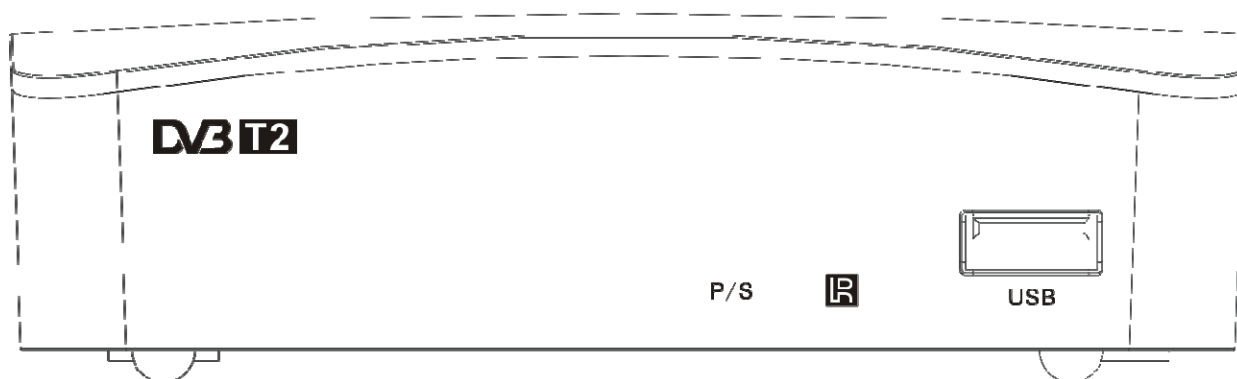


DVB-Terrestrial Receiver

SMP125HDT2

Service Manual



This service manual should be used with the User Manual together.
Please read this Service Manual and User Manual carefully before service this product.

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Safety Instructions

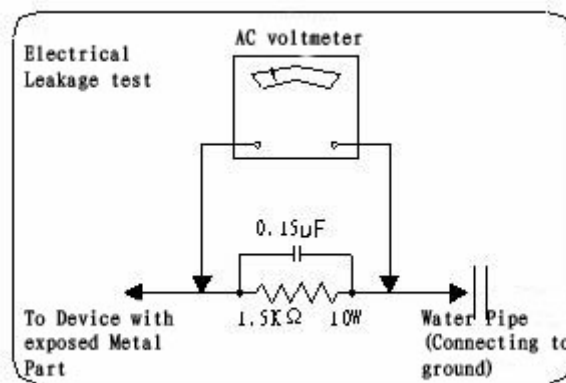
Generally Guide

1. Please check electric circuits before maintenance and change the damaged or over heated components if short-circuit has been found.
2. Please check all protective devices have been installed well after maintenance, such as insulation covering and paper.
3. Please finish following electrical leakage tests after maintenance to avoid electric shock.

Low Voltage Leakage Testing

Take out power cord from an AC outlet and connect a length of wire between the two leads of the plug.

Use Gear R x 10K of the voltmeter to measure the resistance between shorted-out AC plug and exposed metallic parts like screw cap, control shaft etc. which shall be infinite.



Picture 1

High Voltage Leakage Testing

As shown in Picture 1, connect a resistor of 1.5K, 10W and capacitor of 0.15 μ F between exposed metallic part and well grounded devices (water pipe etc.).

Plug power cord directly into the socket. Do not use insulated transformer to test.

Use 1000 Ohm/V or more sensitive voltmeter to measure AC voltage of the resistor.

Turn over the AC jack and plug into the socket again to iterate the inspection as above.

Inspect the voltage of the resistor between other exposed metallic parts and the earth in the same way.

Any parts' voltage of the resistor should not over 0.75Vrms. A leakage testing machine with voltage over 2,500 V can also be used for this inspection in which case the electric leakage should not be over 0.5mA. When the leakage exceeds that limit, electric shock may occur. Please check and repair again before hand it over to users.

4. Protect Electrostatic-Sensitive Devices from Electrostatic Discharge

Some solid states made of semiconductors materials can be easily damaged by commonly static charges, those components are usually called electrostatic-sensitive devices. Such like integrated circuits, laser diodes and field effect devices. The following tips will help you to reduce the impacts on those components while electrostatic discharging.

Please release static which build-up on human body before handling electrostatic-sensitive devices by using grounded tools. The antistatic strap which can be found in the market will be a good choice.

Please install the electrostatic-sensitive devices on conductor products such as aluminum foil to prevent static build-up after disassembling from this DVB-T receiver.

The soldering iron must be earthed while soldering and unsoldering the electrostatic-sensitive devices.

Only antistatic solder can be used for electrostatic-sensitive devices disassembly. The electrostatic-sensitive devices will be damaged by static without ESD prevention solder while disassembling.

Do not use Freon Volatile which may damage the electrostatic-sensitive devices by discharging static.

Do not take the new electrostatic-sensitive devices from the antistatic protection package unless you are ready for installation. (Most electrostatic-sensitive devices will be packed with anti-static foam, foil or similar conductive materials. And a lead wire to prevent short circuit.)

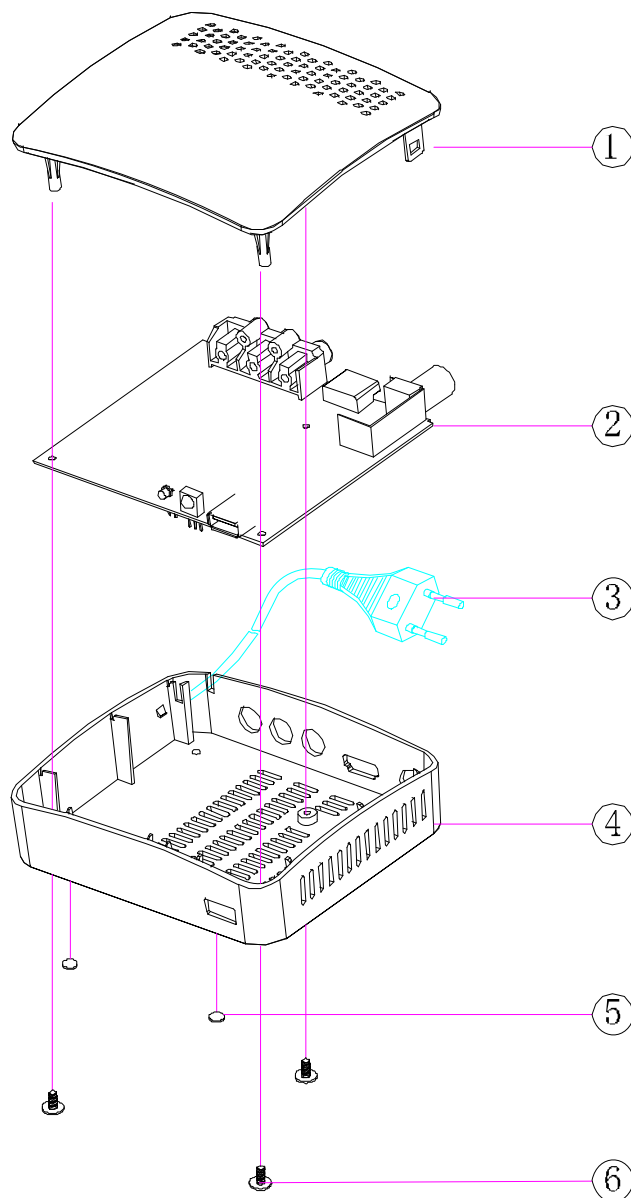
Please contact the core or circuit parts of the device to be installed with ESD protection package before carry out the new electrostatic-sensitive devices from it. And make sure no power supply on the device and remember other precautions.

Try to reduce body movements while assembling or disassembling electrostatic-sensitive devices. (Clothes made of fabrics will build-up static by attrition. Feet lifts up from floor will also build-up static.)

Electrical Specifications

A Audio Section （MPEG-1 Layer II, R. L Track Output）						
No.	ITEM		UNIT	REQUIREMENTS	Test Environment	
1	Audio Output Level		V	1.0~2.0	Output impedance is 10KΩ 1KHz 0dB	
3	Frequency Characteristics		dB	+1/-2.0	20Hz-60Hz	
				±0.5	60Hz-17.5KHz	
				+1/-3	17.5KHz-20KHz	
4	S/N		dB	≥70	1KHz 0dB weighting	
5	L/R Channel Separation		dB	≥60	N-CBAR100.TS f= 1KHz P-CBAR75.TS	
6	L/R Channel Level Difference		dB	≤0.5	60Hz-18KHz	
7	Audio THD		%	≤1	60Hz-18KHz	
8	Output Level of Coaxial Signal		Vp-p	0.5±10%	75Ω Load	
B Video (MPEG-2MP@ML)						
1	Output range	Video		Vp-p	1.0±0.15	75Ω Load
		Brightness/RGB			0.7±0.10	
		Sync			0.30±0.080	
2	Frequency Characteristics (75Ω)			dB	±0.5	0.5-4.8MHz
				dB	≤+0.5/-1.0	4.8-5.0MHz
				dB	≤+0.5/-4	5.0-5.5MHz
3	Brightness S/N			dB	≥56	WTD 5MHz
4	Chromatic S/N			dB	AM≥58	Load 75Ω
PM≥51						
5	Differential gain（DG）			%	≤±5	Load 75Ω
6	Differential phase（DP）			°	≤±5	Load 75Ω
7	Brightness non-linear distortion			%	≤5	Load 75Ω
8	△τ chrominance-luminance delay inequality			ns	≤±30	Load 75Ω
9	△K Chrominance-luminance Gain Inequality			%	≤±5	Load 75Ω
10	Brightness Waveform distortion			%	≤3	Load 75Ω
11	Chrominance Subcarrier Offset is not more than			Hz	200	Load 75Ω
C Demodulation						
1	Input Frequency Range		MHz	174~230MHz,470~862MHz (VHF/UHF)		
2	Input Level Range		dBm	-75~-20		
3	Frequency Offset		MHz	-0.2MHz~+0.2MHz		
D Power Supply (~165-264V)						
1	+5V		mA	1000	5%	
2	+5V Active Antenna Amplifier		mA	30		
E Others						
1	Free Fall		Meets QJ/ET08.02-2005's requirements			
2	Remote Control Distance		M	≥8	In line	
				≥6	With range of ±30°	
3	Rated Power Consumption		W	≤8		

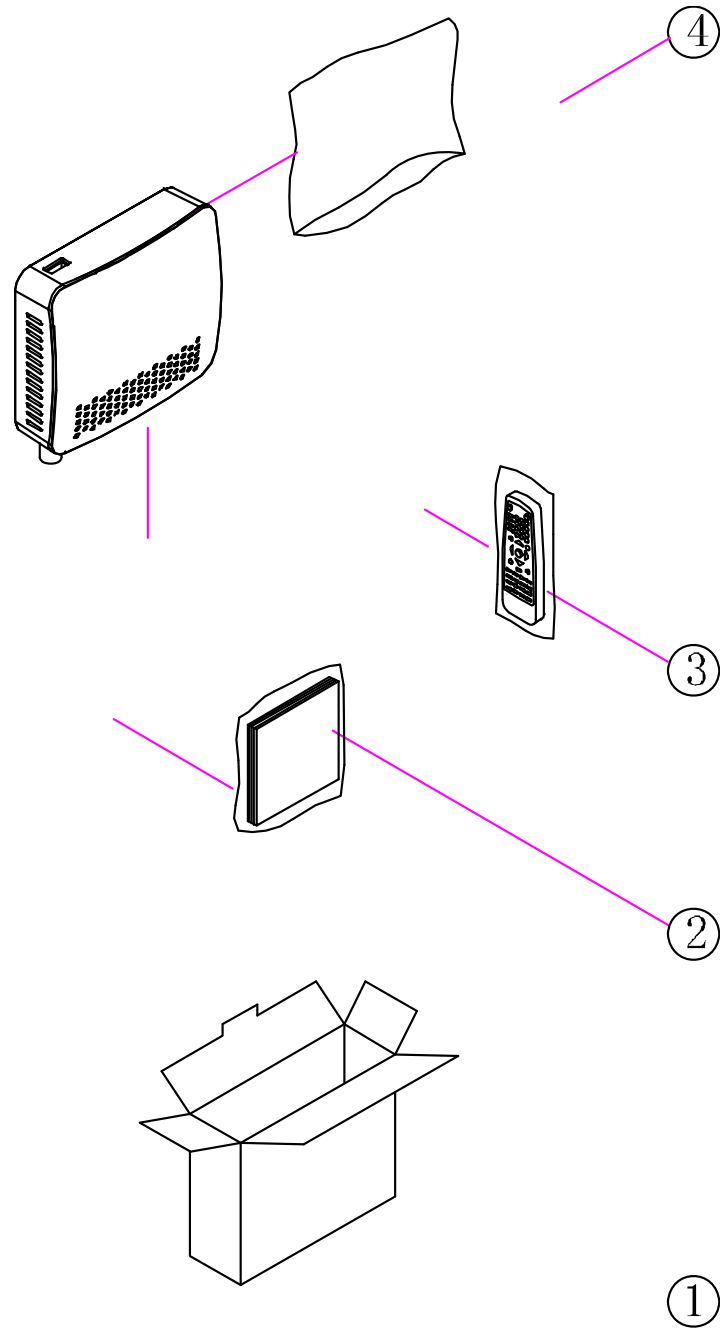
Mechanical Exploded View Drawing



Mechanical Parts List

NO.	Part No.	Part Name	Qty	Notes
1	4110-1656-000H	Top Cover	1	ABS
2	2104-1599-D00H	Decoding Board	1	
3	4111-1656-000H	Bottom Cover	1	Transparent ABS
4	3141-5851-0304	Feet Pad	1	
5	3000-4000-0800	Power Cord	2	Rubber, Black
6	3211-2008-0005	ST2*8PANi Screw	3	

Packaging and Accessories



Packaging Exploded View Drawing

Material List

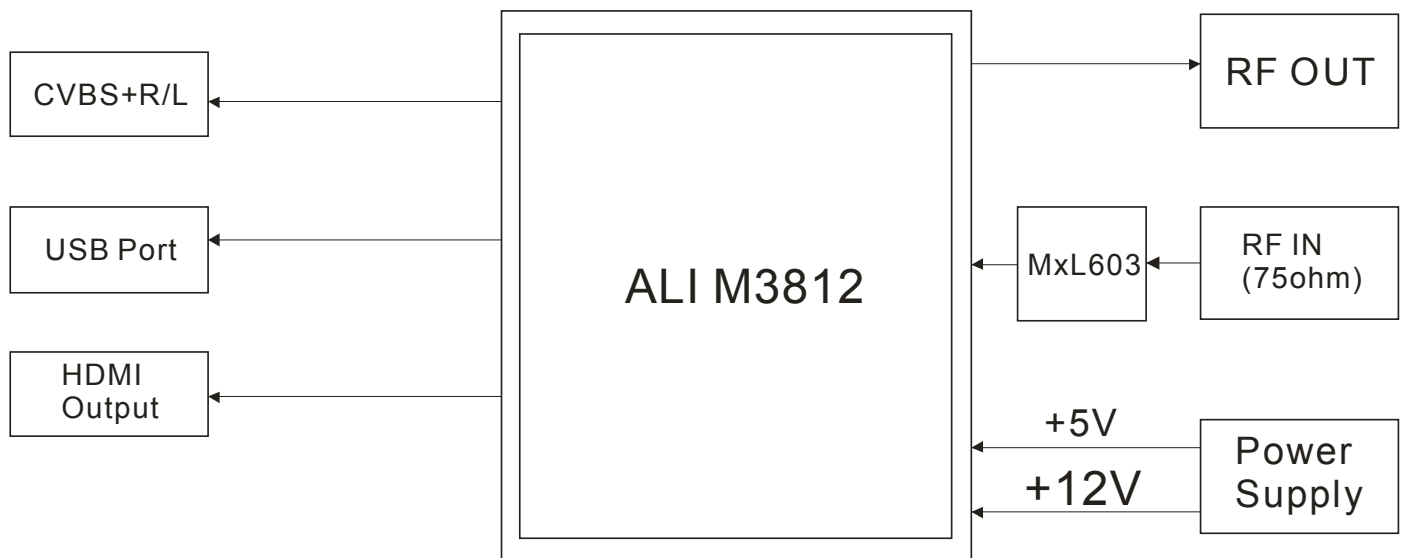
NO.	Material No.	Name	Qty
1	4401-1656-000H	White Box	1
2	ST2.025.496SS	User Manual	1
3	2301-1555-000H	Remote Control	1
4	4413-1812-1100	Bubble Pak 180*210mm	1

Appendix 1 Flowchart and Circuit Diagram

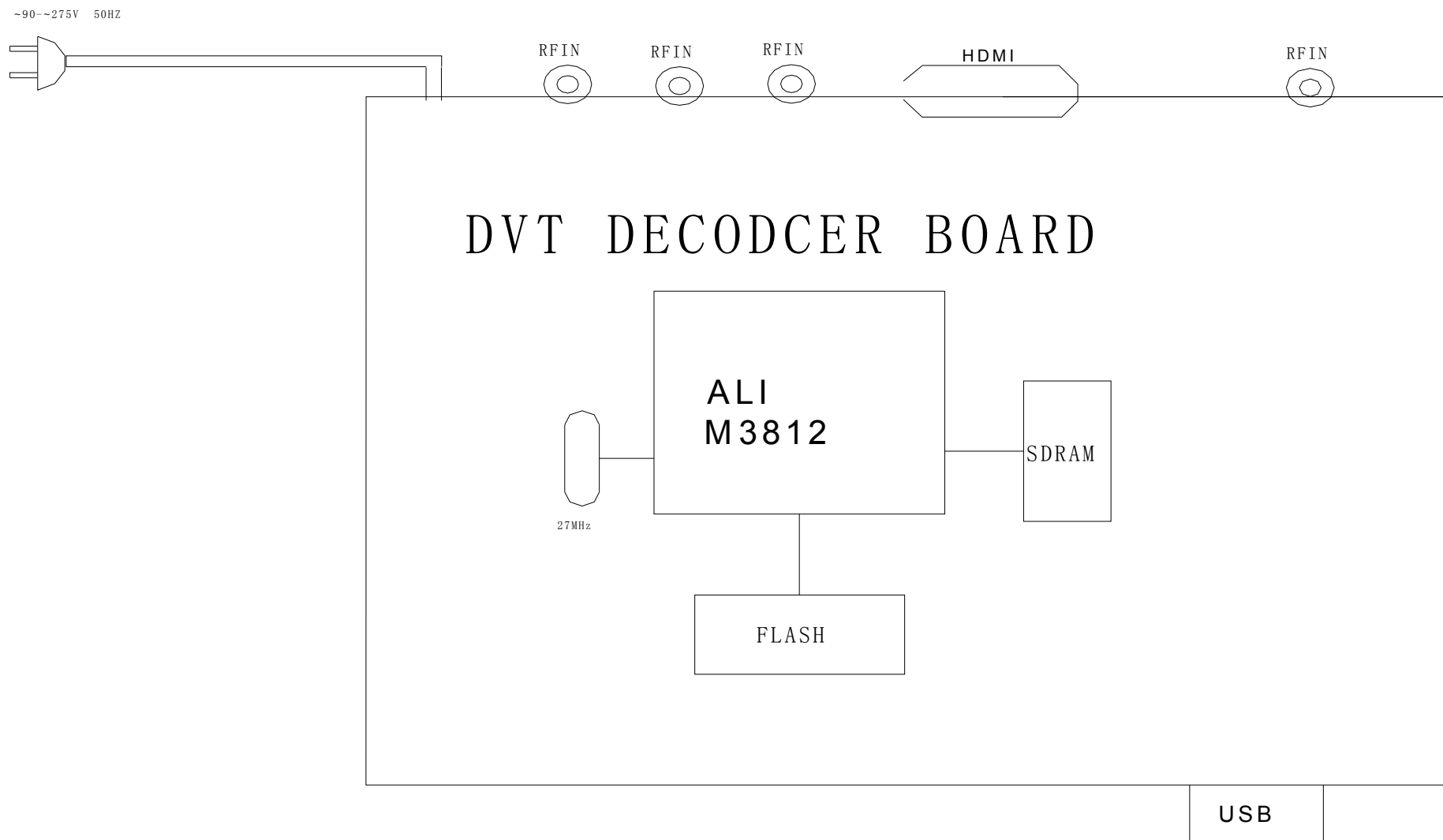
Flowchart

Wiring Diagram

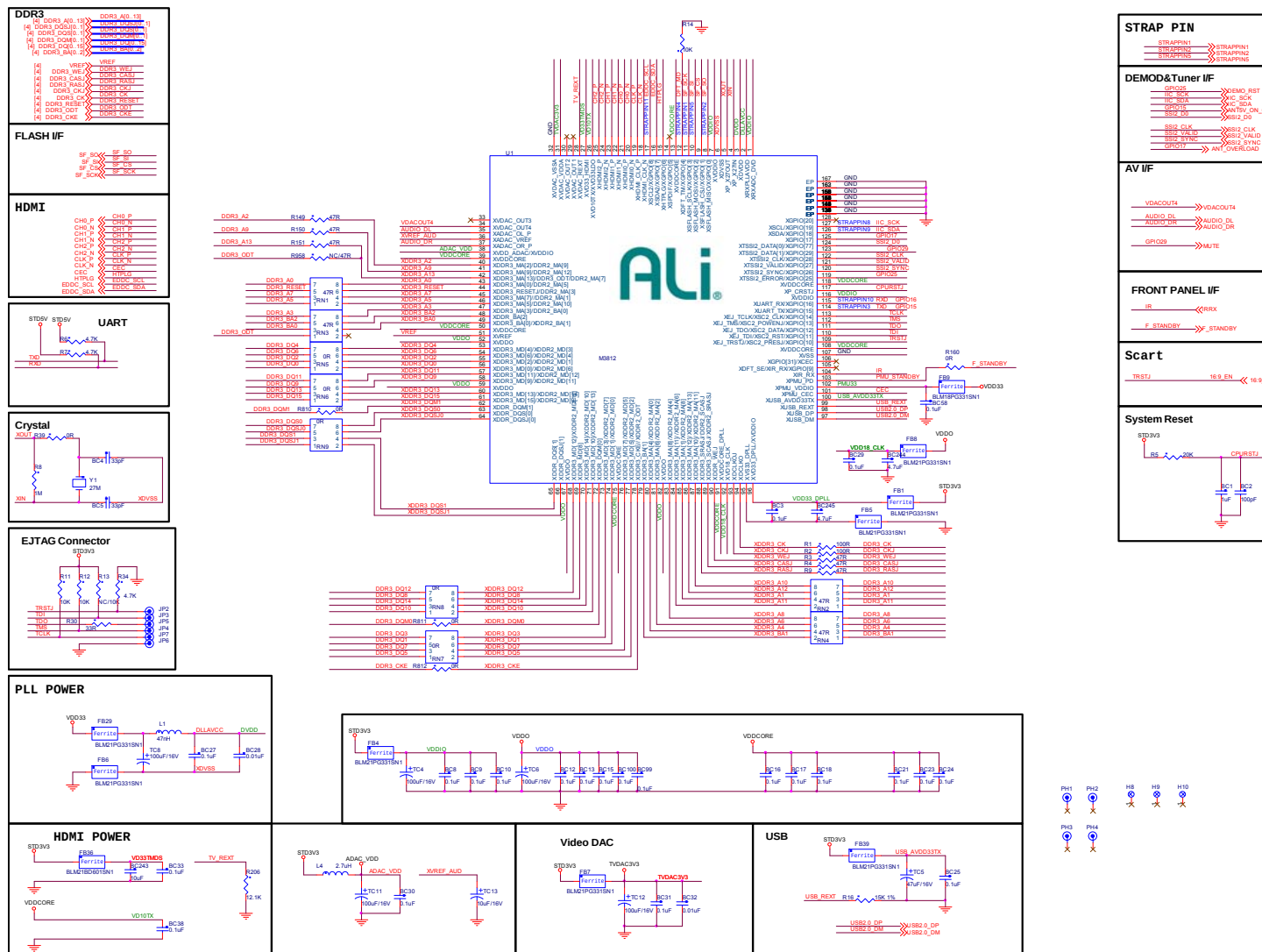
Circuit Diagram of Decoding Board

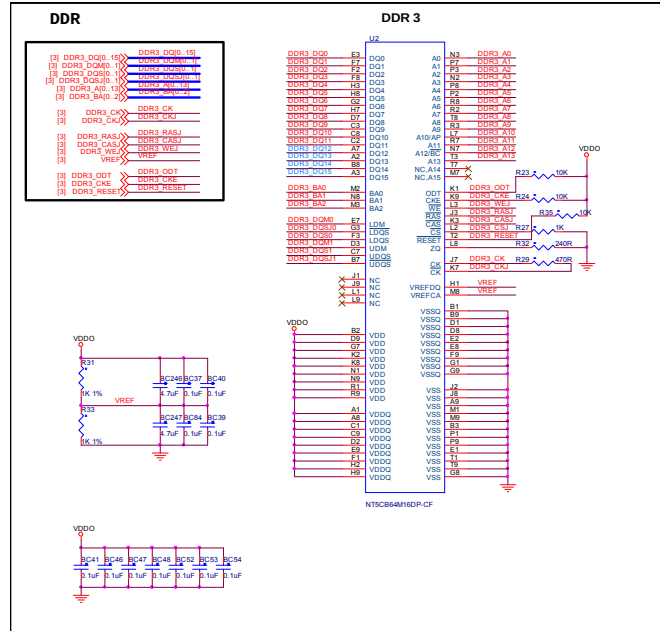


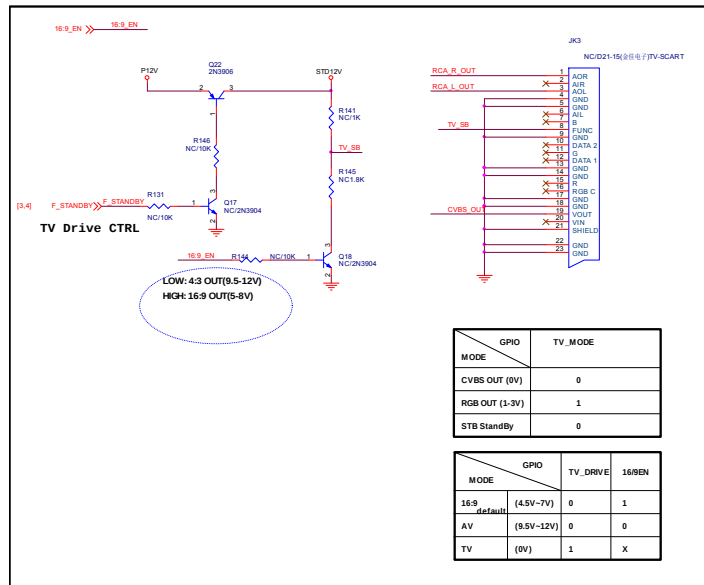
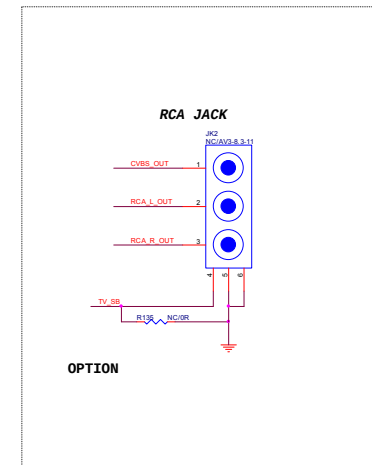
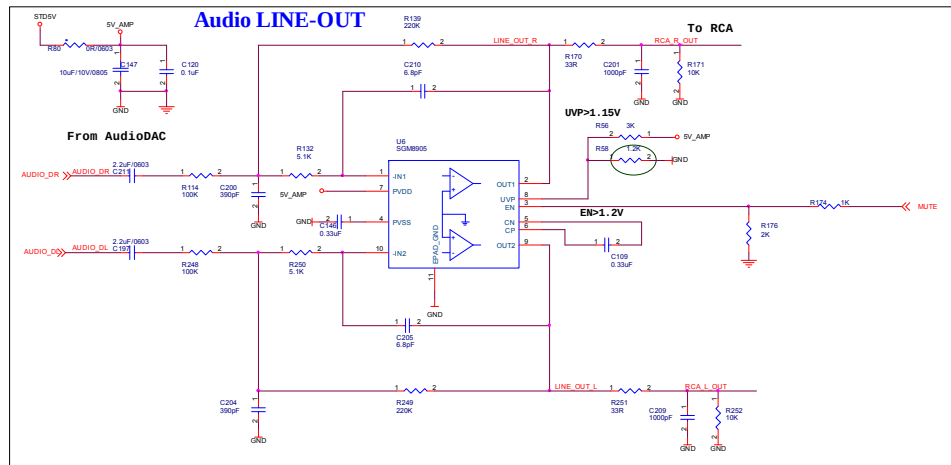
Flowchart



Wiring Diagram

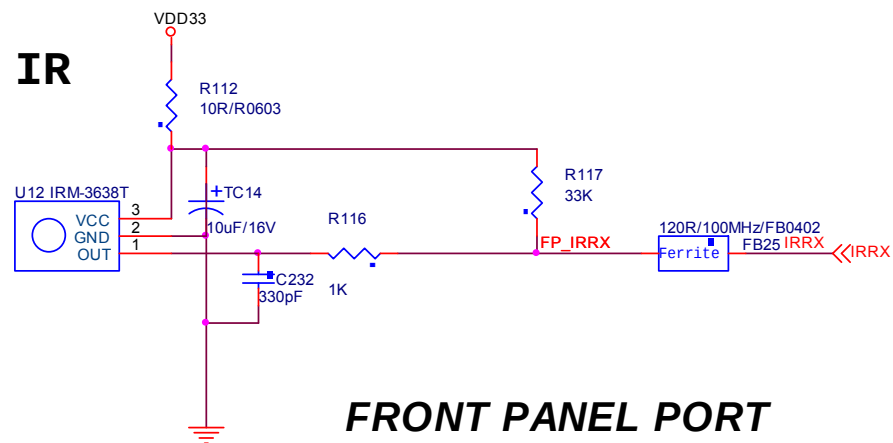
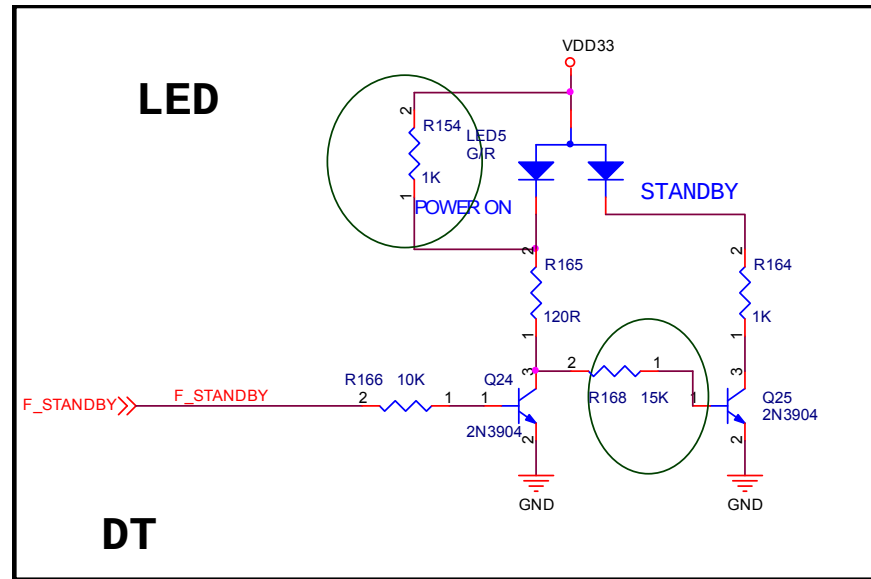




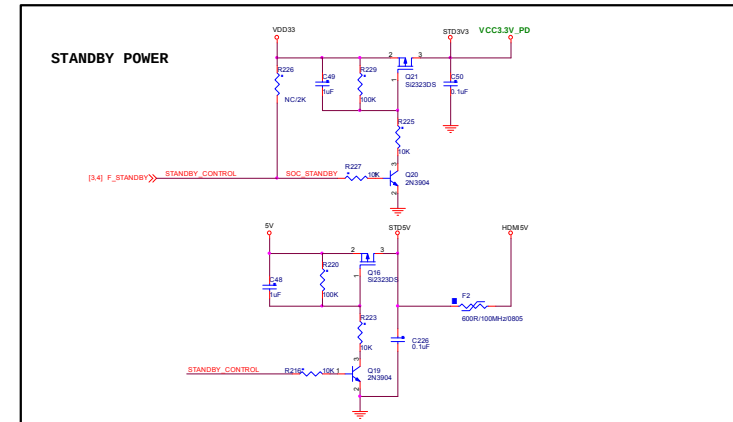
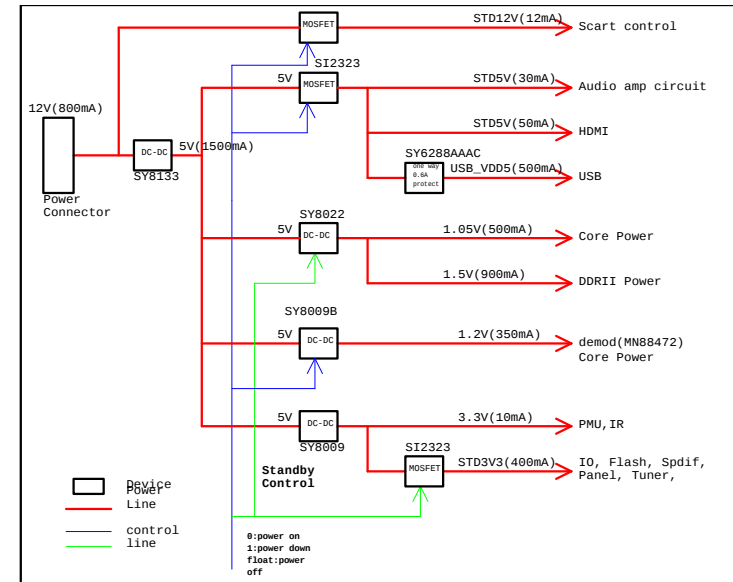
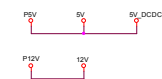
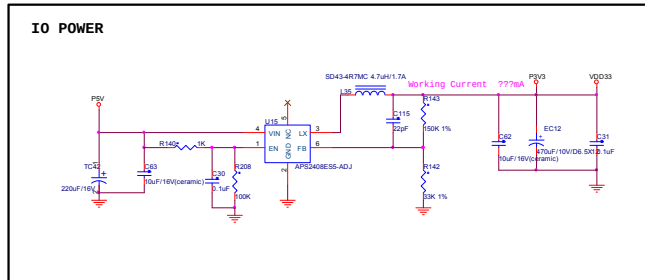
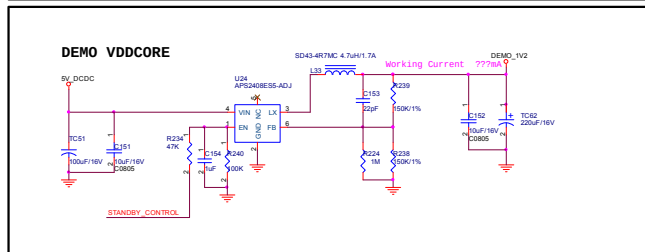
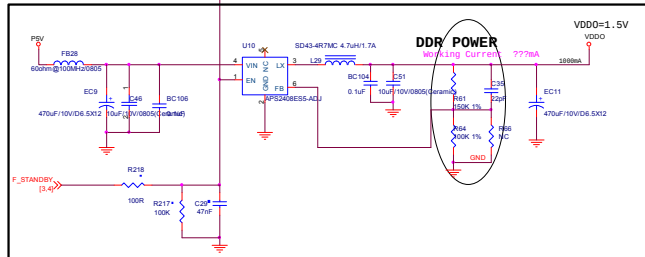
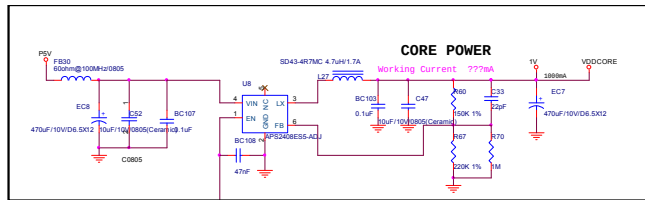


Decoding Board Schematic Diagram (3)





Decoding Board Schematic Diagram (6)



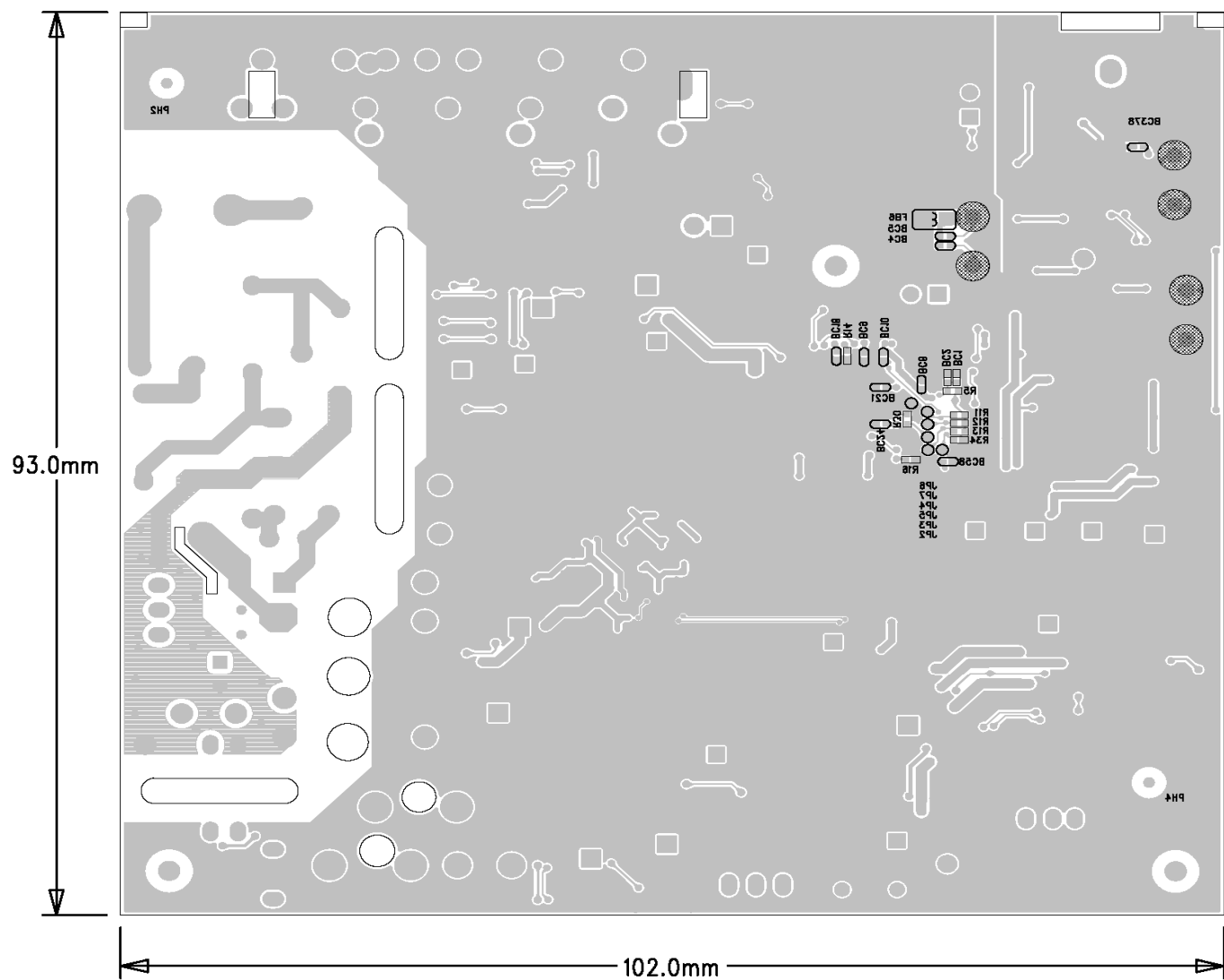
Decoding Board Schematic Diagram (7)



Appendix 2 Silkscreen of PCB

Circuit Diagram of Decoding Board Top

Circuit Diagram of Decoding Board Bottom



Circuit Diagram of Decoding Board Bottom

Appendix 3 Component List

Component List of Decoding Board

Component List

Component List of Decoding Board (1)					
NO	Material No.	Name	Specification	Position	Qt
1	3260-1000-1400	Sink Heat	ST7.061.0069,14.3×14×6mm	U1 上面	1
2	3020-1000-0004	MLCC	0Ω±5%,1/16w,0402	L64,L65,PR15,R39,R160,	12
3				R962,R810,R811,R812, R929,	
4				R931,R135	
5	3020-1330-0007	MLCC	33Ω±5%,1/16w,0402	R10,R15,R17,R30,R170,	11
6				R251,R969,R972,R973,	
7				R162,R163	
8	3020-1470-0002	MLCC	47Ω±5% 1/16W 0402	R3,R4,R9,R149,R150,R151	6
9	3020-1750-0007	MLCC	75Ω±5%,1/16w,0402	R93	1
10	3020-1101-0011	MLCC	100Ω±5%,1/16w,0402	R1,R2,R62,R63,R218,R74	6
11	3020-1121-0005	MLCC	120Ω±5%,1/16w,0402,ROHS	R165	1
12	3020-1301-0004	MLCC	300Ω±5%,1/16w,0402	PR19	1
13	3020-1241-0003	MLCC	240Ω±5%,1/16w,0402,RoHS	R32	1
14	3020-1471-0003	MLCC	470Ω±5%,1/16w,0402	R29	1
15	3020-1102-0005	MLCC	1K±5%,1/16W,0402	R27,R116,R140,R154,	8
16				R164,R174,R167,R187	
17	3020-1122-0003	MLCC	1.2K±5%,1/16w,0402	R58	1
18	3020-1132-0002	MLCC	1.3K±5%,1/16w,0402	R192	1
19	3020-1182-0003	MLCC	1.8KΩ±5%,1/16w,0402,RoHS	R18,R19	2
20	3020-1202-0005	MLCC	2K±5%,1/16w,0402	R176	1
21	3020-1222-0004	MLCC	2.2KΩ±5%,1/16W,0402,RoHS	R965,R966,R967,R968	4
22	3020-1302-0002	MLCC	3KΩ±5%,1/16w,0402,	R56	1
23	3020-1472-0003	MLCC	4.7K±5%,1/16w,0402	R7,R34,R37,R41,R43,	7
24				R128,R130	
25	3020-1512-0003	MLCC	5.1K±5%,1/16w,0402	R132,R250	2
26	3020-6100-0300	MLCC	10KΩ±1%,1/16w,0402,	R964	1
27	3020-1103-0005	MLCC	10K±5%,1/16w,0402	PR18,PR20,PR22,R171,R189,R35,	23
28				R190,R193,R196,R252,R11,R12,	
29				R14,R26,R166,R216,R219,R223,	
30				R225,R227,R23,R24,R974	
31	3020-6121-0301	MLCC	12.1KΩ±1% 1/16w,0402,RoHS	R206	1
32	3020-1203-0003	MLCC	20KΩ±5%,1/16w,0402,RoHS	R5	1
33	3020-1153-0003	MLCC	15KΩ±1% 1/16W 0402	R168, R16	2
34	3020-1303-0003	MLCC	30KΩ±5%,1/16w,0402,RoHS	R38	1
35	3020-1333-0006	MLCC	33KΩ±1% 1/16W 0402	R142, R117	2
36	3020-1473-0004	MLCC	47KΩ±5% 1/16W 0402	R69,R92,R234	3
37	3020-1104-0006	MLCC	100K±5%,1/16w,0402	R114,R186,R248,R208,R217,	8
38				R220,R229,R240	
39	3020-6100-0400	MLCC	100KΩ±1%,1/16W,0402,ROHS	R64	1
40	3020-6150-0400	MLCC	150KΩ±1%,1/16W,0402,ROHS	R60,R61,R143,R238,R239	5

Component List

Component List of Decoding Board (2)					
NO	Material No.	Name	Specification	Position	Qty
1	3020-6220-0400	MLCC	220K Ω $\pm$ 1%,1/16W,0402,ROHS	R67, R139,R249	3
2	3020-1204-0001	MLCC	200K $\pm$ 5%,1/16w,0402	PR24	1
3	3020-1514-0000	MLCC	510K $\pm$ 5%,1/16w,0402	R900,R961	2
4	3020-1105-0007	MLCC	1M $\pm$ 5%,1/16w,0402	R8,R70,R224	3
5	3020-1102-0000	MLCC	1K Ω $\pm$ 1%,1/10w,0603,	R31,R33	2
6	3020-1683-0000	MLCC	68K $\pm$ 5%,1/10w,0603	PR25	1
7	3020-1015-0002	MLCC	1.5 Ω $\pm$ 5%,1/8w,0805,	R188	1
8	3020-1000-0001	MLCC	0 Ω $\pm$ 5%,1/8w,0603	PR14,R80	2
9	3020-1100-0005	MLCC	10 Ω $\pm$ 5%,1/10w,0603	R112	1
10	3020-1220-0001	MLCC	22 Ω $\pm$ 5%,1/10w,0603	PR16	1
11	3020-3000-0003	SMD Resistors	4 $\times$ 0 Ω $\pm$ 5%,1/16W,0402	RN5,RN6,RN7,RN8,RN9	5
12	3020-3470-0002	SMD Resistors	4 $\times$ 47 Ω $\pm$ 5%,1/16W,0402	RN1,RN2,RN3,RN4	4
13	3021-1100-0000	Thermistor	NTC10D-9,10 Ω $\pm$ 10%,	RT1	1
14	3020-1104-0005	Metal Film Resistor	100K $\pm$ 5%, 2W	PR17	1
15	3040-1068-0000	SMD Capacitor	6.8pF $\pm$ 0.25PF 50V 0402	C205,C210	2
16	3040-1220-0005	SMD Capacitor	22PF $\pm$ 5%,16V,0402	C33,C35,C115,C153,C202,	8
17				C203,BC374,BC375	
18	3040-1330-0003	SMD Capacitor	33PF $\pm$ 5%,16V,0402	BC4,BC5,BC248,BC249	4
19	3040-1101-0002	SMD Capacitor	100PF $\pm$ 5%,50V,0402,	BC2,C228,C229	3
20	3040-1331-0006	SMD Capacitor	330PF $\pm$ 5%,50V,0402	C232	1
21	3040-1391-0005	SMD Capacitor	390PF $\pm$ 5%,50V,0402	C200,C204	2
22	3040-1561-0006	SMD Capacitor	560pF $\pm$ 10%,50V,0402	BC376	1
23	3040-1102-0002	SMD Capacitor	1nF $\pm$ 10%,50V,0402	C201,C209,C231,C282,C287	5
24	3040-1472-0003	SMD Capacitor	4.7nF $\pm$ 10%,50V,0402	C283,C285,BC386,BC387	4
25	3040-1103-0013	SMD Capacitor	0.01uF $\pm$ 10%,25V,0402,	BC28,BC32,BC269,BC272, C179	5
26	3040-1104-0018	SMD Capacitor	0.1uF+80/-20 25V 0402	BC3,BC8,BC9,C10,BC10,BC12,	83
27				BC13,BC15,BC16,BC17,BC18,	
28				BC21,C22,BC23,BC24,BC25,BC27,	
29				BC29,C30,BC30,C31,BC31,BC33,	
30				BC34,BC37,BC38,BC39,BC40,	
31				BC41,BC46,BC47,BC48,C50,BC52,	
32				BC53, BC54,BC57,BC58,C73,BC84,	
33				C91,BC99,BC100,BC103, BC388,	
34				BC104,BC106,BC107,C114,C120,	
35				C135,C195,C208,C226,C230,C236,	
36				BC250,BC251,BC252,BC253,BC254,	
37				BC255,BC257,BC258,BC259,	
38				BC260,BC261,BC263,BC264,BC265,	
39				BC266,BC267,BC268,BC270,	
40				BC271,BC274,BC275,C288, C807	
41				BC377,BC378,BC382,BC384,	

Component List

Component List of Decoding Board (3)					
NO	Material No.	Name	Specification	Position	Qty
1	3040-1105-0014	SMD Capacitor	1uF+80-20%,16V,0402	BC1,C48,C49,C154,BC262,BC273,BC350,B	8
2	3040-1334-0004	SMD Capacitor	0.33uF±20%,10V,0402,RoHS	C109,C146	
3	3040-1473-0004	SMD Capacitor	0.047uF±10%,16V,0402,RoHS	C29,BC108	2
4	3040-1273-0001	SMD Capacitor	0.027uF+80-20%,50V,0603	PC18	2
5	3040-1104-0008	SMD Capacitor	0.1uF+80-20%,50V,0603	PC17	1
6	3040-1224-0013	SMD Capacitor	0.22uF+80-20%,50V,0402	PC21	1
7	3040-1225-0001	SMD Capacitor	2.2uF±20% 16V 0603	C197,C211	1
8	3040-1106-0007	SMD Capacitor	10uF+80-20%,16V,0805	BC243,C46,C47,C51,C52,C62,C63,	2
9				C101,C118,C129, C151,C152,C147	13
10	3040-1475-0008	SMD Capacitor	4.7uF+80-20%,16V,0805,RoHS	BC244,BC245,BC246,BC247	
11	3040-2106-0011	Electrolytic Capacitor	10uF+80-20%,50V,Φ5×11mm	TC10	4
12	3040-2106-0010	Electrolytic Capacitor	10uF+80-20%,16V,Φ5×11mm	TC13,TC14	1
13	3040-2476-0002	Electrolytic Capacitor	47UF±20%,16V,Φ5×11mm,	TC5	2
14	3040-2107-0010	Electrolytic Capacitor	100uF±20%,16V,Φ5×11mm	TC4,TC6,TC8,TC11,TC12,TC51,TC65	1
15	3040-2337-0017	Electrolytic Capacitor	3300uF±20%,10V,Φ6.3×11mm	TC49	7
16	3040-2227-0038	Electrolytic Capacitor	220uF+80-20%,10V, 105°	C67,C69	1
17	3040-2227-0031	Electrolytic Capacitor	220UF±20%,16V,Φ6.3×12mm,105°,RoHS	TC42,TC62	2
18	3040-2108-0025	Electrolytic Capacitor	1000UF±20%,16V, SHL	PC14,PC15	2
19	3040-2477-0000	Electrolytic Capacitor	470uF+80-20%,10V,Φ6.3×11mm	EC7,EC8,EC9,EC11,EC12	2
20	3040-2106-0021	Electrolytic Capacitor	10uF±20%,400V,105°	PC25	5
21	3040-3222-0001	High Voltage Capacitor	2200PF±20%,1KV	PC20	1
22	3040-1222-0007	H-V Ceramic Capacitor	2200PF±20% AC400V	PC23	1
23	3170-3004-0201	Chip Bead	0402,120Ω,100MHz,RoHS	FB25	1
24	3170-3006-0307	Chip Bead	0603,120Ω,100MHz	FB40	1
25	3170-3006-0323	Chip Bead	0603,330Ω,100mHz,RoHS	FB1,FB5,FB8,FB9,FB24	1
26	3170-3008-0520	Chip Bead	0805,330Ω,100mHz,RoHS	FB4,FB6,FB7,FB29,FB39	5
27	3170-3008-0511	Chip Bead	0805,120Ω,100MHz	FB62	5
28	3170-3008-0507	Chip Bead	0805,60Ω,100MHz,RoHS	FB28,FB30,L28	1
29	3170-3008-0500	Chip Bead	0805,600Ω,100MHz,RoHS	FB36,FB41,F2	3
30	3050-1027-0006	SMD Inductor	2.7uH±5%,0805,RoHS	L4	3
31	3110-3201-2700	Convertor	ATB2012_75011	T2	1
32	3050-1312-1001	SMD Inductor	120nH±5%,0402,RoHS	L30,L31	1
33	3050-1347-0005	High Frequency Ceramic Capacitor	47nH±10%,0805,RoHS	L1	2
34	3050-1327-1007	White high-frequency Ceramic	270nH±5%,0603	L809	1
35	3050-3047-0002	SMD Power Inductor	SD54-4R7MC 1.5A	L27,L29,L33,L35	1
36	3050-1100-0002	Radial Inductor	10uH±10%, 2A	L42	4
37	3060-1990-0000	SMD Diode	BAV99,SOT-23	TD2	1
38	3060-1104-0000	Diode	FR104 DO-41	PD14	1

Component List

Component List of Decoding Board (4)					
NO.	Material No.	Name	Specification	Position	Qty
1	3060-1107-0000	Diode	FR107 DO-41	PD15	1
2	3060-1140-0700	Diode	IN4007 DO-41	PD10,PD11,PD12,PD13	4
3	3060-1158-2200	Diode	1N5822,DO-27,ROHS	PD18	1
4	3060-6034-0100	SMD FET	AO3401,SOT-23	Q16,Q21	2
5	3060-5855-0001	SMD Audion	S8550,SOT23	Q26	1
6	3060-5239-0400	SMD Audion	2N3904 SOT23	Q19,Q24,Q25,Q28,Q20	5
7	3060-3390-0001	LED	Φ3 Astigmatism	LED5	1
8	3060-5239-0600	SMD Audion	2N3906 SOT23	Q27	1
9	3070-1243-8000	Receiver	HL-2438M,38KHz	U12	1
10	3070-1817-0001	Photo Couples	BPC-817B DIP4	PIC3	1
11	3070-3431-0000	LDO IC	TL431 TO-92	PIC4	1
12	3070-1884-7200	SMD IC	MN88472 LQFP64 65PIN , ROHS	U31	1
13	3070-1603-0000	SMD IC	MxL603,QFN-25	U37	1
14	3150-1134-1181	Transformer	KB1341-17855,ROHS	PT2	1
15	3070-1240-8501	SMD IC	APS2408ES5-ADJ,SOT23-5L,ROHS	U8,U10,U15,U24	4
16	3070-1381-2000	SMD IC	M3812,LQFP-128-Pin,ROHS	U1	1
17	3070-1253-2003	SMD IC	GD25Q32BSIG,SOP8,32M,208MIL,ROHS	U27	1
18	3070-1890-5000	SMD IC	SGM8905,MSOP-10	U6	1
19	3070-1628-8001	SMD IC	SY6288A,SOT-23-5	U17	1
20	3070-1564-1602	SMD IC	NT5CB64M16DP-CF,FBGA-96,ROHS	U2	1
21	3070-1810-6000	IC	PN8106,DIP-8,ROHS	PIC6	1
22	3162-0104-2800	HDMI Socket	10428-01944	J1	1
23	3160-9383-1101	Concentric Socket	AV3-8.3-11	JK2	1
24	3120-1102-0007	Fuse	Time-lag type, 1A,250V	PF2	1
25	3160-5000-0000	USB Socket	ZX-USBSOCKET-A	J5	1
26	3110-2204-8600	Crystal	20.48MHz,fundamental wave 49S,30PPM,	Y4	1
27	3110-2270-0600	Oscillator	27MHz,30PPM,fundamental wave 49S	Y1	1
28	3110-2160-0610	Crystal	16MHz,fundamental wave 49S,20PPM,CL=16PF	Y5	1
29	4303-1599-000H	Shield Cover	ST6.430.0024,0.3mm Tinplate, ROHS	J6	1
30	4303-0762-001H	Shield Top Cover	ST6.430.0016,0.3mm Tinplate	High Frequency	1
31	3200-3010-0000	Varnished Tube	Φ1.0		
32		Varnished Tube	Φ1.0×5.5mm×2	LED5	11mm
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