6-4. Cables	6-7



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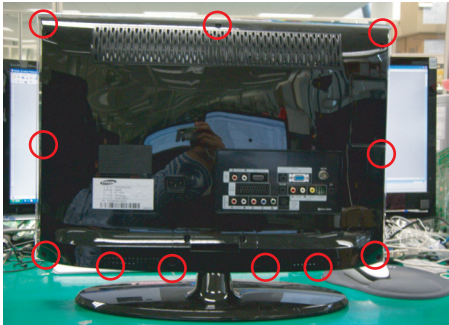


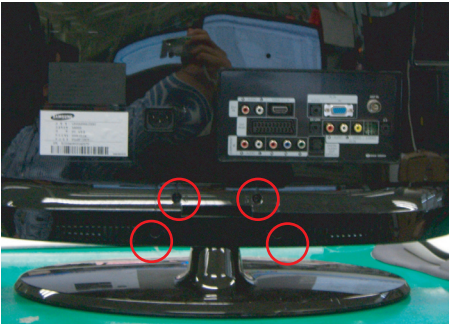
3. Disassembly and Reassemble

This section of the service manual describes the disassembly and reassembly procedures for the LE19A656A1D LCD TV.

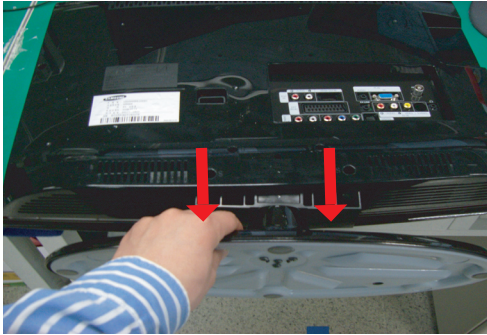
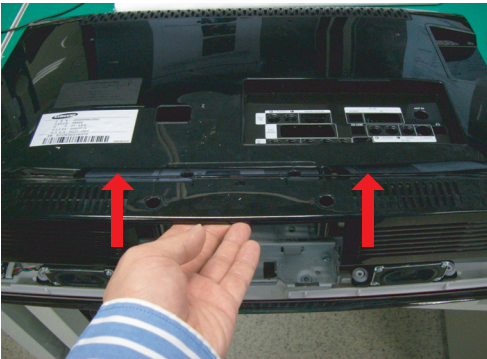
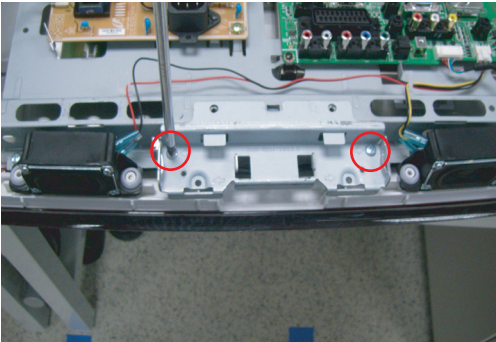

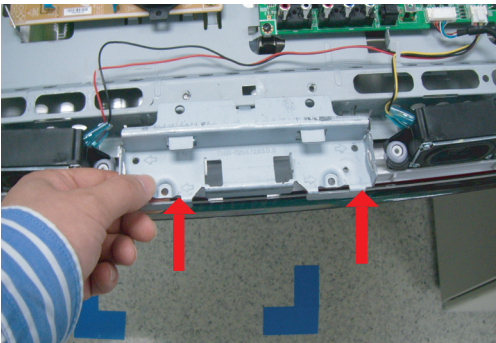
⚠ WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.

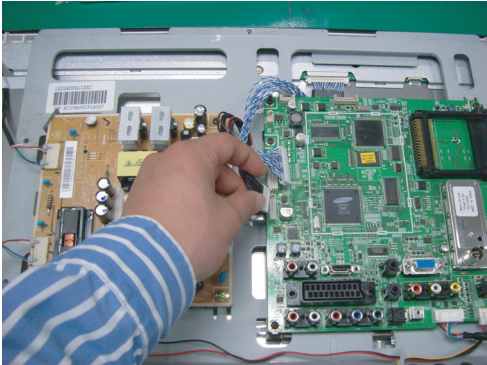
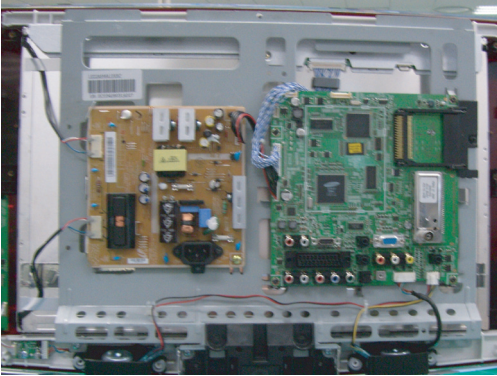


3-1. Disassembly

- ⚠ Cautions:**
- 1. Disconnect the monitor from the power source before disassembly.
 - 2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.

Description	Picture Description	Screws
1. Place monitor face down on cushioned table. Remove the screws from the Stand. Remove stand.		 ○ x 7
		
		 ○ x 4

3. Disassembly and Reassemble

Description	Picture Description	Screws
2. Lift up rear cover and remove the stand.		
		
3. Remove Screw from the stand BRKT and lift up the stand BRKT.		 ○ x 2
		

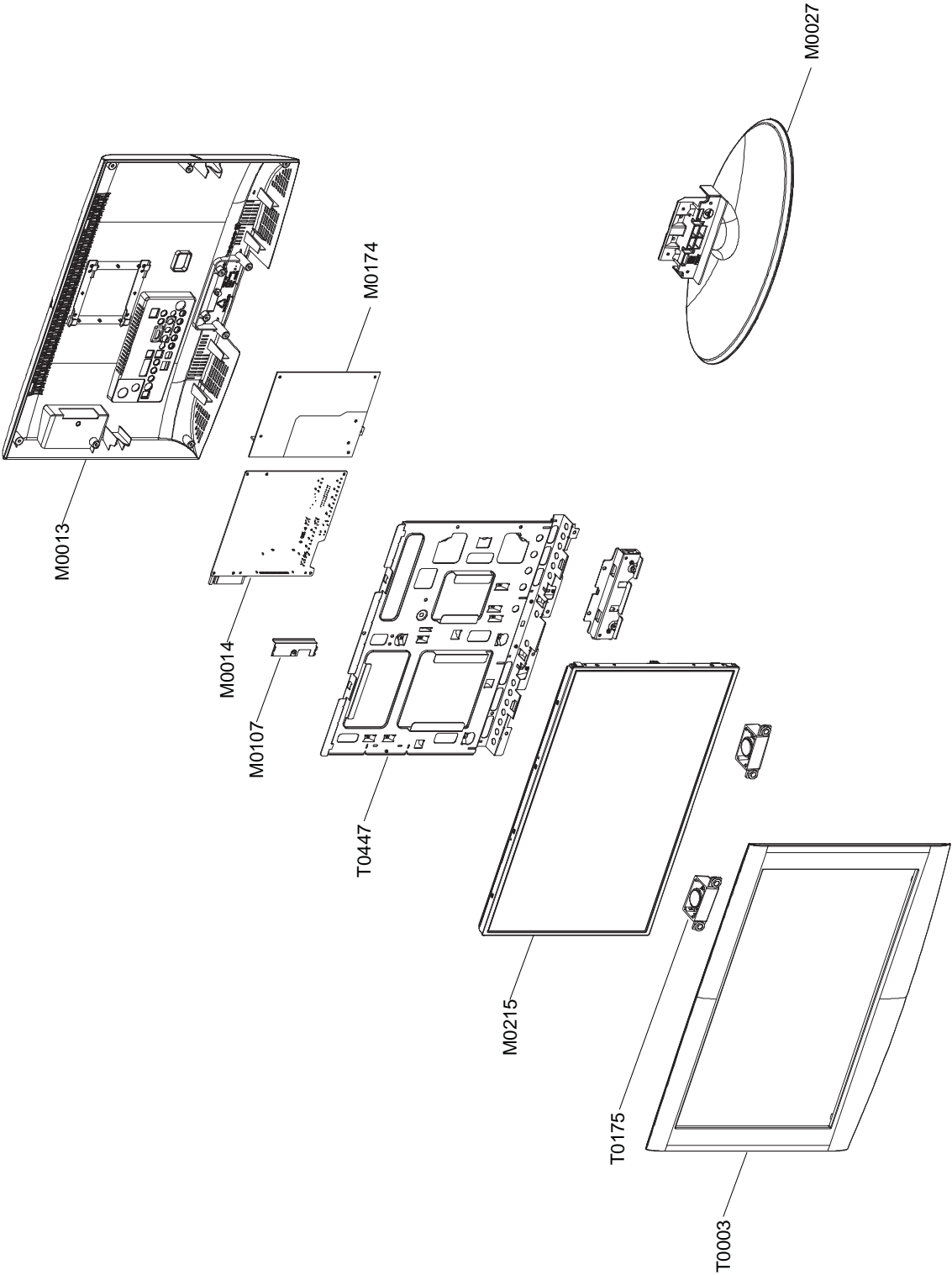
Description	Picture Description	Screws
4. Disonnect cable from the boards.		
5. Remove the screws of Scaler board's shield case and boards.		 ○ x 8  ○ x 1

3. Disassembly and Reassemble

Description	Picture Description	Screws
6. Remove screws and Lift up the Lod pa		 ○ x 4
		
		

※ Reassembly procedures are in the reverse order of disassembly procedures.

5-2. LE22A656A** Exploded View



5-2-1. LE22A656A Parts List**

Location No.	Code No.	Description & Specification	Q'ty	S.A/S.N.A	Remark
T0003	BN96-07146B	ASSY COVER P-FRONT;22,L650,EO(IDTV),,PMM	1	S.A	
M0215	BN07-00487A	LCD-PANEL;LTM220M1-L01-2	1	S.A	
T0175	BN96-06823A	ASSY SPEAKER P;16ohm,CORAL,LCD 22"/19",3	1	S.A	
M0115	BN61-02947A	BRACKET-STAND LINK;JASMINE 32",SECC,T1.6	1	S.A	
M0014	BN94-01817C	ASSY PCB MAIN-STE;LE22A656A1CXXE	1	S.A	
M0013	BN96-07439A	ASSY COVER P-REAR;22,L650,EO(IDTV),,ABS+	1	S.A	
M0027	BN96-06463C	ASSY STAND P-BASE;AMBER,22,ABS+PMMA,HB,R	1	S.A	

5-4. LE22A656A** Parts List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
		LE22A656A1CXXE	LE22A656A1C,N48A/22AA1-GAM,22,LCD-TV,SWE			
0.1	M0216	BN90-01510C	ASSY STAND;22AA1,RD02,AMBER	1	S.N.A	
..2	T0524	6902-000561	BAG PE;HDPE/NITRON,T0.015+T0.5,W500,L400	1	S.N.A	
..2	M0027	BN96-06463C	ASSY STAND P-BASE;AMBER,22,ABS+PMMA,HB,R	1	S.A	
...3	T0081	6002-001294	SCREW-TAPPING;BH,+,M4,L16,ZPC(BLK)	4	S.A	
...3	M0081	6003-001239	SCREW-TAPTITE;FH,+,B,M4,L10,ZPC(WHT),S	4	S.A	
...3		BN61-02954A	BRACKET-STAND BOTTOM;23,26 BORDEAUX PLUS	1	S.N.A	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	0.4	S.N.A	
...3	T0004	BN63-03122C	COVER-STAND BASE;AMBER,22,ABS+PMMA,HB,RD	1	S.N.A	
...3	M0126	BN73-00052C	RUBBER-FOOT;LCD TV,CR RUBBER,T2.0 DIA19,	4	S.N.A	
...3	T0920	BN61-03680C	GUIDE-STAND;22,26L450,ABS,V0(NT),BLK	1	S.N.A	
0.1	M0001	BN90-01566B	ASSY COVER FRONT;22,L650,EO,AMBER	1	S.N.A	
..2	T0175	BN96-06823A	ASSY SPEAKER P;16ohm,CORAL,LCD 22"/19",3	1	S.A	
..2	T0003	BN96-07146B	ASSY COVER P-FRONT;22,L650,EO(IDTV),,PMM	1	S.A	
...3	M0081	6003-001188	SCREW-TAPTITE;BH,+,B,M4,L10,ZPC(WHT),S	1	S.A	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	1	S.N.A	
...3	M0112	BN63-04359B	COVER-FRONT;22,L650,EO(IDTV),PMMA+PMMA A	1	S.N.A	
...3		BN61-03881A	HOLDER-BOSS BOTTOM;22,L650,ABS,HB,-,-,-,	1	S.N.A	
...3		BN61-03882A	HOLDER-BOSS TOP;22,L650,ABS,HB,-,-,-,WH1	1	S.N.A	
...3	H/BOSS/T	BN61-03261K	BOSS-TAPE;AMBER,ACRYL,T1.1,W8.0mm,WHITE,	0.6	S.N.A	
...3	H/BOSS/B	BN61-03261M	BOSS-TAPE;AMBER,ACRYL,T1.1,W16.0mm,WHITE	0.6	S.N.A	
...3	M0175	BN96-08120F	ASSY BOARD P-TOUCH FUNCTION&IR;LN22A650A	1	S.N.A	
0.1	M0002	BN90-01673A	ASSY COVER REAR;22,L650,EO(IDTV),,,,	1	S.N.A	
..2	T0081	6002-001294	SCREW-TAPPING;BH,+,M4,L16,ZPC(BLK)	7	S.A	
..2	M0013	BN96-07439A	ASSY COVER P-REAR;22,L650,EO(IDTV),,ABS+	1	S.A	
...3	T0069	AA63-60122D	SPACER-FELT;PDP ,FELT,BLK,T0.3,L30*8	4	S.N.A	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	0.45	S.N.A	
...3	M0006	BN63-04361A	COVER-REAR;22AA1,EO(IDTV),ABS+PMMA,-,-,-	1	S.N.A	
...3	T0071	BN64-00840A	INLAY-TERMINAL;22L650,EO(iDTV),PS SHEET,	1	S.N.A	
...3	T0064	BN65-00002A	CLAMPER CORE;BORDEAUX,LDPE,-,-,BLK,-	1	S.N.A	
...3	T0069	BN60-00027C	SPACER-FELT;19R7,FELT,90,T0.35,10	2	S.N.A	
...3	M0113	BN61-02621A	BRACKET-VESA;19R7,SECC,T1.0	2	S.N.A	
0.1		BN91-02202A	ASSY LCD-AMLCD;BN07-00487A	1	S.N.A	
..2	M0215	BN07-00487A	LCD-PANEL;LTM220M1-L01-2	1	S.A	
0.1	M0017	BN91-02294C	ASSY CHASSIS;LE22A656A1CXXE,AMLCD	1	S.N.A	
..2	M0014	BN94-01817C	ASSY PCB MAIN-STE;LE22A656A1CXXE	1	S.A	
...3		0202-001557	SOLDER-CREAM;LST57-A,D38-63,42SN/57BI/1A	11	S.N.A	
...3	T0245	0202-001608	SOLDER-WIRE FLUX;LFC7-107,D0.8,99.3Sn/0.	0.25	S.N.A	
...3	JA3004	3701-001480	CONNECTOR-DSUB;15P,3R,FEMAIL,STAMPED PIN	1	S.A	
...3	CN906	3707-001081	CONNECTOR-OPTICAL;STRAIGHT,SPDIF	1	S.A	
...3	JA7201_OP	3709-001508	CONNECTOR-CARD SLOT;68P,1.27mm,PIN,PCMC	1	S.A	
...3	CN330	3711-000058	HEADER-BOARD TO CABLE;BOX,4P,1R,2.5MM,AN	1	S.A	
...3	CN330	3711-004531	HEADER-BOARD TO CABLE;BOX,10P,1R,2mm,ANG	1	S.A	
...3	CN330	3711-004712	HEADER-BOARD TO CABLE;BOX,9P,1R,2mm,STRA	1	S.A	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3	CN330	3711-005606	HEADER-BOARD TO CABLE;BOX,30P,2R,2mm,STR	1	S.A	
...3	JA3201	3722-000498	JACK-SCART;21P,-,SN,BLK,NO	1	S.A	
...3	JA330	3722-001061	JACK-PHONE;1P,3.6PI,AG,BLK,N	1	S.A	
...3	JA330	3722-001061	JACK-PHONE;1P,3.6PI,AG,BLK,N	1	S.A	
...3	JA330	3722-001061	JACK-PHONE;1P,3.6PI,AG,BLK,N	1	S.A	
...3	JA333	3722-002691	JACK-PIN;2P,Ni,WHT/RED,STRAIGHT	1	S.A	
...3	JA333	3722-002691	JACK-PIN;2P,Ni,WHT/RED,STRAIGHT	1	S.A	
...3	JA333	3722-002699	JACK-PIN;3P,Ni,YEL/WHT/RED,STRAIGHT	1	S.A	
...3	JA333	3722-002703	JACK-PIN;3P,Ni,GRN/BLU/RED,STRAIGHT	1	S.A	
...3	CIS3	BN40-00115A	TUNER;DNOQ403NH261A(S),PAL Hyper DVB-T,	1	S.A	
...3	T0603	BN63-02494A	SHIELD-PCB MAIN;MOSEL 40",SPTE,T0.3,EURO	1	S.N.A	
...3	CIS02	BN73-00024C	SILICON/RUBBER-BERGQUIST;VENUS 32,40",SI	1	S.N.A	
...3	HDCP	BN97-00688A	ASSY HDCP;BN46-00018A,PS-42V6S,D73A,GENE	1	S.N.A	
...4		BN46-00018A	KEY CODE-CERTIFICATE;(HDCP KEY)PPM42M5S,	1	S.N.A	
...3	T0174	BN97-02208C	ASSY SMD;LE22A656A1CXXE,AMLCD	1	S.N.A	
...4	SUB05	0202-001477	SOLDER-CREAM;LST309-M,-,D20~45um,96.5Sn/	2.197	S.N.A	
...4	D2012	0401-000133	DIODE-SWITCHING;RLS4148,75V,150mA,LL-34,	1	S.A	
...4	D2019	0401-000133	DIODE-SWITCHING;RLS4148,75V,150mA,LL-34,	1	S.A	
...4	D3244	0401-000133	DIODE-SWITCHING;RLS4148,75V,150mA,LL-34,	1	S.A	
...4	D1004	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3016	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3017	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3045	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3046	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3047	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3061	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3062	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3064	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3066	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3202	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3203	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3204	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3205	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3206	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3207	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3217	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3218	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3219	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3230	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D3236	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	1	S.A	
...4	D1001	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	1	S.A	
...4	D2001	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	1	S.A	
...4	D3063	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	1	S.A	
...4	D3065	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	1	S.A	
...4	D3067	0401-001099	DIODE-SWITCHING;1N4148WS,75V,150mA,SOD-3	1	S.A	
...4	D1002	0402-001098	DIODE-RECTIFIER;SK34,40V,3A,SMC,TP	1	S.A	
...4	D3048	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	
...4	D3049	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	
...4	D3050	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	
...4	D3051	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	
...4	D3052	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	D5001	0403-000002	DIODE-ZENER;VLZ5V6B,5.45/5.73V,500mW,SOD	1	S.A	
....4	D3070	0403-000258	DIODE-ZENER;BZX84C5V6,5.2-6V,225mW,SOT-2	1	S.A	
....4	D3216	0403-000607	DIODE-ZENER;VLZ16C,15.69/16.51V,500mW,SO	1	S.A	
....4	D3015	0403-000771	DIODE-ZENER;VLZ6V2B,5.96-6.27V,500mW,SOD	1	S.A	
....4	D5002	0403-000771	DIODE-ZENER;VLZ6V2B,5.96-6.27V,500mW,SOD	1	S.A	
....4	D3014	0403-001052	DIODE-ZENER;RD8.2MB,7.7-8.7V,200mW,SOT-2	1	S.A	
....4	D5201	0403-001052	DIODE-ZENER;RD8.2MB,7.7-8.7V,200mW,SOT-2	1	S.A	
....4	D1005	0403-001425	DIODE-ZENER;BZX84C33,31-35V,350mW,SOT-23	1	S.A	
....4	D0254	0404-001271	DIODE-SCHOTTKY;SSA34,40V,3000mA,SMA,TP	1	S.A	
....4	D3053	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3054	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3055	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3056	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3057	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3058	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3068	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3069	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3212_EU	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3213	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3214_EU	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3215	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3220	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3221	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3222_EU	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3231	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3232	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3233	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3237	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3238	0406-001172	DIODE-TVS;CDS3C30GTH,48/-/50V,SMD	1	S.A	
....4	D3019	0406-001271	DIODE-TVS;RCLAMP0524P,6/-/V,150W,SLP251	1	S.A	
....4	D3021	0406-001271	DIODE-TVS;RCLAMP0524P,6/-/V,150W,SLP251	1	S.A	
....4	D2013	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D3071	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7201	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7202	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7203	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7204	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7205	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	D7206	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	S.A	
....4	Q7001	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	1	S.A	
....4	Q7002	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	1	S.A	
....4	Q7402	0501-000434	TR-SMALL SIGNAL;KTC3875S-GR,NPN,150mW,SO	1	S.A	
....4	Q1001	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2001	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2002	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2003	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2004	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2007	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2008	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2009	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q3006	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	Q3007	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q3207	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q3208	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q5002	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	1	S.A	
....4	Q2005	0501-000669	TR-SMALL SIGNAL;KTA1505Y,PNP,150mW,SOT-2	1	S.A	
....4	Q2006	0501-000669	TR-SMALL SIGNAL;KTA1505Y,PNP,150mW,SOT-2	1	S.A	
....4	Q3205	0501-000669	TR-SMALL SIGNAL;KTA1505Y,PNP,150mW,SOT-2	1	S.A	
....4	Q1004	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q1010	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q1011	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q1012	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q1013	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q3204	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q3206	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	1	S.A	
....4	Q409	0505-001170	FET-SILICON;SI9933ADY-T1,P,-20V,3.4A,0.0	1	S.A	
....4	Q409	0505-001170	FET-SILICON;SI9933ADY-T1,P,-20V,3.4A,0.0	1	S.A	
....4	IC104	0801-002095	IC-CMOS LOGIC;74LCX245,TRANSCIEVER,TSSOP	1	S.A	
....4	IC104	0801-002172	IC-CMOS LOGIC;74LCX16244,BUFFER/LINE DRI	1	S.A	
....4	IC104	0801-002172	IC-CMOS LOGIC;74LCX16244,BUFFER/LINE DRI	1	S.A	
....4	IC104	0801-002172	IC-CMOS LOGIC;74LCX16244,BUFFER/LINE DRI	1	S.A	
....4	IC104	0801-002432	IC-CMOS LOGIC;74LVC244,8BIT BUFFER/DRIVE	1	S.N.A	
....4	IC104	0801-002630	IC-CMOS LOGIC;74AHCT1G08,2-INPUT AND GAT	1	S.A	
....4	IC104	0801-003239	IC-CMOS LOGIC;74LVC1G00,2-input NAND Gat	1	S.A	
....4	IC104	0801-003239	IC-CMOS LOGIC;74LVC1G00,2-input NAND Gat	1	S.A	
....4	IC2002	1001-000164	IC-ANALOG MULTIPLEX;74HC4052,CMOS,SOP,16	1	S.A	
....4	IC106	1001-001082	IC-VIDEO SWITCH;BA7657F,-,SOP,24P,300MIL	1	S.A	
....4	IC3011	1001-001109	IC-ANALOG SWITCH;FST3125M,BUS SWITCH & C	1	S.A	
....4	IC107	1002-001482	IC-D/A CONVERTER;WM8521H9GED/R,16bit,SOI	1	S.A	
....4	IC110	1006-001076	IC-DRIVER/RECEIVER;MAX232ECWE+T,SOP,16P,	1	S.A	
....4	IC112	1103-000129	IC-EEPROM;24C02,2Kbit,256x8Bit,SOP,8P,5x	1	S.A	
....4	IC112	1103-000129	IC-EEPROM;24C02,2Kbit,256x8Bit,SOP,8P,5x	1	S.A	
....4	IC112	1103-001385	IC-EEPROM;AT24C256,256Kbit,32Kx8,SOP,8P,	1	S.A	
....4	IC112	1103-001410	IC-EEPROM;S-24CS08AFJ-TB-1GE,8Kbit,1Kx8,	1	S.A	
....4	IC113	1105-001712	IC-DRAM;HYB25D256163CE,DDR,256Mbit,16Mx1	1	S.A	
....4	IC113	1105-001749	IC-DRAM;K4D261638I,GDDR,128Mbit,4x2Mx16,	1	S.N.A	
....4	DU410	1201-000166	IC-OP AMP;LM358,SOP,ST,8P,150MIL,DUAL,10	1	S.A	
....4	DU410	1201-000541	IC-OP AMP;062,SOP,8P,153MIL,DUAL,6V/mV,P	1	S.A	
....4	T0085	1201-002487	IC-AUDIO AMP;MAX9728A,QFN,12P,3x3mm,DUAL	1	S.A	
....4	T0124	1201-002677	IC-POWER AMP;NTP3100,QFN56,56P,8x8mm,DUA	1	S.A	
....4	T0087	1203-001815	IC-POSI.FIXED REG.;78M09,TO-252,3P,-,PLA	1	S.A	

5. Exploded View & Part List

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Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	R110	2007-007009	R-CHIP;75ohm,5%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007009	R-CHIP;75ohm,5%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007009	R-CHIP;75ohm,5%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007009	R-CHIP;75ohm,5%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007136	R-CHIP;4.7Kohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007141	R-CHIP;240ohm,5%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007307	R-CHIP;150ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007319	R-CHIP;390ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007334	R-CHIP;200Kohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007469	R-CHIP;110ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007469	R-CHIP;110ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007791	R-CHIP;9.1Kohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007791	R-CHIP;9.1Kohm,1%,1/16W,TP,1005	1	S.N.A	
....4	RA5009	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5010	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5011	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5012	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5013	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5014	2011-000585	R-NETWORK;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5021	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5022	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5023	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5201	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5202	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5203	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5204	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5205	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7203	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7204	2011-000881	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5006	2011-001001	R-NETWORK;0ohm,5%,1/16W,L,CHIP,8P,TP,3.2	1	S.A	
....4	RA6001	2011-001001	R-NETWORK;0ohm,5%,1/16W,L,CHIP,8P,TP,3.2	1	S.A	
....4	RA6002	2011-001001	R-NETWORK;0ohm,5%,1/16W,L,CHIP,8P,TP,3.2	1	S.A	
....4	RA6003	2011-001001	R-NETWORK;0ohm,5%,1/16W,L,CHIP,8P,TP,3.2	1	S.A	
....4	RA5001	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5002	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5003	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5004	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5015	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5024	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5025	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5030	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5031	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5034	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7009	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7010	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7011	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7012	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7209	2011-001011	R-NETWORK;10Kohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7001	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7002	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	RA7003	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7004	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7005	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7006	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7007	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7008	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7205	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA7210	2011-001087	R-NETWORK;75ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	S.A	
....4	RA5005	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5007	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5008	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5016	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5017	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5018	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5019	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5020	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5026	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5027	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5028	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5029	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5032	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA5033	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7201	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	RA7202	2011-001093	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,3	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	S.A	
....4	C120	2203-000425	C-CER,CHIP;0.018nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000425	C-CER,CHIP;0.018nF,5%,50V,C0G,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	C120	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	S.A	
....4	C120	2203-000585	C-CER,CHIP;0.22nF,10%,50V,X7R,1005	1	S.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-000815	C-CER,CHIP;0.033nF,5%,50V,C0G,1608	1	S.A	
....4	C120	2203-000815	C-CER,CHIP;0.033nF,5%,50V,C0G,1608	1	S.A	
....4	C120	2203-000815	C-CER,CHIP;0.033nF,5%,50V,C0G,1608	1	S.A	
....4	C120	2203-000925	C-CER,CHIP;470nF,+80-20%,50V,Y5V,2012	1	S.A	
....4	C120	2203-000925	C-CER,CHIP;470nF,+80-20%,50V,Y5V,2012	1	S.A	
....4	C120	2203-000925	C-CER,CHIP;470nF,+80-20%,50V,Y5V,2012	1	S.A	
....4	C120	2203-000972	C-CER,CHIP;47nF,10%,16V,X7R,1608	1	S.A	
....4	C120	2203-001153	C-CER,CHIP;0.068nF,5%,50V,NP0,1005	1	S.A	
....4	C120	2203-001153	C-CER,CHIP;0.068nF,5%,50V,NP0,1005	1	S.A	
....4	C120	2203-001153	C-CER,CHIP;0.068nF,5%,50V,NP0,1005	1	S.A	
....4	C120	2203-001153	C-CER,CHIP;0.068nF,5%,50V,NP0,1005	1	S.A	
....4	C120	2203-001630	C-CER,CHIP;330nF,+80-20%,16V,Y5V,1608	1	S.A	
....4	C120	2203-001630	C-CER,CHIP;330nF,+80-20%,16V,Y5V,1608	1	S.A	
....4	C120	2203-001630	C-CER,CHIP;330nF,+80-20%,16V,Y5V,1608	1	S.A	
....4	C120	2203-002285	C-CER,CHIP;10nF,10%,50V,X7R,1005	1	S.N.A	
....4	C120	2203-002285	C-CER,CHIP;10nF,10%,50V,X7R,1005	1	S.N.A	
....4	C120	2203-002285	C-CER,CHIP;10nF,10%,50V,X7R,1005	1	S.N.A	
....4	C120	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,1608	1	S.A	
....4	C120	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,1608	1	S.A	
....4	C120	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,1608	1	S.A	
....4	C120	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,1608	1	S.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	1	S.N.A	
....4	C120	2203-002687	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1005	1	S.A	
....4	C120	2203-002687	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1005	1	S.A	

5. Exploded View & Part List

[illegible]

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[illegible]

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[illegible]

5. Exploded View & Part List

[illegible]

5. Exploded View & Part List

[illegible]

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006681	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1005	1	S.N.A	
....4	C120	2203-006842	C-CER,CHIP;0.47nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-006992	C-CER,CHIP;0.33nF,5%,50V,C0G,1005	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C120	2203-007176	C-CER,CHIP;10000nF,10%,16V,X5R,TP,2012 (	1	S.N.A	
....4	C3056	2402-001129	C-AL,SMD;47UF,20%,16V,WT,TP,6.3X5.2MM	1	S.A	
....4	C1025	2402-001238	C-AL,SMD;1uF,20%,50V,HR,TP,4.3x4.3x5.2mm	1	S.A	
....4	C1049	2402-001257	C-AL,SMD;470uF,20%,16V,-,TP,8.3*10	1	S.A	
....4	C1081	2402-001257	C-AL,SMD;470uF,20%,16V,-,TP,8.3*10	1	S.A	
....4	C1084	2402-001257	C-AL,SMD;470uF,20%,16V,-,TP,8.3*10	1	S.A	
....4	C2014	2402-001330	C-AL,SMD;330uF,20%,25V,TP,10x10mm	1	S.N.A	
....4	T0052	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	S.A	
....4	T0052	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	S.A	
....4	T0052	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	S.A	
....4	T0052	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	S.A	
....4	T0052	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	S.A	

5. Exploded View & Part List

[illegible]

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	T0568	3301-001278	BEAD-SMD;120ohm,1608,200mA,TP,169ohm/174	1	S.N.A	
....4	JA3002	3701-001367	CONNECTOR-HDMI;19P,2R,FEMALE,SMD,AU	1	S.A	
....4	M0018	BN97-02268A	ASSY MICOM;T-NHBTEDUC-1001.4,L330/430/4	1	S.N.A	
....5	IC115	1107-001415	IC-FLASH MEMORY;29W320D,4Mx8/2Mx16Bit,TS	1	S.N.A	
....4	M0018	BN97-02406A	ASSY MICOM;T-AMB22PEUMD-0101.0,N48A,2008	1	S.A	
....5	IC115	1107-001709	IC-FLASH MEMORY;MX25L1605A,16Mbit,2Mx8,S	1	S.N.A	
....4	R110	2007-001068	R-CHIP;6.8Kohm,1%,1/10W,TP,1608	1	S.A	
....4	R110	2007-007306	R-CHIP;100ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	R110	2007-007306	R-CHIP;100ohm,1%,1/16W,TP,1005	1	S.N.A	
....4	C120	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,1608	1	S.A	
....4	C1056	2402-001086	C-AL,SMD;100UF,20%,16V,WT,TP,6.6X6.6X5.3	1	S.A	
....4	F1001	3601-001374	FUSE-SURFACE MOUNT;32V,5A,FAST-ACTING,Hi	1	S.N.A	
....4	T0077	BN41-01027B	PCB MAIN;Amber iDTV,FR-4,4,1.6T,192*195,	1	S.N.A	
...3	CCMM1	BN73-00024D	SILICON/RUBBER;BORDEAUX,SILICON,28x28XT6	1	S.A	
0.1	M0045	BN92-03475J	ASSY ACCESSORY;LE22A656A1CXXE	1	S.N.A	
..2	T0268	3903-000145	CBF-POWER CORD;DT,EU,FP3/YES,U(IEC C13-R	1	S.A	
..2	T0081	6002-001294	SCREW-TAPPING;BH,+,M4,L16,ZPC(BLK)	4	S.A	
..2		AA68-03242K	MANUAL FLYER-02,SAFETY GUIDE;comm,Samsun	1	S.N.A	
..2		AA68-03575A	MANUAL FLYER-02,REGISTRATION C;XEU,ENG,U	1	S.N.A	
..2	T0074	BN59-00705A	REMOCON;TM-95,39,TTX,EUROPE	1	S.A	
..2		BN63-01798B	CLOTH-CLEAN;cloth,180,200,sea blue,ToC	1	S.N.A	
..2	T0531	BN63-04269B	COVER-BOTTOM;22,26,32L450,HIPS,HB,BK500	1	S.N.A	
..2	T0175	BN68-00514E	MANUAL FLYER-01,WARRANTY CARD;comm,Samsu	1	S.N.A	
..2	T0511	BN68-01412N	MANUAL USERS;COMM,SAMSUNG,Eng/Swe/Dan/No	1	S.N.A	
0.1	M0019	BN92-03476C	ASSY LABEL;LE22A656A1CXXE	1	S.N.A	
0.1	M0003	BN92-03497D	ASSY BOX;22AA1,EO,AMBER	1	S.N.A	
..2		BN69-02633A	BOX-01,SET;22L650,CB,A-01,SW-50,YEL,W620	1	S.N.A	
0.1	M0113	BN92-03499A	ASSY P/MATERIAL;22AA1,AMBER	1	S.N.A	
..2	T0524	6902-000758	BAG PE;HDPE/HDPE/NITRON,T0.015/T0.015/T1	1	S.N.A	
..2	T0214	BN74-00008A	TAPE-OPP MASKING;OPP-2,T0.05,W100,L800M,	1.55	S.N.A	
0.1	M0112	BN91-02293A	ASSY SHIELD;LE22A656A1DXXC	1	S.N.A	
..2	M0081	6003-000115	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(BLK),SWRC	1	S.A	
..2	M0081	6003-000115	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(BLK),SWRC	5	S.A	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
..2	M0081	6003-000115	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(BLK),SWRC	1	S.A	
..2	M0081	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(BLK),S	2	S.N.A	
..2	M0081	6003-001188	SCREW-TAPTITE;BH,+,B,M4,L10,ZPC(WHT),S	2	S.A	
..2	M0081	6003-001188	SCREW-TAPTITE;BH,+,B,M4,L10,ZPC(WHT),S	4	S.A	
..2	M0081	6003-001439	SCREW-TAPTITE;BH,+,S,M4,L8,ZPC(WHT),SW	1	S.N.A	
..2	T0297	BN39-00953D	CABLE FORM CONN.COAX;LE22S86BD,UL1571#30	1	S.A	
..2	M0174	BN44-00232A	IP BOARD;IP-54135T,L650,1.4~2.8mA,6.8~8.	1	S.A	
..2	M0115	BN61-02947A	BRACKET-STAND LINK;JASMINE 32",SECC,T1.6	1	S.N.A	
..2	M0107	BN63-03039A	SHIELD-COVER;MURANO40,PCM,T0.5,IDTV	1	S.N.A	
..2	M0412	BN96-08042A	ASSY BRACKET P-PCB;22AA1,EO,SECC,T0.8	1	S.N.A	
...3	M0131	AA63-00997A	GASKET;RE 32,40,Conductive Fabric,16mm,1	4	S.N.A	
...3	T0530	BH61-00006A	SUPPORT-PCB;DP17LS,NYLON66,-,-,-,-	1	S.N.A	
...3	M0114	BN61-02500A	HOLDER-WIRE;NYLON6.6,NATURAL	4	S.N.A	
...3	T0212	BN61-04229A	BRACKET-PANEL;22L650,SECC,T0.8,EO	1	S.N.A	
...3	M0131	BN63-03442A	GASKET;Pininfarina,FABRIC,3,12,80,GRAY,7	4	S.N.A	
...3		BN61-02429B	STUD-PEM;PNB,M2.8,D7,L8,ZPC(SIL),SUM24L	1	S.N.A	

1. Precautions

1-1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1-1. Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2. Servicing the LCD TV

1. When servicing the LCD TV, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times.
Check the calibration of this meter periodically.

1-1-3. Fire and Shock Hazard

Before returning the LCD TV to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the LCD TV.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor/capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

WARNING : Do not use an isolation transformer during this test.

Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

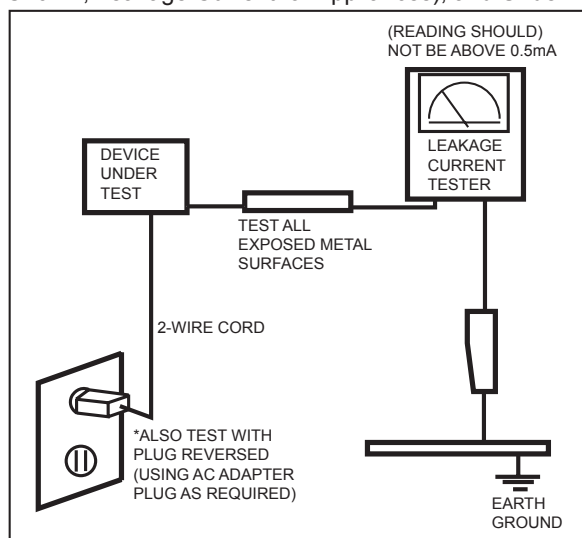



Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts.
The current measured should not exceed 0.5 milliamp.
Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by  on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2. Servicing Precautions

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
(a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3. Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the LCD TV.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4. Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (10cm) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.

Memo

2. Product specifications

Model	LE22A65*A**	
Feature		
<div>▶ Digital TV(LE22A65*A**), RF, 1-HDMI, 1-Component, 1-AV, D-SUB</div> <div>▶ Brightness : 300cd/m²</div> <div>▶ Contrast Ratio : 1000:1</div> <div>▶ Response time : 8ms</div> <div>▶ Dynamic contrast</div>		
Specifications		
Item	Description	
LCD Panel	TFT-LCD panel, RGB vertical stripe, TN mode, normally white, 22-inch viewable, 0.282(H) x 0.282(W) x 3 mm pixel pitch	
Scanning Frequency	Horizontal : 30 kHz ~ 80 kHz (Automatic) Vertical : 56 Hz ~ 75 Hz (Automatic)	
Display Colors	16.7 million colors	
Maximum resolution	Horizontal : 1680 Pixels Vertical : 1050 Pixels	
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω , internally terminated	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock rate	80MHz	
Active Display Horizontal/Vertical	473.76(H) x 296.1(V) mm	
AC power voltage & Frequency	AC 110V ~ 240V, 50/60Hz	
Power Consumption	<60 W (< 1W, stand by)	
Dimensions Set (W x D x H)	22.14 x 8.50 x 17.8 inches (562.4 x 216 x 452.2 mm) with stand 22.14 x 8.50 x 15.85 inches (562.4 x 216 x 402.6mm) without stand	
Weight (Set)	15.87lbs (7.2Kg)	
TV System	Tuning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T, PAL, SECAM
	Sound	BG, DK, NICAM, MPEG1
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80%, non-condensing Storage temperature : -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity : 5% ~ 95%, non-condensing	
Environmental Considerations	<div>- MAX Internal speaker Out : Right => 10W, Left => 10W</div> <div>- BASS Control Range : -8 dB ~ +8dB</div> <div>- TREBLE Control Range : -8 dB ~ +8 dB</div> <div>- Headphone Out : 10 mW MAX</div> <div>- Output Frequency : RF : 80 Hz ~ 15 kHz</div> <div>A/V : 80 Hz ~ 20 kHz</div>	

CHANNEL FREQUENCY TABLE

1. OUTPUT FREQUENCY : ANALOG fv:45.75MHz, fs:41.25MHz DIGITAL Fc:44MHz




2. TUNING STEP SIZE : FIRST PLL 250KHz SECOND PLL 62.5KHz

OSD	CH NO	AIR		BAND	CH NO	Cable STD		BAND	CH NO	Cable HRC		CH NO	Cable IRC	
		Air-DTV	Air-NTSC											
1	1								A-8	72.00		A-8	73.25	
2	2	57	55.25	V-L	2	55.25		V-L	2	54.00		2	55.25	
3	3	63	61.25	V-L	3	61.25		V-L	3	60.00		3	61.25	
4	4	69	67.25	V-L	4	67.25		V-L	4	66.00		4	67.25	
5	5	79	77.25	V-L	5	77.25		V-L	A-7	78.00		A-7	79.25	
6	6	85	83.25	V-L	6	83.25		V-L	A-6	84.00		A-6	85.25	
7	7	177	175.25	V-H	7	175.25		V-H	7	174.00		7	175.25	
8	8	183	181.25	V-H	8	181.25		V-H	8	180.00		8	181.25	
9	9	189	187.25	V-H	9	187.25		V-H	9	186.00		9	187.25	
10	10	195	193.25	V-H	10	193.25		V-H	10	192.00		10	193.25	
11	11	201	199.25	V-H	11	199.25		V-H	11	198.00		11	199.25	
12	12	207	205.25	V-H	12	205.25		V-H	12	204.00		12	205.25	
13	13	213	211.25	V-H	13	211.25		V-H	13	210.00		13	211.25	
14	14	473	471.25	UHF	A	121.25		MID	A	120.00		A	121.25	
15	15	479	477.25	UHF	B	127.25		MID	B	126.00		B	127.25	
16	16	485	483.25	UHF	C	133.25		MID	C	132.00		C	133.25	
17	17	491	489.25	UHF	D	139.25		MID	D	138.00		D	139.25	
18	18	497	495.25	UHF	E	145.25		MID	E	144.00		E	145.25	
19	19	503	501.25	UHF	F	151.25		MID	F	150.00		F	151.25	
20	20	509	507.25	UHF	G	157.25		MID	G	156.00		G	157.25	
21	21	515	513.25	UHF	H	163.25		MID	H	162.00		H	163.25	
22	22	521	519.25	UHF	I	169.25		MID	I	168.00		I	169.25	
23	23	527	525.25	UHF	J	175.25		SUPER	J	174.00		J	175.25	
24	24	533	531.25	UHF	K	181.25		SUPER	K	180.00		K	181.25	
25	25	539	537.25	UHF	L	187.25		SUPER	L	186.00		L	187.25	
26	26	545	543.25	UHF	M	193.25		SUPER	M	192.00		M	193.25	
27	27	551	549.25	UHF	N	199.25		SUPER	N	198.00		N	199.25	
28	28	557	555.25	UHF	O	205.25		SUPER	O	204.00		O	205.25	
29	29	563	561.25	UHF	P	211.25		SUPER	P	210.00		P	211.25	
30	30	569	567.25	UHF	Q	217.25		SUPER	Q	216.00		Q	217.25	
31	31	575	573.25	UHF	R	223.25		SUPER	R	222.00		R	223.25	
32	32	581	579.25	UHF	S	229.25		SUPER	S	228.00		S	229.25	
33	33	587	585.25	UHF	T	235.25		SUPER	T	234.00		T	235.25	
34	34	593	591.25	UHF	U	241.25		SUPER	U	240.00		U	241.25	
35	35	599	597.25	UHF	V	247.25		SUPER	V	246.00		V	247.25	
36	36	605	603.25	UHF	W	253.25		SUPER	W	252.00		W	253.25	
37	37	611	609.25	UHF	AA	259.25		HYPER	AA	258.00		AA	259.25	
38	38	617	615.25	UHF	BB	265.25		HYPER	BB	264.00		BB	265.25	
39	39	623	621.25	UHF	CC	271.25		HYPER	CC	270.00		CC	271.25	
40	40	629	627.25	UHF	DD	277.25		HYPER	DD	276.00		DD	277.25	
41	41	635	633.25	UHF	EE	283.25		HYPER	EE	282.00		EE	283.25	
42	42	641	639.25	UHF	FF	289.25		HYPER	FF	288.00		FF	289.25	
43	43	647	645.25	UHF	GG	295.25		HYPER	GG	294.00		GG	295.25	
44	44	653	651.25	UHF	HH	301.25		HYPER	HH	300.00		HH	301.25	
45	45	659	657.25	UHF	II	307.25		HYPER	II	306.00		II	307.25	
46	46	665	663.25	UHF	JJ	313.25		HYPER	JJ	312.00		JJ	313.25	
47	47	671	669.25	UHF	KK	319.25		HYPER	KK	318.00		KK	319.25	
48	48	677	675.25	UHF	LL	325.25		HYPER	LL	324.00		LL	325.25	
49	49	683	681.25	UHF	MM	331.25		HYPER	MM	330.00		MM	331.25	
50	50	689	687.25	UHF	NN	337.25		HYPER	NN	336.00		NN	337.25	
51	51	695	693.25	UHF	OO	343.25		HYPER	OO	342.00		OO	343.25	
52	52	701	699.25	UHF	PP	349.25		HYPER	PP	348.00		PP	349.25	
53	53	707	705.25	UHF	QQ	355.25		HYPER	QQ	354.00		QQ	355.25	
54	54	713	711.25	UHF	RR	361.25		HYPER	RR	360.00		RR	361.25	
55	55	719	717.25	UHF	SS	367.25		HYPER	SS	366.00		SS	367.25	
56	56	725	723.25	UHF	TT	373.25		HYPER	TT	372.00		TT	723.25	
57	57	731	729.25	UHF	UU	379.25		HYPER	UU	378.00		UU	729.25	
58	58	737	735.25	UHF	VV	385.25		HYPER	VV	384.00		VV	735.25	
59	59	743	741.25	UHF	WW	391.25		HYPER	WW	390.00		WW	741.25	
60	60	749	747.25	UHF	XX	397.25		HYPER	XX	396.00		XX	747.25	
61	61	755	753.25	UHF	YY	403.25		HYPER	YY	402.00		YY	753.25	
62	62	761	759.25	UHF	ZZ	409.25		HYPER	ZZ	408.00		ZZ	759.25	
63	63	767	765.25	UHF	AAA	415.25		HYPER	AAA	414.00		AAA	765.25	
64	64	773	771.25	UHF	BBB	421.25		HYPER	BBB	420.00		BBB	771.25	
65	65	779	777.25	UHF	CCC	427.25		ULTRA	CCC	426.00		CCC	777.25	
66	66	785	783.25	UHF	DDD	433.25		ULTRA	DDD	432.00		DDD	783.25	
67	67	791	789.25	UHF	EEE	439.25		ULTRA	EEE	438.00		EEE	789.25	
68	68	797	795.25	UHF	FFF	445.25		ULTRA	FFF	444.00		FFF	795.25	
69	69	803	801.25	UHF	GGG	451.25		ULTRA	GGG	450.00		GGG	801.25	

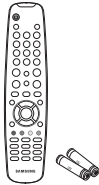




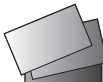

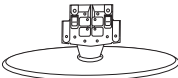
2. Product specifications

OSD	CH NO	AIR		BAND	CH NO	Cable STD	BAND	CH NO	Cable HRC	CH NO	Cable IRC
		Air-DTV	Air-NTSC								
70	70				HHH	499.25	ULTRA	HHH	498.00	HHH	499.25
71	71				III	505.25	ULTRA	III	504.00	III	505.25
72	72				JJJ	511.25	ULTRA	JJJ	510.00	JJJ	511.25
73	73				KKK	517.25	ULTRA	KKK	516.00	KKK	517.25
74	74				LLL	523.25	ULTRA	LLL	522.00	LLL	523.25
75	75				MMM	529.25	ULTRA	MMM	528.00	MMM	529.25
76	76				NNN	535.25	ULTRA	NNN	534.00	NNN	535.25
77	77				000	541.25	ULTRA	000	540.00	000	541.25
78	78				PPP	547.25	ULTRA	PPP	546.00	PPP	547.25
79	79				79	553.25	ULTRA	79	552.00	79	553.25
80	80				80	559.25	ULTRA	80	558.00	80	559.25
81	81				81	565.25	ULTRA	81	564.00	81	565.25
82	82				82	571.25	ULTRA	82	570.00	82	571.25
83	83				83	577.25	ULTRA	83	576.00	83	577.25
84	84				84	583.25	ULTRA	84	582.00	84	583.25
85	85				85	589.25	ULTRA	85	588.00	85	589.25
86	86				86	595.25	ULTRA	86	594.00	86	595.25
87	87				87	601.25	ULTRA	87	600.00	87	601.25
88	88				88	607.25	ULTRA	88	606.00	88	607.25
89	89				89	613.25	ULTRA	89	612.00	89	613.25
90	90				90	619.25	ULTRA	90	618.00	90	619.25
91	91				91	625.25	ULTRA	91	624.00	91	625.25
92	92				92	631.25	ULTRA	92	630.00	92	631.25
93	93				93	637.25	ULTRA	93	636.00	93	637.25
94	94				94	643.25	ULTRA	94	642.00	94	643.25
95	95				A-5	91.25	FM	A-5	90.00	A-5	91.25
96	96				A-4	97.25	FM	A-4	96.00	A-4	97.25
97	97				A-3	103.25	FM	A-3	102.00	A-3	103.25
98	98				A-2	109.25	MID	A-2	108.00	A-2	109.25
99	99				A-1	115.25	MID	A-1	114.00	A-1	115.25
100	100				100	649.25	ULTRA	100	648.00	100	649.25
101	101				101	655.25	ULTRA	101	654.00	101	655.25
102	102				102	661.25	ULTRA	102	660.00	102	661.25
103	103				103	667.25	ULTRA	103	666.00	103	667.25
104	104				104	673.25	ULTRA	104	672.00	104	673.25
105	105				105	679.25	ULTRA	105	678.00	105	679.25
106	106				106	685.25	ULTRA	106	684.00	106	685.25
107	107				107	691.25	ULTRA	107	690.00	107	691.25
108	108				108	697.25	ULTRA	108	696.00	108	697.25
109	109				109	703.25	ULTRA	109	702.00	109	703.25
110	110				110	709.25	ULTRA	110	708.00	110	709.25
111	111				111	715.25	ULTRA	111	714.00	111	715.25
112	112				112	721.25	ULTRA	112	720.00	112	721.25
113	113				113	727.25	ULTRA	113	726.00	113	727.25
114	114				114	733.25	ULTRA	114	732.00	114	733.25
115	115				115	739.25	ULTRA	115	738.00	115	739.25
116	116				116	745.25	ULTRA	116	744.00	116	745.25
.
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125	125				125	799.25	ULTRA	125	798.00	125	799.25
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2-2. Spec Comparison to the Old Models

Model	AMBER (LE19/22A656A1D)	JASMINE(LE22S86BD)	BORDEAUX PLUS(LE19R86BD)
Design			
Display Type	LCD TV	LCD TV	LCD TV
Built-in Tuner	O	O	O
Resolution	LE22A656A1D : 1680 x 1050 LE19A656A1D : 1440 x 900	1680 x 1050	1440 x 900
LCD Panel	TFT LCD Panel 50Hz	TFT LCD Panel 50Hz	TFT LCD Panel 50Hz
Screen Size	19"/22"	22"	19"
Picture ratio	16:10	16:10	16:10
Dimensions (W x H x D)	19 22 18.90 x 7.09 x 15.59 inches (with stand) 18.90 x 2.34 x 13.98 inches (without stand) 22.14 x 8.50 x 17.80 inches (with stand) 22.14 x 2.70 x 15.85 inches (without stand)	22 24.23 x 9.12 x 17.43 inches (with stand) 24.23 x 3.20 x 15.88 inches (without stand)	19 18.9 x 7.09 x 15.47 inches with stand 18.9 x 2.26 x 14.19 inches without stand
Weight	19 12.35 lbs (set) 22 15.87 lbs (set)	22 16.53 lbs (set)	19 11.46 lbs (set)
Brightness	300 nit	300 nit	300 nit
Contrast Ratio	1000 : 1	1000:1	1000:1
Picture Enhacer	-	DNle (FBE2)	DNle (FBE2)
Equalizer	O	O	O
Surround Sound	SRS TruSurround Dolby Digital	SRS TruSurround Dolby Digital	SRS TruSurround Dolby Digital
Speaker Output	3W + 3W	3W + 3W	3W + 3W
Antenna	1	1	1

2-3. Accessories

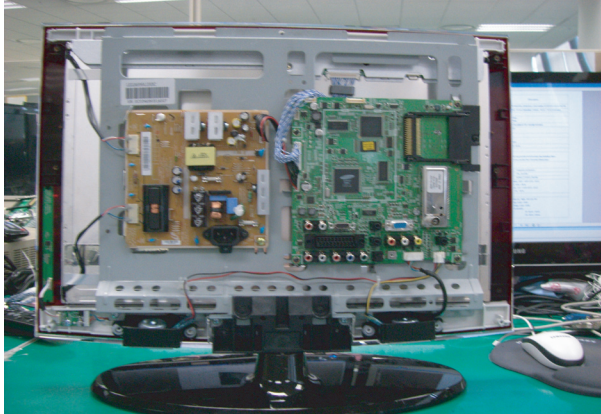
Product	Description	Code. No	Remark
	Remote Control & Batteries (AAA x 2)	iDTV: BN59-00705A READY: BN59-00676A	Samsung Electronics Service center
	Power Cord	3903-000145	
	Cover-Bottom	19" : BN63-03039A 22" : BN63-04269B	
	Owner's Instructions	BN68-01424A	
	Cleaning Cloth	BN63-01798A	
	Warranty Card / Registration Card / Safety Guide Manual (Not available in all locations)	-	
	Stand Screw x 4	6002-001294	
	Stand	19" : BN90-01200E 22" : BN90-01510C	

4. Troubleshooting

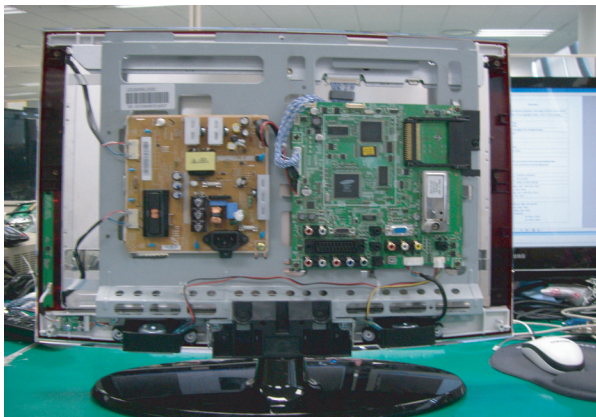
4-1. Troubleshooting

1. Check the various cable connections first.
 - Check to see if there is a burnt or damaged cable.
 - Check to see if there is a disconnected or loose cable connection.
 - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.

4-1-1. No Power

Symptom	<ul style="list-style-type: none"> - The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The units appears to be dead.
Major checkpoints	<p>The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following:</p> <ul style="list-style-type: none"> - Check the internal cable connection status inside the unit. - Check the fuses of each part. - Check the output voltage of SMPS. - Replace the Main Board.
Diagnostics	 <pre> graph TD Q1[LAMP off, power indicator LED red color?] -- No --> A1[Check a connection a power cable.] Q1 -- Yes --> Q2[1 Does proper DC 13V appear at pin2 of CN1001?] Q2 -- No --> A2[Change a Assy PCB Power.] Q2 -- Yes --> Q3[2 Does proper DC 3.3V appear at C1013?] Q3 -- No --> A3[Check a IC1011 Change a main PCB ass'y] Q3 -- Yes --> Q4[3 Does proper DC 5V, 2.5V, 1.2V appear at C1051, C1057, C1066?] Q4 -- No --> A4[Check a IC1022, IC1021, IC1006. Change a main PCB ass'y.] Q4 -- Yes --> A5[A power is supplied to set?] </pre>
Caution	Make sure to disconnect the power before working on the SMPS/IP.

4-1-2. No Video (Analog PC signal)

Symptom	<ul style="list-style-type: none"> Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> Check the PC source Check the SEMS01 This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Power Indicator is off. Lamp on, no video.] -- Yes --> Q1[Check a PC source and check the connection of DSUB cable?] Q1 -- No --> A1[Input a analog PC signal and connected cable(DPMS).] Q1 -- Yes --> Q2[1 Does the signal appear at BD3014, 3015, 3016 (R, G, B)?] Q2 -- No --> A2[PC cable. Change a PC cable.] Q2 -- Yes --> Q3[2 Does the digital data appear at the output of LVDS (RA5012~13)?] Q3 -- No --> A3[Check a IC5001. Change a main PCB ass'y] Q3 -- Yes --> Q4[Check a LVDS cable? Replace a lcd panel?] Q4 -- No --> A4[Please, Call to Samsung Co. LTD.] </pre>
Caution	Make sure to disconnect the power before working on the SMPS/IP.

WAVEFORMS

1

R,G,B Output Signal

2002/01/08 10:45:29
Stopped 204

Normal
200MS/s 10ns/div

CH1 10:1
0.500 0.410
DC Full

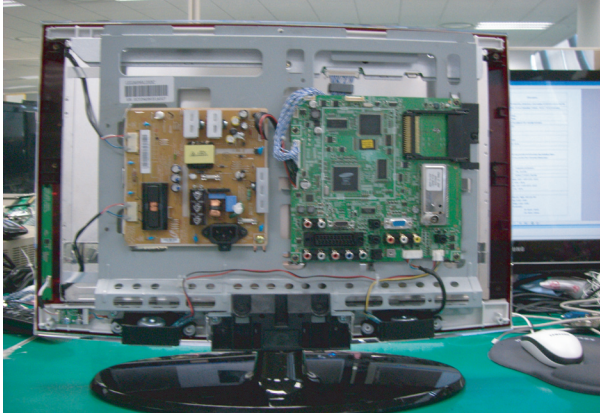
Edge CH 1
Auto
1.770 0

IMAGE
Thumbnail Format Color Comment File List File Name
JPEG ON FB 0000

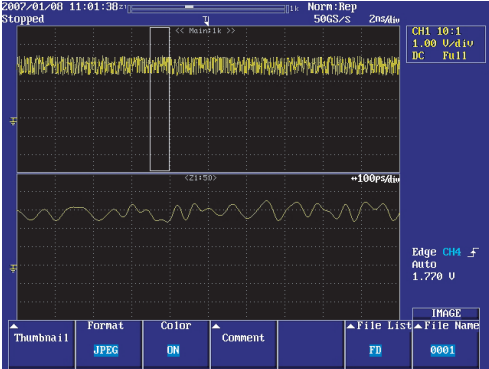
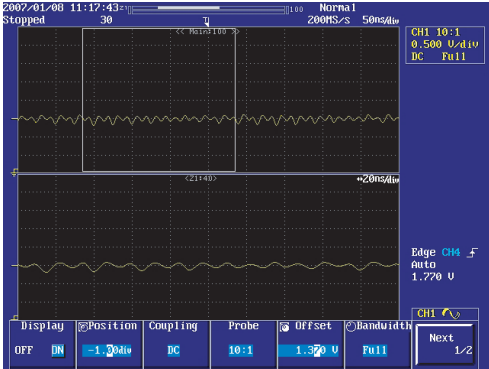
20ns/div

20ns/div

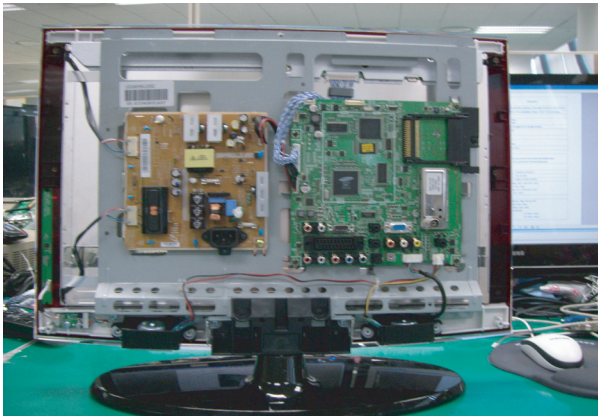
4-1-3. No Video (HDMI - Digital Signal)

Symptom	<ul style="list-style-type: none"> Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> Check the HDMI source Check the SEMS01 This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Power Indicator is off. Lamp on, no video.] -- Yes --> Q1{1 Check the connection of HDMI cable?} Q1 -- No --> A1[Input a HDMI cable.] Q1 -- Yes --> Q2{3 Does the digital data appear at the No output of LVDS (RA5012~14)?} Q2 -- No --> A2[Check a IC5001. Change a main PCB ass'y.] Q2 -- Yes --> Q3[Check the LVDS cable? Replace the LCD panel?] Q3 -- No --> A3[Please, Contact Tech support] </pre>
Caution	Make sure to disconnect the power before working on the SMPS/IP.

WAVEFORMS

2	Digital Output Data
	
3	Signal of HDMI(Data)
	

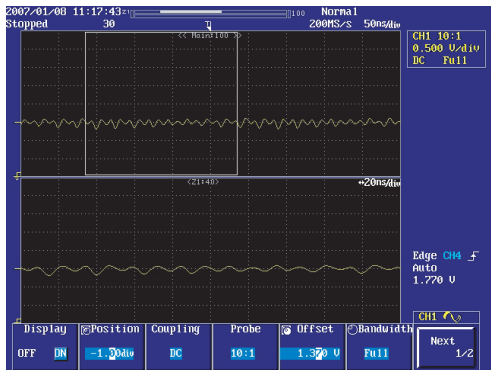
4-1-4. No Video (Tuner_CVBS)

Symptom	<ul style="list-style-type: none"> Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> Check the Tuner CVBS source Check the SEMS01 This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD A[Power Indicator is off. Lamp on, no picture.] -- No --> B[Connect the RF cable and check RF signal.] A -- Yes --> C{1 Does the signal appear at L3001?} C -- No --> D[Check a B+ voltage (#3 of Tuner) 5V, change a main PCB ass'y.] C -- Yes --> E{2 Does the signal appear at R3169?} E -- No --> F[Change a main PCB ass'y.] E -- Yes --> G[Check the LVDS cable? Replace the LCD panel?] G -- No --> H[Please, Call to Samsung Co. LTD.] </pre>
Caution	Make sure to disconnect the power before working on the SMPS/IP.

WAVEFORMS

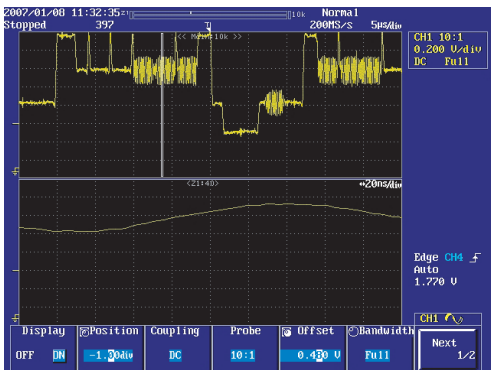
3

CVBS Output Signal

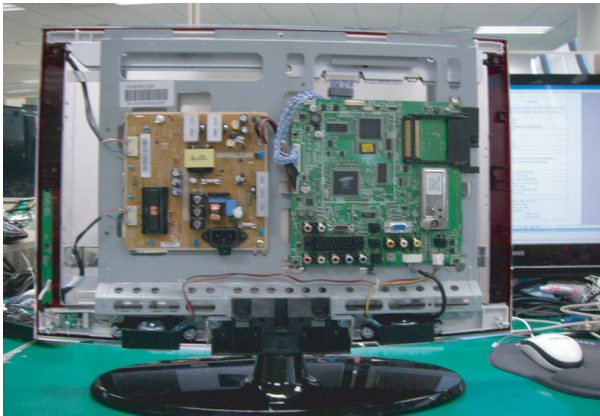


4

Tuner_CVBS Output Signal

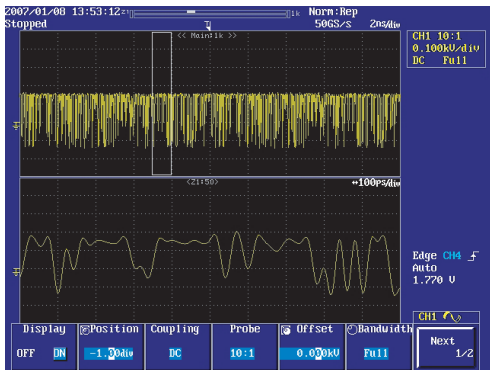


4-1-5. No Sound

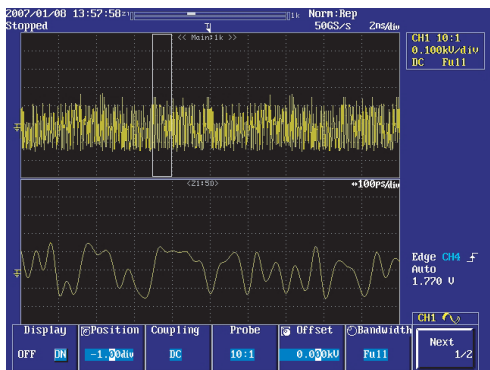
Symptom	<ul style="list-style-type: none"> Audio is normal but no picture is displayed on the screen.
Major checkpoints	<ul style="list-style-type: none"> Check the RF Source Check the SEMS01 This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Picture is display, no sound.] -- No --> Step1[Connect a sound cable. control a volume.] Start -- Yes --> Q1{1 Does the signal appear at C2058~65?} Q1 -- No --> Step2[Check sound cables of each source, and a connection harness.] Q1 -- Yes --> Q2{2 Does the signal appear at #3,#13 of IC2002?} Q2 -- No --> Step3[Check IC2002. Change a main PCB ass'y.] Q2 -- Yes --> Q3{3 Does the signal appear at BD2006~9?} Q3 -- No --> Step4[Change a main PCB ass'y.] Q3 -- Yes --> Step5[Replace the speaker ass'y?] </pre>
Caution	Make sure to disconnect the power before working on the SMPS/IP.

WAVEFORMS

6 The Signal are Inputed to IC2002



7 The Signal are Inputed to IC2001



4-2. Alignments and Adjustments

4-2-1. General Alignment Instruction

1. Usually, a color LCD-TV needs only slight touch-up adjustment upon installation.
Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect against shock hazard, use an isolation transformer.

4-3. Factory Mode Adjustments

4-3-1 Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote - control



- If you have Factory remote - control



- The buttons are active in the service mode.

1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left

Arrow Right, Menu, Enter, Number Key(0~9)

2. Function - Control Key : Power, CH +, CH -, VOL +, VOL -,
Menu, TV/VIDEO(Enter)

4-3-2 Panel Check

You have to check Panel Maker Because of different adjustments as follows.

First of all, Check the label rating!

1) Label Rating File

- LCD PANEL MARK

A:ACER(AUO), S : SEC, C : CMO

* If not printed you could consider S(sec) panel mark.

4-3-3 Factory Data

1. Option Table(Service)
2. WB Adjust
3. Information

Checksum

T-AMB22PEUMD-XXXX (Main Micom Ver.)

T-PERLDEUC-XXXX(DTV MICOM Ver.)

EDID: L12_1680_1050 Success (IF 19" 1440 x 900)

HDCP Success

Month/Day/Year

Hour/Min./Sec.

4. Advanced Menu

4. Troubleshooting

1. Option Table(Service)

Factory Reset	Default
Country(0x55)	Others-0~3/Russia-4~5/Nordic-6~9
Ready	Off
Panel Inch	19"/22"/23"/26"/27"/32"/37"/40"/42"/46"/50"/52"/57"
Dimm Type	INT/INT_NEG/EXT_POS/EXT_NEG/EXT
Panel Type	19A T/22A T/22D T/26A AG/26L AG/26D T/32L AG/32L NG/32D NG/32D AG/37L AG/37I NG/40L AG/40A AG/32A AG 7/32A AG 8/37L NG/26 D T NF/32D AG NF/32A AG NF/37L NG NF/37I NG NF/40L AG NF/40A AG NF/32A PB/26A PB/37L PB/40A PB
Model Option	Amber/Coral/Jade/Tanzanite/Hanaro/Jade_FBE/Pyrope/Pyrope_3D/Carnelian/Carnelian_3D
Anynet+	On/Off
Light Effect	On/Off
TTX	On/Off
TTX List	FLOF/List
TTX Group	Lang OSD/W Europe/E Europe/Russia/Greek/Turkey/Arab/Farsi/ArabHbrw
Carrier Mute	On/Off
Volume Curve	EU/EA
HotPlug	On/Off
HotPlugCtrl	On/Off
HotPlugDelay	0~63
Auto Power	On/Off
LNA Menu	On/Off
Hotel Option	On/Off
D.Gamma	On/Off
PC Ident	On/Off
Language	English/Germany/French/Italia/Spain/Netherland/Portuguese/Greek/Czech/Serbian/Croatian/Romanian/Hungarian/Polish/Russian/Bulgarian/Turkish/Slovakia
Ch Table	SUWON/SESK/SHE/TTSEC/SEIN/SDMA/TSED/SAVINA/SIEL/TSE
DDR	Etron
Shop Mode	On/Off
Nordic	On/Off
Arabic	On/Off
NT Conversion	On/Off
Control	
PDP Filter	
PDP Group	
Spread Spectrum	

2. WB Adjust

Calibration
White Balance
EPA Standard
Movie WB

3. Information

Checksum

T-AMB22PEUMD-XXXX (Main Micom Ver.)

T-PERLDEUC-XXXX(DTV MICOM Ver.)

EDID: L12_1680_1050 Success (IF 19" 1440 x 900)

HDCP Success

Month/Day/Year

Hour/Min./Sec.

4. Advanced Menu

I. MST68981

1) ADC Calibration

ADC Calibration	AV/COMP/PC/HDMI/DTV	
	CVBS Y Offs	0~255
	CVBS Y Gain	0~255
	Ana Y/G Offs	0~255
	Ana U/B Offs	0~255
	Ana V/R Offs	0~255
	Ana Y/G Gain	0~255
	Ana U/B Gain	0~255
	Ana V/R Gain	0~255
	RGB R Offs	0~255
	RGB G Offs	0~255
	RGB B Offs	0~255
	RGB R Gain	0~255
	RGB G Gain	0~255
	RGB B Gain	0~255

4. Troubleshooting

2) Calibration Target

AV ADC Target	Low	17
	High	234
	Delta	3

Comp ADC Target	Low	17
	High	234
	Delta	3

PC ADC Target	Low	1
	High	254
	Delta	3

ALL RGB Target	Low	2
	High	235
	Delta	1

3) IPC/MJC

4) Picture Enhance

Sharpness	H1 Gain	0~63
	H2 Gain	0~63
	H3 Gain	0~63
	H4 Gain	0~63
	V1 Gain	0~63
	V2 Gain	0~63
	D1 Gain	0~63
	D2 Gain	0~63
	Over Shoot2	0~255
	Over Shoot3	0~255
	Under Shoot2	0~255
	Under Shoot3	0~255
	Sub Color	0~100

II. Option Block

1) FBE

Pattern Select	0
B-Slope Gain	45
B-Tilt Min	40
B-Tilt Max	120
Lfunc-Basis	80
Hfunc-Basis	85
Mean-Offset1	30
Mean-Offset2	235
Mean Slope	112
ACR Offset	15
ACR Th1	10
ACR Th2	110
Skin Enable	1
Skin Uv	138
Mskin Uv	140
Sub Color	128
Msub Color	112

2) FRCS

3) FRCM

4) LD

5) PDP LOGIC

III. Sound

Saturation Mute	Off
FM Prescale	26
AM Prescale	24
Nicam Prescale	21
FM M Prescale	20
SC1 Vol	16
SC2 Vol	16
Audio Delay	On
Audio Delay Time	8
Ch1BW	2
Ch2BW	1
Num of Check	1
Num of Double Check	5
Mono Weight	1
Stereo Weight	1
Dual Weight	1
BG M2S Threshold	144
DK M2S Threshold	80
BG S2M Threshold	176
DK S2M Threshold	0
FINE Vol	20
Detection Threshold	
Ext Volume Scale	2
Ext Prescale Speaker	0
R2E Scart2 Offset	2
NTP3000	
NTP Master Volume	30
NTP PWM Modulation	239
NTP DRC Thresh	18
NTP Speaker EQ	On

IV. YC Delay

PAL BG	4
PAL DK	4
PAL I	4
SECAM BG	5
SECAM DK	5
SECAM L	4
NTSC 358	17
NTSC 443	1
AV PAL	1
AV SECAM	2
AV NT358	17
AV NT443	1
AV PAL60	17

V. Adjust

Video Mute time	8
Dynamic Dimming	Off
Dynamic CE	On
LNA Plus	
Megazine LNA	Off
DTV WatchDog	On
Main WatchDog	Off
UART Select	Off
Debug Mode	Normal
BackEndMute	Off
Tuner Select	ALPS_Slim
Tuner TOP Semco	10
Tuner TOP Alps	13
PixelShift Test	Off
FBE Select	FBE3
Hp Detextct	High
D WatchDog Count	0
Visual Test	Off

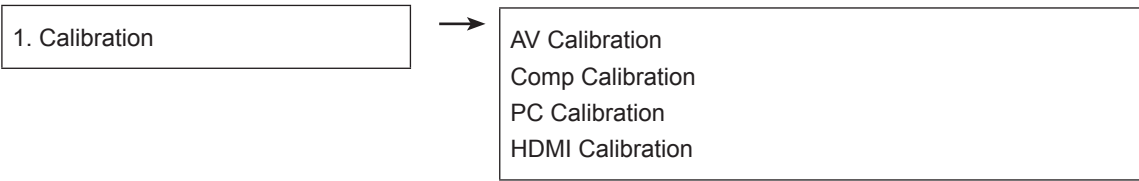
VI. Bus Stop

VII. Defect Log

- 1) LogList1
- 2) LogList2
- 3) LogList3

4-4. White Balance - Calibration

4-4-1 White Balance -Calibration

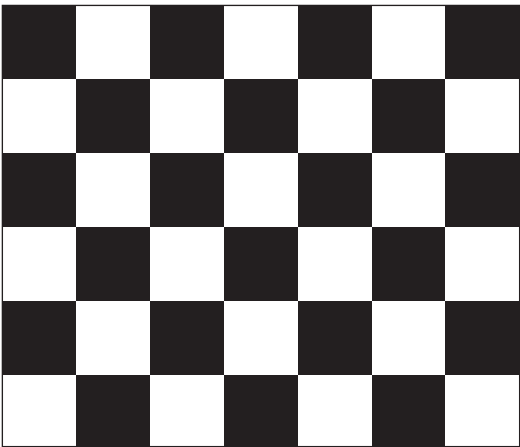


4-4-2 Service Adjustment - You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

Adjust spec.

- 1. Source : HDMI
- 2. Setting Mode : 1280*720@60Hz
- 3. Pattern : Pattern #24 (Chess Pattern)



(Chess Pattern)

4. Use Equipment : CA210 & Master MSPG925 Generator

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
CVBS IN (Model_#2)	Perform in PAL B&W Pattern #24	Lattice
Component IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice
PC Analog IN (Model_#21)	Perform in VESA XGA (1024x768) B&W Pattern #24	Lattice
HDMI IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice

<Table 1>

■ Method of Color Calibration (AV)

- 1) Apply the NTSC Lattice (N0. 3) pattern signal to the AV IN 1 port
- 2) Press the Source key to switch to "AV1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "AV Calibration" menu.
- 6) In "AV Calibration Off" status, press the "►" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "AV Calibration" status from Failure to Success.

■ Method of Color Calibration (Component)

- 1) Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port
- 2) Press the Source key to switch to "Component1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "Comp Calibration" menu.
- 6) In "Comp Calibration Off" status, press the "►" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "Comp Calibration" status from Failure to Success.

■ Method of Color Calibration (PC)

- 1) Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port
- 2) Press the Source key to switch to "PC" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "PC Calibration" menu.
- 6) In "PC Calibration Off" status, press the "►" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "PC Calibration" status from Failure to Success.

■ Method of Color Calibration (HDMI)

- 1) Apply the 720p Lattice (N0. 6) pattern signal to the HDMI1/DVI IN port
- 2) Press the Source key to switch to "HDMI1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "HDMI Calibration" menu.
- 6) In "HDMI Calibration Off" status, press the "►" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "HDMI Calibration" status from Failure to Success.

4-4-3 White Balance - Adjustment

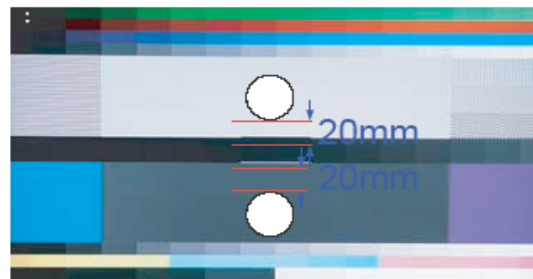
	(low light)	(hight light)
3. W/B	Sub Bright R offset G offset B offset	Sub Contrast R gain G gain B gain

(W/B adjustment Condition refer next page)

4-5. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. (Refer to Table 1, 2)
It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min ↑



- Calibration and Manual setting for WB adjustment.

HDMI : Time #6 720P, Pattern #24 Chessboard Calibration	→ Manual adjustment #92 pattern (720p)
COMP: Time #6 720P, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (720p)
CVBS: Time #2 PAL, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (NTSC)
PC: Time #21 1024*768, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (NTSC)

- If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.
- White Balance Manual Adjustment

	CA-210				
		x	y	Y(L)	T(K) + MPCD
CVBS (NTSC)	H/L	272	278	- (Sub_CT:140)	12,000 (±0)
	L/L	272	278	17.0 cd/m ² (5.0 Ft - Sub_BR:128)	12,000 (±0)
COMP (720P)	H/L	272	278	- (Sub_CT:140)	12,000 (±0)
	L/L	272	278	17.0 cd/m ² (3.5 Ft - Sub_BR:128)	12,000 (±0)
HDMI (720P)	H/L	272	278	- (Sub_CT:140)	12,000 (±0)
	L/L	272	278	17.0 cd/m ² (5.0 Ft - Sub_BR:128)	12,000 (±0)

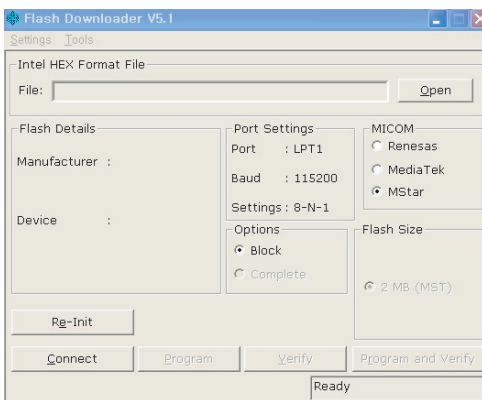
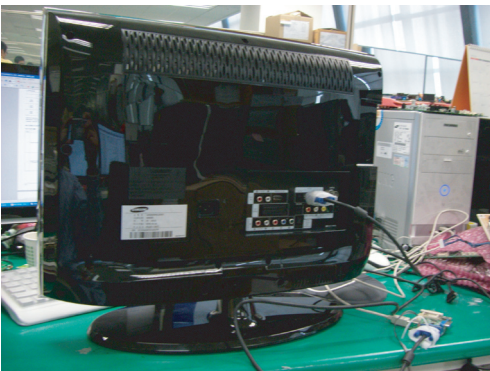
- Adjustment Specification

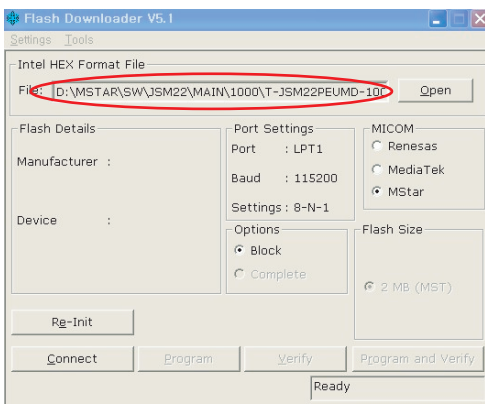
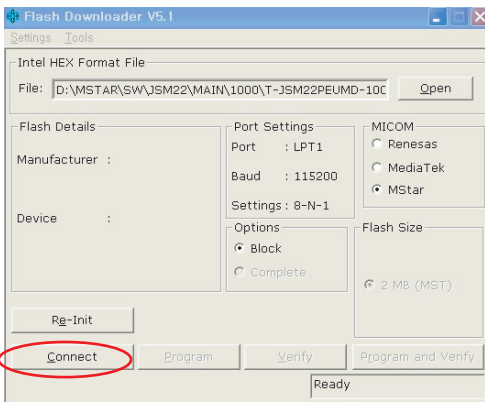
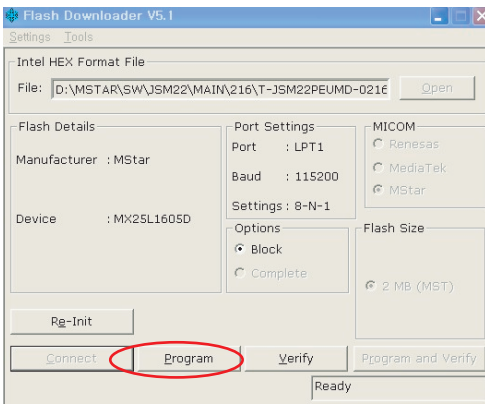
White Balance : High light (±3), Low light (±5)

Luminance : High light (±0.1Ft/L), Low light (±0.1Ft/L)


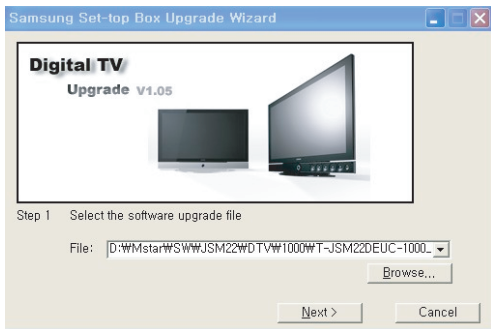
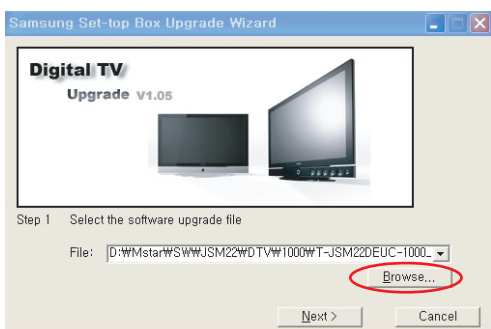
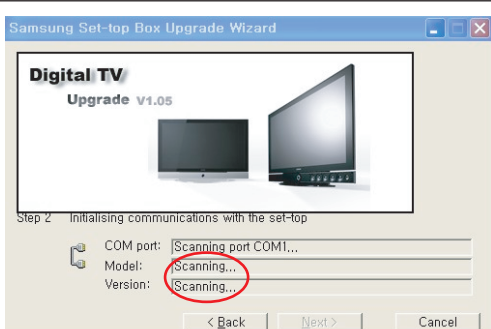
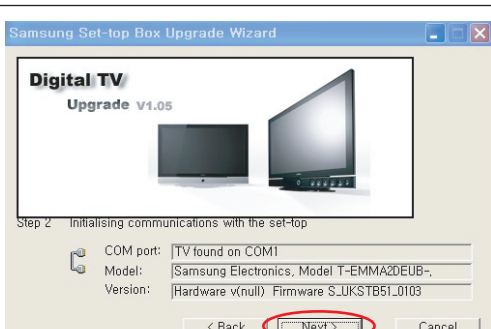
4-6. HOW TO UPGRADE

4-6-1 ATV S/W

Order	Description	ETC.
1	Open the Flash Downloader.	
2	Connect DDC Manager to the TV Set with D-SUB Cable.	

Order		Description	ETC.
3	Open the Flash Downloader.		
4	Click "Connect"		Before clicking the icon, TV should be turned on.
5	Click "Program"		

4-6-2 DTV S/W

Order		Description		ETC.
1		Connect PC and TV Set with Serial cable. TV should be turned on.		
2		Open the Samsung Set-top Box upgrade Wizard.		
3		1) Choose the DTV S/W by clicking "Browse" 2) After choosing the S/W, click the "Next" icon.		
4		1) Choose the DTV S/W by clicking "Browse" 2) After choosing the S/W, click the "Next" icon.		It doesn't matter soft or hard power off and on.
5		After scanning COM port, Model, and Version, click "Next"		

4-6-3 After S/W Upgrade

■ How to Access Service Mode

■ Entering Factory Mode

<Power OFF> → <INFO> → <MENU> → <MUTE> → <Power ON>

■ Factory Data

1. Option Table(Service)
2. WB Adjust
3. Information
4. Advanced Menu

If you want to enter here, press "0000".

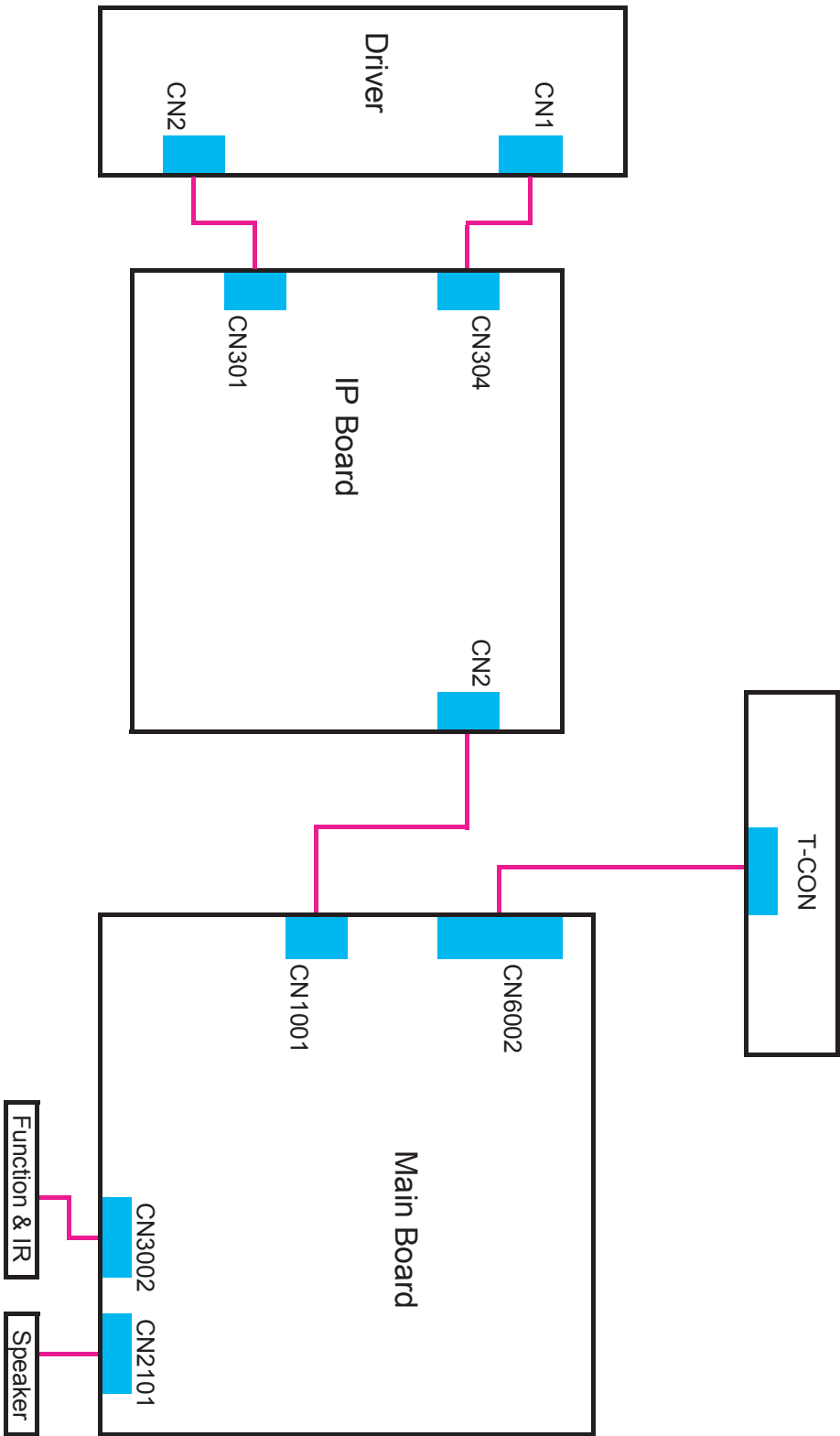
■ How to Initialize.

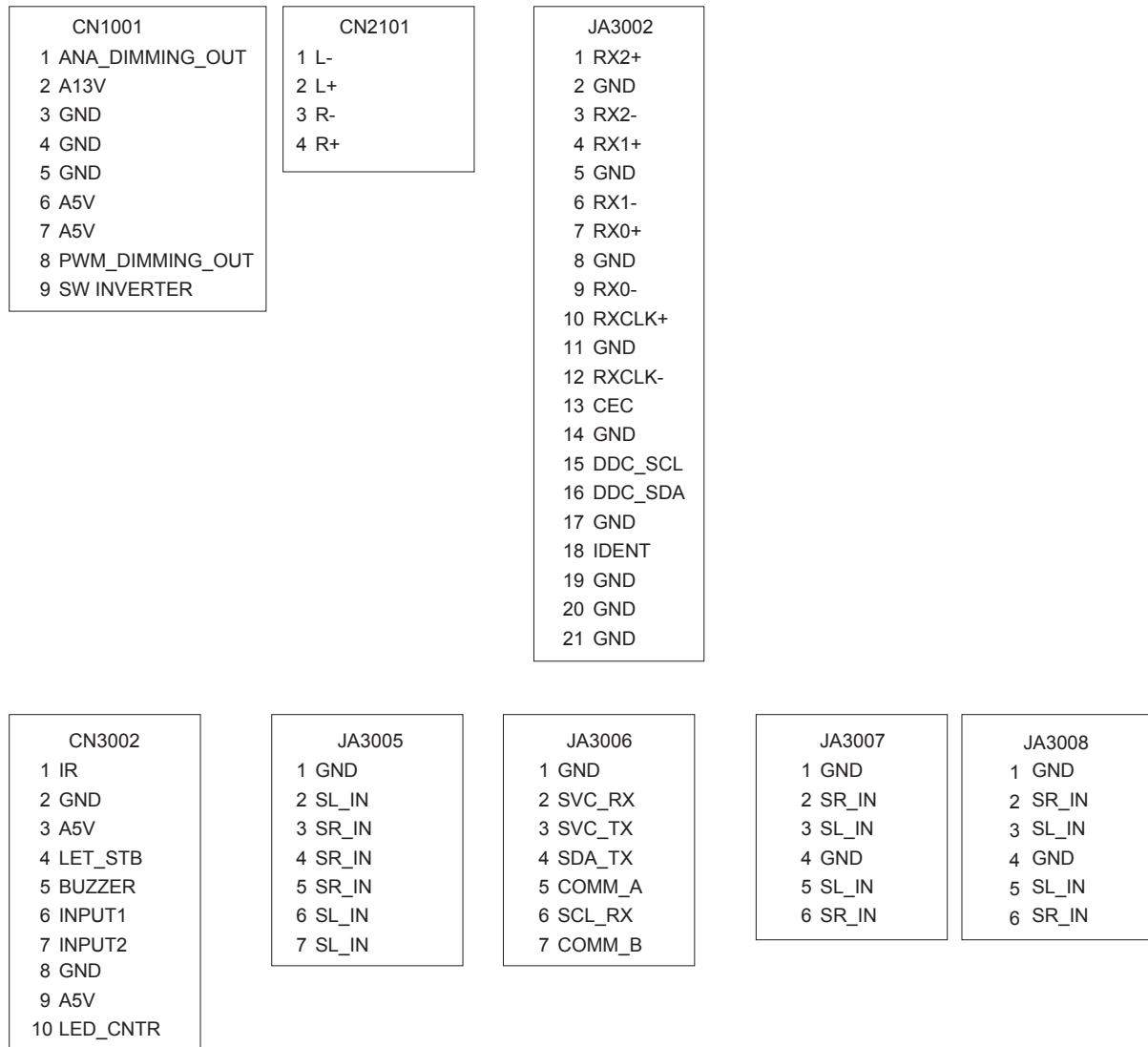
Click "1. Option Table(Service)" → "Factory Reset" in Factory Menu.

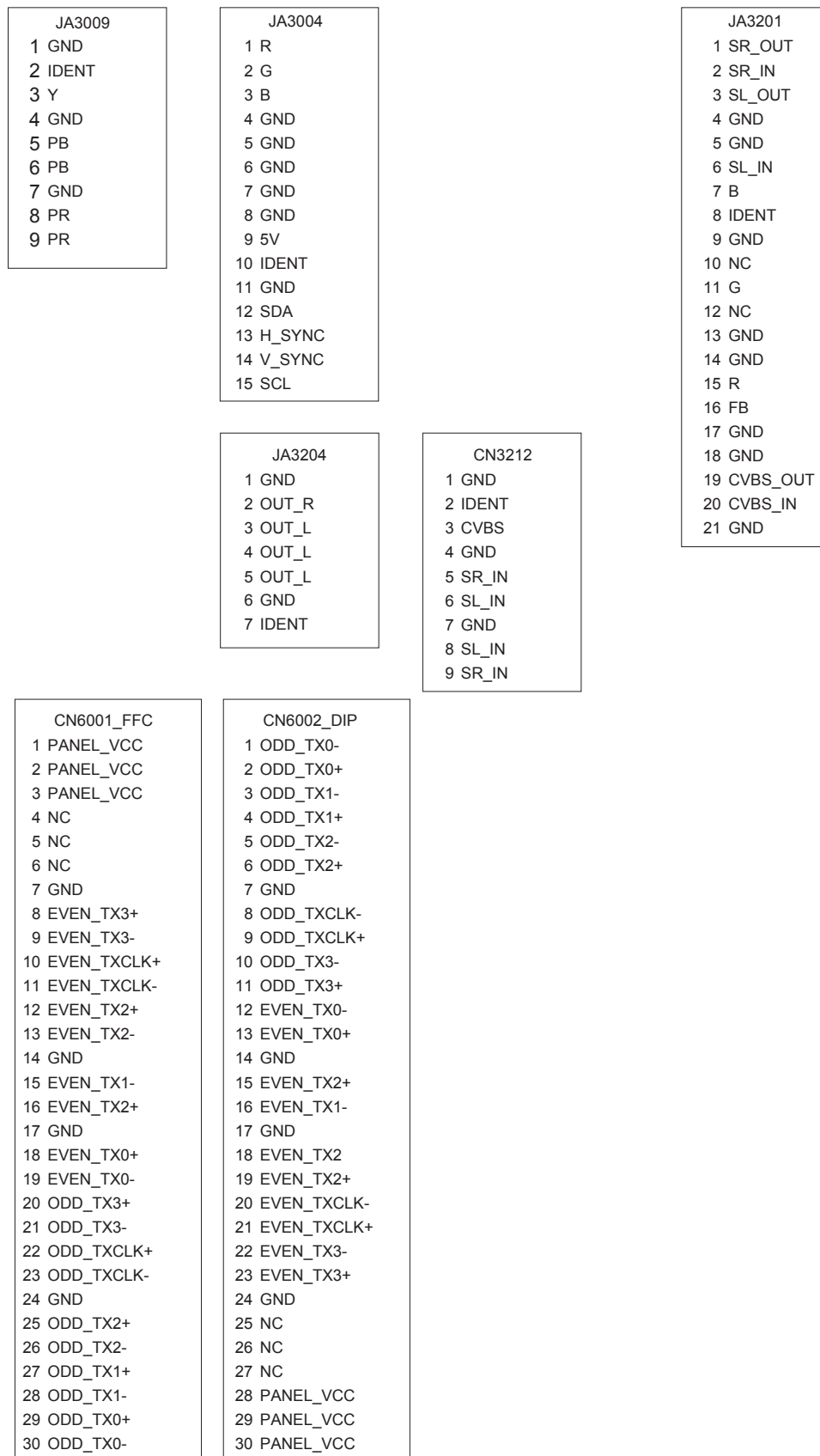
You can make every setting in Factory Initial Status.

6. Wiring Diagram

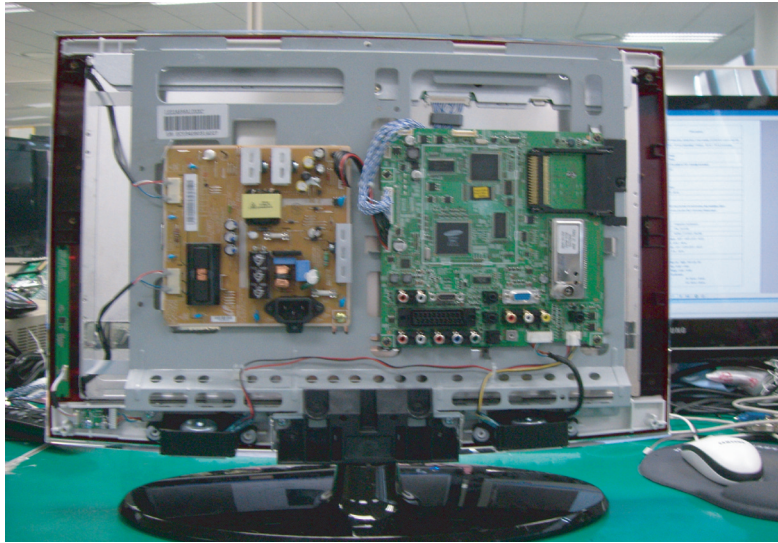
6-1. Wiring Diagram







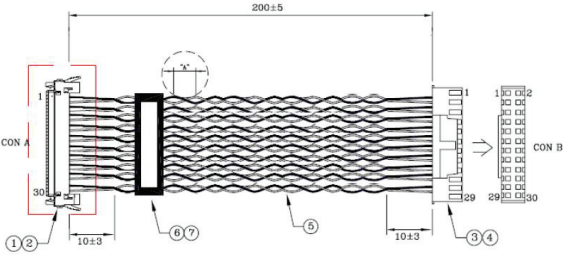
6-2-3. LE22A656A*



6-3. Connector Functions

Connector	Functions
CN2101 <-> SPEAKER	Connection Main Board and Speaker. * defective symptom : No sound but normal picture
CN3002 <-> Function & IR	Connection Main Board and Function & IR Assy. * defective symptom : Control panel & remocon doesn't work
CN6002_DIP<-> T-CON	The LVDS signal transferred from Main Board to Panel. * defective symptom : No picture but panel on
CN1, CN2(Panel) <-> CN304(3), CN301(2)(IP Board)	Supply power and signal from SMPS to Inverter. * defective symptom : No picture but normal sound

6-4. Cables

Code	BN39-00953D (30P, 200mm)
Photo	 <p>The diagram shows a 30-pin cable with a length of 200±5 mm. It features two connectors, CON A and CON B, both with 30 pins. The cable is divided into three sections: a 10±3 mm section at the left end, a 10±3 mm section at the right end, and a central section. The central section is marked with a circled 'X' and a dimension of 200±5 mm. The cable is labeled with 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. The connectors are labeled CON A and CON B. The cable is shown in a perspective view with a cross-section at the center.</p>

Memo