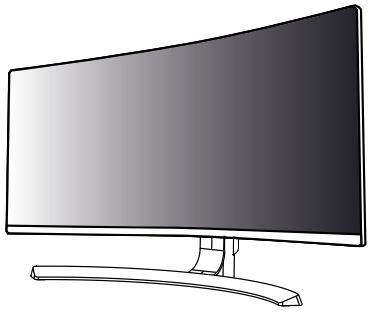
Internal Use Only

LED MONITOR
SERVICE MANUAL

CHASSIS : LM55E

MODEL : 34UC88 34UC88-BF
34CB88 34CB88-PF

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL68920174 (1601-REV01)

CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

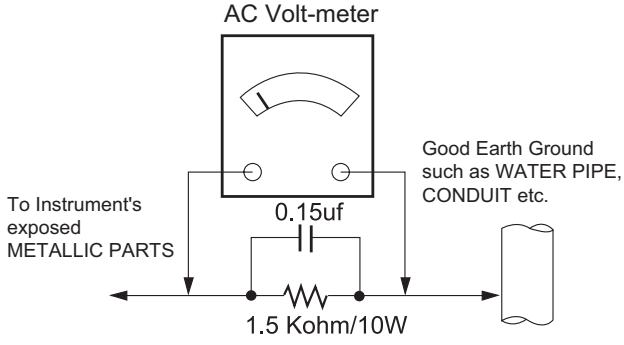
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1
*Base on Adjustment standard

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. General Specification

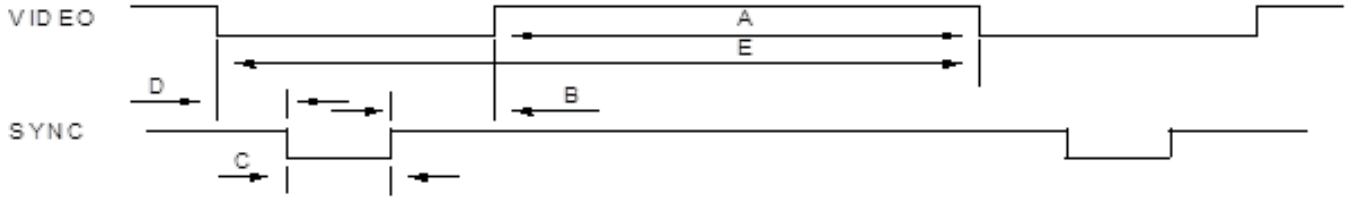
No	Item		Content	Remark
1	Customer		BRAND	
2	User Model Name		34UC88	
3	Sale region		World Wide	
4	Feature		34 Inch Wide Curved LCD MONITOR(WQHD)	
5	Chassis Name		LM55E	
6	General Scope	External SW &Adj.	5-way joystick switch	
		Function	PBP, Picture Mode Ratio, Gamma Calibration, SES, Six Color, 7W speaker x 2, DisplayPort, HDMI x 2, Screen split, USB hub(USB3.0 x 2)	
7	Input	HDMI1/2 IN	HDMI 1 and HDMI 2	
		DP IN	Display Port	
		Thunderbolt	N/A	
		USB UP	USB upstream(only with Host PC)	
		USB 1/2	USB downstream(only with Host PC) Quick Charge(USB 1 only)	
		H/P	Audio L/R	
8	Power Code		Length : 1.55 ± 0.05 M, Shape : Wall-out, Color : Black Weight : 0.17 kg	Refer to Suffix standard and power cord table
9	Cable	TBT (Thunderbolt)	Length : ,Shape : ,Color: ,Pin	N/A
		USB	Length : ,Shape : ,Color: ,Pin	N/A
		Displayport	Length : 1.8 ± 0.05 M Shape : Detachable Type Color : Black Weight : 0.10kg±10%,	EAD63127603
		HDMI	Length : 1.8±0.05 M Shape : Detachable Type Color : Black Weight : 0.09kg±10%,	EAD00926103
10	Power		Input: AC 100 - 240 V 50 - 60Hz, 1.5A Max Output: DC 19V 5.79A, 110W Adapter Color : Black Weight : 0.438kg±10%, without vinyl bag	EAY63032202

2. Engineering Specification

No.	Item	Specification			Remarks
1	Supported Sync. Type	Separate Sync., Digital			
2	Operating Frequency	HDMI	Horizontal	30 ~ 90kHz	
			Vertical	56 ~ 61 Hz	Native : 30 ~ 60 Hz
		DP/TBT	Horizontal	30 ~ 90kHz	
			Vertical	56 ~ 61 Hz	Native : 30 ~ 60 Hz
		DP (FreeSync)	Horizontal	90 Hz	
			Vertical	55 ~ 75 Hz	
3	Resolution	HDMI	Max	3440×1440 @ 60 Hz	
			Recommend	3440×1440 @ 60 Hz	
		DP/TBT	Max	3440×1440 @ 60 Hz	
			Recommend	3440×1440 @ 60 Hz	
4	Input Voltage	Input Voltage	Voltage :100 - 240 Vac, 50 or 60 Hz, 1.5 A		

3. Signal Timing (Resolution)

3.1. Signal (Video & Sync)



3.2. H/V Timing

No.	Section	Pol.	Dot Clock [MHz]	Frequency [kHz]/[Hz]	Total Cycle (E)	Display (A)	Front Porch(B)	Sync. (D)	Back Porch(F)	Resolution	Input source
1	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480	HDMI
	V(Lines)	-		59.94	525	480	10	2	33		DP
2	H(Pixels)	+	40	37.879	1056	800	40	128	88	800 x 600	HDMI
	V(Lines)	+		60.317	628	600	1	4	23		DP
3	H(Pixels)	-	65	48.363	1344	1024	24	136	160	1024 x 768	HDMI
	V(Lines)	-		60	806	768	3	6	29		DP
4	H(Pixels)	+	79.99	54.347	1472	1152	32	96	192	1152 x 864	HDMI
	V(Lines)	+		60.05	905	864	1	3	37		DP
5	H(Pixels)	+	74.25	45	1650	1280	110	40	220	1280x720	HDMI
	V(Lines)	+		60	750	720	5	5	20		DP
6	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280x1024	HDMI
	V(Lines)	+		60.02	1066	1024	1	3	38		DP
7	H(Pixels)	+	108	60	1800	1600	24	80	96	1600 x 900	HDMI
	V(Lines)	+		60	1000	900	1	3	96		DP
8	H(Pixels)	-	146.25	65.29	2240	1680	104	176	280	1680x1050	HDMI
	V(Lines)	+		59.954	1089	1050	3	6	30		DP
9	H(Pixels)	+	148.5	67.5	2200	1920	88	44	148	1920x1080	HDMI
	V(Lines)	-		60	1125	1080	4	5	36		DP
10	H(Pixels)	-	185.58	66.7	2784	2560	64	64	96	2560x1080	HDMI
	V(Lines)	+		60	1111	1080	3	10	18		DP
11	H(Pixels)	+	157.75	43.82	3600	3440	48	32	80	3440x1440	HDMI
	V(Lines)	+		29.99	1461	1440	3	10	8		DP
12	H(Pixels)	+	265.25	73.68	3600	3440	48	32	80	3440x1440	HDMI
	V(Lines)	+		49.99	1474	1440	3	10	21		DP
13	H(Pixels)	+	319.75	88.82	3600	3440	48	32	80	3440x1440	HDMI
	V(Lines)	+		59.97	1481	1440	3	10	28		DP

3.3. HDMI Video input

No.	Factory support mode (Preset Mode)	Horizontal frequency (KHz)	Horizontal frequency (Hz)
1	640x480P	31.47	60
2	720x480P	31.47	60
3	1280x720P	45	60
4	1920x1080P	67.5	60
5	1280x720P	37.5	50
6	1920x1080P	56.25	50
7	2560x1080P	56.25	60
8	2560x1080P	66	50
9	720x576P	31.25	50

ADJUSTMENT INSTRUCTION

1. Application Range

This document is applied to LM55E chassis Monitor which is manufactured in Monitor Factory or is produced on the basis of this data.

2. Designation

(1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
(2) Power Adjustment: Free Voltage
(3) Magnetic Field Condition: Nil.
(4) Input signal Unit: Product Specification Standard
(5) Reserve after operation: Above 5 Minutes (Heat Run)
Temperature : at 25 °C ± 5 °C
Relative humidity : 65 % ± 10 %
Input voltage : 100 V~ 240 V, 50/60Hz
(6) Adjustment equipments: Color Analyzer (CA-210 or CA-110), DDC Adjustment Jig equipment,

3. Main PCB check process

*APC - After Manual-Insert, executing APC

3.1. ADC Process

N/A

3.2. EDID Process

3.2.1. EDID Download

F/W includes default EDID for All input ports, aging on Mode If AC ON, default EDID is automatically loaded to EEPROM. Update serial number in EDID of HDMI1.

→ Caution : Never connect HDMI Cable when execute NVRAM Init and AC On at first for downloading HDMI EDID automatically.

** Protocol : DDC 2AB

No	Item	Content	16 Data
1	Manufacturer ID	GSM	1E 6D
2	Product ID	HDMI : 30454 Display Port (10bit / Free-sync) : 30436 Display Port (8bit) : 30266	E6 76 E4 76 E2 5A E3 5A E5 76
3	Year	2015	19
4	Version	1	1
5	Revision	HDMI : 3 DP : 4	HDMI : 3 DP : 4
6	Serial Number	*	*
7	Week / Year	**	**
8	Model Name	LG ULTRAWIDE	-
9	Check Sum	***	***
10	Color Depth (0x14h)	8bit / 10bit	A5 / B5

- EDID Ver. 1.3 FOR HDMI 1 (256Byte)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	F6	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	03	80	50	22	78	EA	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	E7	7C	70	A0	D0	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	9D	67	70	A0	D0	A0	22	50
50	30	20	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38
60	3D	1E	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	4C	54	52	41	57	49	44	45	0A	01	12 ***
80	02	03	1E	F1	23	09	07	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	67	03	0C	00	10	00	38	40	9F	3D
A0	70	A0	D0	A0	15	50	30	20	3A	00	20	4F	31	00	00	1A
B0	7E	48	00	E0	A0	38	1F	40	40	40	3A	00	20	4F	31	00
C0	00	18	01	1D	00	72	51	D0	1E	20	6E	28	55	00	20	4F
D0	31	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
E0	20	4F	31	00	00	18	00 *	00 *	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *
F0	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	00 *	00 *	00	00	00	00	00	9A ***

- EDID Ver. 1.3 FOR HDMI 1 (256Byte)_PBP Mode

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	F6	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	03	80	50	22	78	EA	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	3C	41	B8	A0	60	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38	3D	1E
50	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4C
60	47	20	55	4C	54	52	41	57	49	44	45	0A	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	5A ***
80	02	03	1E	F1	23	09	07	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	67	03	0C	00	30	00	38	40	9F	3D
A0	70	A0	D0	A0	15	50	30	20	3A	00	20	4F	31	00	00	1A
B0	7E	48	00	E0	A0	38	1F	40	40	40	3A	00	20	4F	31	00
C0	00	18	01	1D	00	72	51	D0	1E	20	6E	28	55	00	20	4F
D0	31	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
E0	20	4F	31	00	00	18	00 *	00 *	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *
F0	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	00 *	00 *	00	00	00	00	00	7A ***

- EDID Ver. 1.3 FOR HDMI 2 (256Byte)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	F6	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	03	80	50	22	78	EA	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	E7	7C	70	A0	D0	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	9D	67	70	A0	D0	A0	22	50
50	30	20	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38
60	3D	1E	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	4C	54	52	41	57	49	44	45	0A	01	12 ***
80	02	03	1E	F1	23	09	07	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	67	03	0C	00	20	00	38	40	9F	3D
A0	70	A0	D0	A0	15	50	30	20	3A	00	20	4F	31	00	00	1A
B0	7E	48	00	E0	A0	38	1F	40	40	40	3A	00	20	4F	31	00
C0	00	18	01	1D	00	72	51	D0	1E	20	6E	28	55	00	20	4F
D0	31	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
E0	20	4F	31	00	00	18	00 *	00 *	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *
F0	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	00 *	00 *	00	00	00	00	00	8A ***

- EDID Ver. 1.3 FOR HDMI 2 (256Byte)_ PBP Mode

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	F6	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	03	80	50	22	78	EA	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	3C	41	B8	A0	60	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38	3D	1E
50	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4C
60	47	20	55	4C	54	52	41	57	49	44	45	0A	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	5A ***
80	02	03	1E	F1	23	09	07	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	67	03	0C	00	40	00	38	40	9F	3D
A0	70	A0	D0	A0	15	50	30	20	3A	00	20	4F	31	00	00	1A
B0	7E	48	00	E0	A0	38	1F	40	40	40	3A	00	20	4F	31	00
C0	00	18	01	1D	00	72	51	D0	1E	20	6E	28	55	00	20	4F
D0	31	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00
E0	20	4F	31	00	00	18	00 *	00 *	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *
F0	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	00 *	00 *	00	00	00	00	00	6A ***

- EDID Ver. 1.4 FOR Display Port_8bit (256Byte)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	E2	5A	01 *	01 *	01 *	01 *
10	01 **	19 **	01	04	A5	50	22	78	9E	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	E7	7C	70	A0	D0	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	9D	67	70	A0	D0	A0	22	50
50	30	20	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38
60	3D	1E	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	4C	54	52	41	57	49	44	45	0A	01	68 ***
80	02	03	16	71	23	09	06	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	9F	3D	70	A0	D0	A0	15	50	30	20
A0	3A	00	20	4F	31	00	00	1A	7E	48	00	E0	A0	38	1F	40
B0	40	40	3A	00	20	4F	31	00	00	18	01	1D	00	72	51	D0
C0	1E	20	6E	28	55	00	20	4F	31	00	00	1E	8C	0A	D0	8A
D0	20	E0	2D	10	10	3E	96	00	20	4F	31	00	00	18	00 *	00 *
E0	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	21 ***

- EDID Ver. 1.4 FOR Display Port (256Byte) _ PBP Mode

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	E2	5A	01 *	01 *	01 *	01 *
10	01 **	19 **	01	04	A5	50	22	78	9E	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	3C	41	B8	A0	60	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38	3D	1E
50	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4C
60	47	20	55	4C	54	52	41	57	49	44	45	0A	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	B0 ***
80	02	03	16	71	23	09	06	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	9F	3D	70	A0	D0	A0	15	50	30	20
A0	3A	00	20	4F	31	00	00	1A	7E	48	00	E0	A0	38	1F	40
B0	40	40	3A	00	20	4F	31	00	00	18	01	1D	00	72	51	D0
C0	1E	20	6E	28	55	00	20	4F	31	00	00	1E	8C	0A	D0	8A
D0	20	E0	2D	10	10	3E	96	00	20	4F	31	00	00	18	00 *	00 *
E0	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	21 ***

- EDID Ver. 1.4 FOR Display Port_10bit (256Byte)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	E4	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	04	B5	50	22	78	9E	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	E7	7C	70	A0	D0	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	9D	67	70	A0	D0	A0	22	50
50	30	20	3A	00	20	4F	31	00	00	1A	00	00	00	FD	00	38
60	3D	1E	5A	20	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	4C	54	52	41	57	49	44	45	0A	01	3A ***
80	02	03	16	71	23	09	06	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	9F	3D	70	A0	D0	A0	15	50	30	20
A0	3A	00	20	4F	31	00	00	1A	7E	48	00	E0	A0	38	1F	40
B0	40	40	3A	00	20	4F	31	00	00	18	01	1D	00	72	51	D0
C0	1E	20	6E	28	55	00	20	4F	31	00	00	1E	8C	0A	D0	8A
D0	20	E0	2D	10	10	3E	96	00	20	4F	31	00	00	18	00 *	00 *
E0	00 *	FF *	00 *	0A *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *	20 *
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	21 ***

- EDID Ver. 1.4 FOR Display Port_Free-sync (256Byte)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	E4	76	01 *	01 *	01 *	01 *
10	01 **	19 **	01	04	B5	50	22	78	9F	CA	95	A6	55	4E	A1	26
20	0F	50	54	21	08	00	71	40	81	80	81	C0	A9	C0	B3	00
30	D1	C0	81	00	01	01	E7	7C	70	A0	D0	A0	29	50	30	20
40	3A	00	20	4F	31	00	00	1A	E4	A7	70	B8	D1	A0	24	50
50	90	60	84	00	20	4F	31	00	00	1A	00	00	00	FD	00	37
60	4B	5A	5A	2B	01	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	55	4C	54	52	41	57	49	44	45	0A	01	58 ***
80	02	03	16	71	23	09	06	07	49	10	04	03	01	1F	13	59
90	5A	12	83	01	00	00	9F	3D	70	A0	D0	A0	15	50	30	20
A0	3A	00	20	4F	31	00	00	1A	7E	48	00	E0	A0	38	1F	40
B0	40	40	3A	00	20	4F	31	00	00	18	01	1D	00	72	51	D0
C0	1E	20	6E	28	55	00	20	4F	31	00	00	1E	8C	0A	D0	8A
D0	20	E0	2D	10	10	3E	96	00	20	4F	31	00	00	18	00 *	00 *
E0	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *	00 *
F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	AA ***

3.3. Function Check

3.3.1. Check Screen

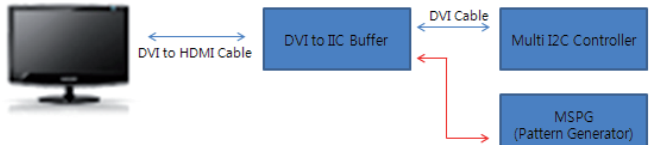
■ Check input and signal items. (cf. work instructions)

1. HDMI1/2 (3440 x 1440 @60Hz)
2. DisplayPort1.2 (3440 x 1440 @60Hz) - using PC

4. Total Assembly line process

4.1. Write HDCP Key

Write HDCP Key into EEPROM by using DDC2AB protocol & HDCP Adjustment Jig equipment. If error is occurred, try to write again. After download HDCP key, send command '0xE6 00 00' for loading RAM memory correctly.



4.2. White balance adjustment

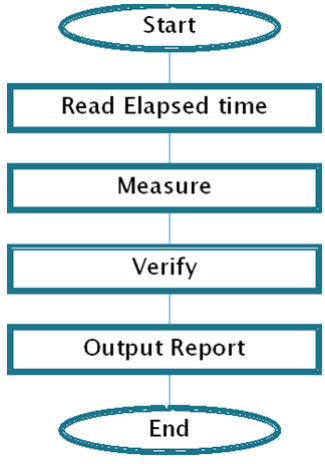
- Adjust PRESET Warm(6500K) Color coordinates and Gamma calibration .

■ Set the CA-210 for calibration.

■ Input Gamma calibration Pattern (R,G,B, Grey 20)

■ Set as Warm(6500K) by commanding COLOR_MODE_ CHANGE Command code.

■ Gamma calibration and verify



■ Warm(6500K) color adjustment

Adjust to meet x/y color coordinate as below

	x	y
2~4 min	0.318	0.339
4~8 min	0.318	0.338
8~10 min	0.317	0.337
10~25 min	0.316	0.334
25~40 min	0.314	0.332
40 min~	0.313	0.329

Save Warm(6500K) Color by commanding COLOR SAVE Command code.

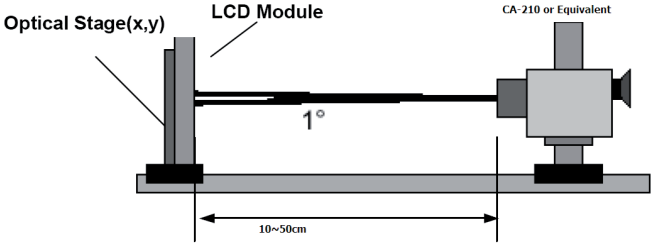
Insert HDMI Jack which is connected with PC for White Balance or equivalent device.
→ Total Assembly line should check whether the color coordinate(x,y) data refer to below table were meet or not.

Color Temperature	Cool	9,300	°K	X=0.283 (±0.03) Y=0.298 (±0.03)	<Test Signal> Inner pattern (255gray,80IRE)
	Medium	8,000	°K	X=0.295 (±0.03) Y=0.305 (±0.03)	
	Warm	6,500	°K	X=0.313 (±0.03) Y=0.329 (±0.03)	
Luminance (cd/m²)	Cool	Min : 170			<Test Signal> Inner pattern (255gray,80IRE)
	Medium	Min : 200			
	Warm	Min : 260			

*Note : x,y coordinates are drifted about 0.007 after 30 mins heat-run. So checking color coordinate within 5-min at total assembly line, consider x,y coordinates might be up to 0.007 than x,y target of each color temperature.

* Note : Manual W/B process
1) Power off => Power on (‘←’ 3 times, ‘→’ 1 time and push ‘◎’)
2) and push the “←” or “→”.
3) In Service Menu.

* When doing Adjustment, Please make circumstance as below.



4.3. DPM Operation check

■ Measurement Condition: 100 ~ 240 V @ 50/60Hz
(1) Set Input to DVI-D, DisplayPort, HDMI1, HDMI2
(2) Turn off the source device.
(3) Check DPM operation refer to the below table.

Operating Condition	Sync (H/V) or Video	EUT (MSPG6100)	LED (SET)	Wattage (W)
Sleep mode	Off/Off	Off	White blinking	1.2W
Off mode	-	-	Off	0.3

5. Signal composition for adjustment

5.1. I2C (100K BPS)

5.2. COMMUNICATION START

Until ACK BIT goes LOW, Repeat it.

START	6E	A	STOP	50Ms

5.3. Command form.

Command form use DDC2AB standard communication protocol.

START	6E	A	50	A	LEN	A	03	A	CMD	A	00	A	VAL	A	CS	A	STOP

a. LEN : DATA BYTE number to send.
b. CMD : Command language that monitor executes.
c. VAL : FOS DATA
d. CS : Dada’s CHECHSUM that transmit
e. DELAY : 50MS
f. A : Acknowledge

5.4. Screen adjust command (LENGTH = 84)

No.	Adjustment contents	CMD(hex)	ADR	VAL(hex)	Explanation
1	EEPROM ALL INITIAL	E4	00	00	adjustment Initialization
2	EEPROM READ	E7	Slave add		At EEPROM Read
3	EEPROM WRITE	E8	Slave add	Data	Write data at EEPROM
4	R GAIN	16	00	00-64	Tune Gain
5	G GAIN	18	00	00-64	
6	B GAIN		00	00-64	
7	BRIGHT(Backlight)	10	00	00-64	Tune Analog Bright
8	FACTORY RESET	F0	00	0	Factory reset
9	AUTO_COLOR_ADJUST	F1	00	0	AUTO COLOR Tuning 0:Auto color
10	COLOR_MODE_CHANGE	F2	00		
				1	WARM(6500K)
				2	COOL(9300K)
11	Elapsed time Clear	E9	00	00	Aging off &Clear elapsed time
12	Aging On/Off	F3	00	FF/00	FF:ON / 00:OFF
13	Input Select	F4	00	0xD0 0x90 0x91 0xD1	1:DisplayPort 2:HDMI1 3:HDMI2 4:Thunderbolt (UC98 only)
14	SYSTEM RESET	F5	00	00	Restart System
15	Select Language	68	00	0x00 ~ 0x0F	00:English, 01:German 02:French 03:Spanish 04:Italian 05:Swedish, 06:Finnish 07:Portuguese 08:Brazil 09:Polish 0A:Russian 0B:Greek 0C:Ukrainian 0D:Chinese 0E:Japanese 0F:Korean
	EDID SN UPDATE	0x77	0	0x01~0x02	0x01:HDMI1 0x02:HDMI2
	APD command	0xF7	00	0x00~0x01	0x00:OFF 0x01:ON
	Module name				LM340UW3

5.5. EEPROM Data Write

5.5.1 Siganl TABLE

LEN : 84h+Bytes

START	6E	A	50	A	84+n	A	03	A	CMD	A	ADH	A	ADL	A
Data_1	A	...			Data_n	A	CS	A	STOP	Delay 20m				

CMD : E8h
ADH : E2PROM Slave Address(A0,A2,A4,A6,A8,AA,AC,AE), Not 00h(Reserved by Buffer To EEPROM)
ADL : E2PROM Sub Address(00~FF)
Data : Write data
Delay : 20ms

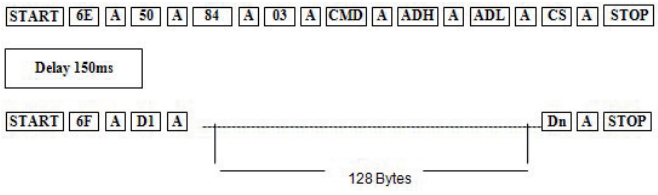
5.5.2. Command Set

No.	Adjustment contents	CMD(hex)	LEN	Explanation
1	EEPROM WRITE	E8	94	16-Byte Write
2			(84+n)	n-byte Write

* Use
■ FOS Default write :
<14mode data> write
SyncFlags, HPeriodH, HPeriodL, VtotalH, VtotalL, SrcHTotalH, SrcHTotalL
SrcHStartH, SrcHStartL, SrcVStartH,SrcVStartL, HsyncPhase
■ Temporary Data write: Write to particular address of EEPROM.

5.6. E2PROM Data Read

5.6.1. Signal TABLE



5.6.2. COMMAND SET

No.	Adjustment contents	CMD (hex)	ADH (hex)	ADL (hex)	Explanation
1	EEPROM READ	E7	A0	0	0-Page 0~7F Read
2				80	0-Page 80~FF Read
3			A2	0	1-Page 0~7F Read
4				80	1-Page 80~FF Read
5			A4	0	2-Page 0~7F Read
6				80	2-Page 80~FF Read
7			A6	0	3-Page 0~7F Read
8				80	3-Page 80~FF Read
9			A8	0	4-Page 0~7F Read
10				80	4-Page 80~FF Read
11			AA	0	5-Page 0~7F Read
12				80	5-Page 80~FF Read
13			AC	0	6-Page 0~7F Read
14				80	6-Page 80~FF Read
15			AE	0	7-Page 0~7F Read
16				80	7-Page 80~FF Read

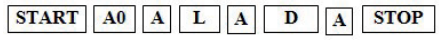
5.6.3. Use

Read E^2PROM's specific area as unit of 128(80h)-byte. (84h)

5.6.4 EDID Write

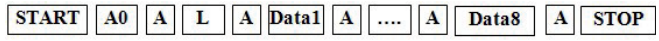
EEPROM access by using DDC2B protocol

■ 1-Byte write



L : 0x00~0x7F
D : data

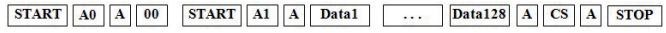
■ 8-byte write



L : 0x00,0x10,….0x70

5.6.5. EDID Read

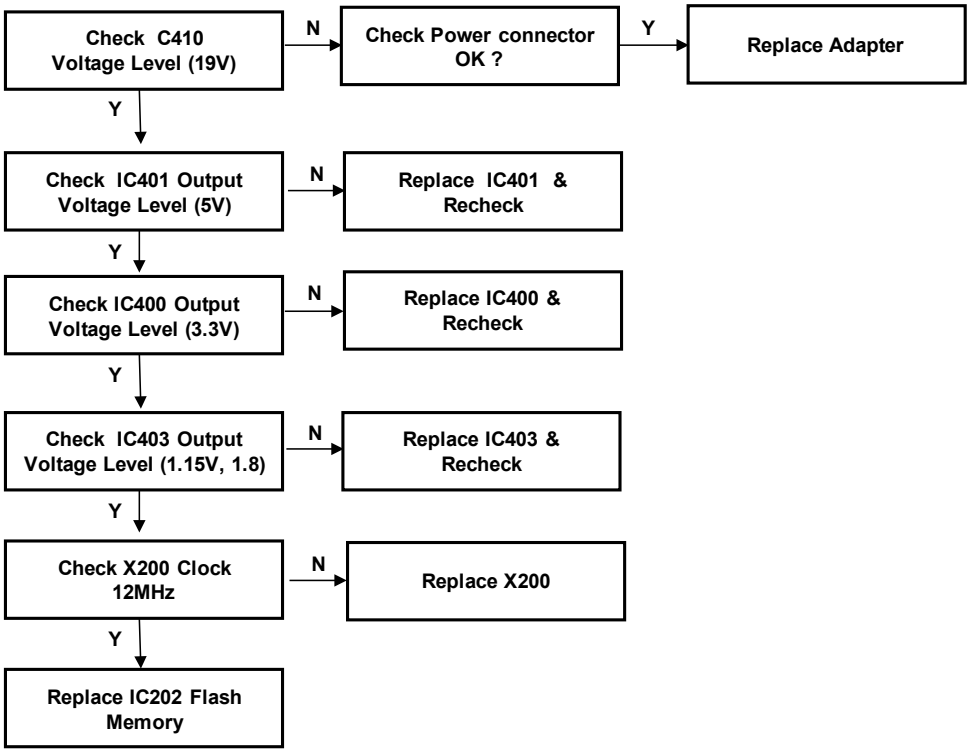
- DDC2B Command.(A0/A1)



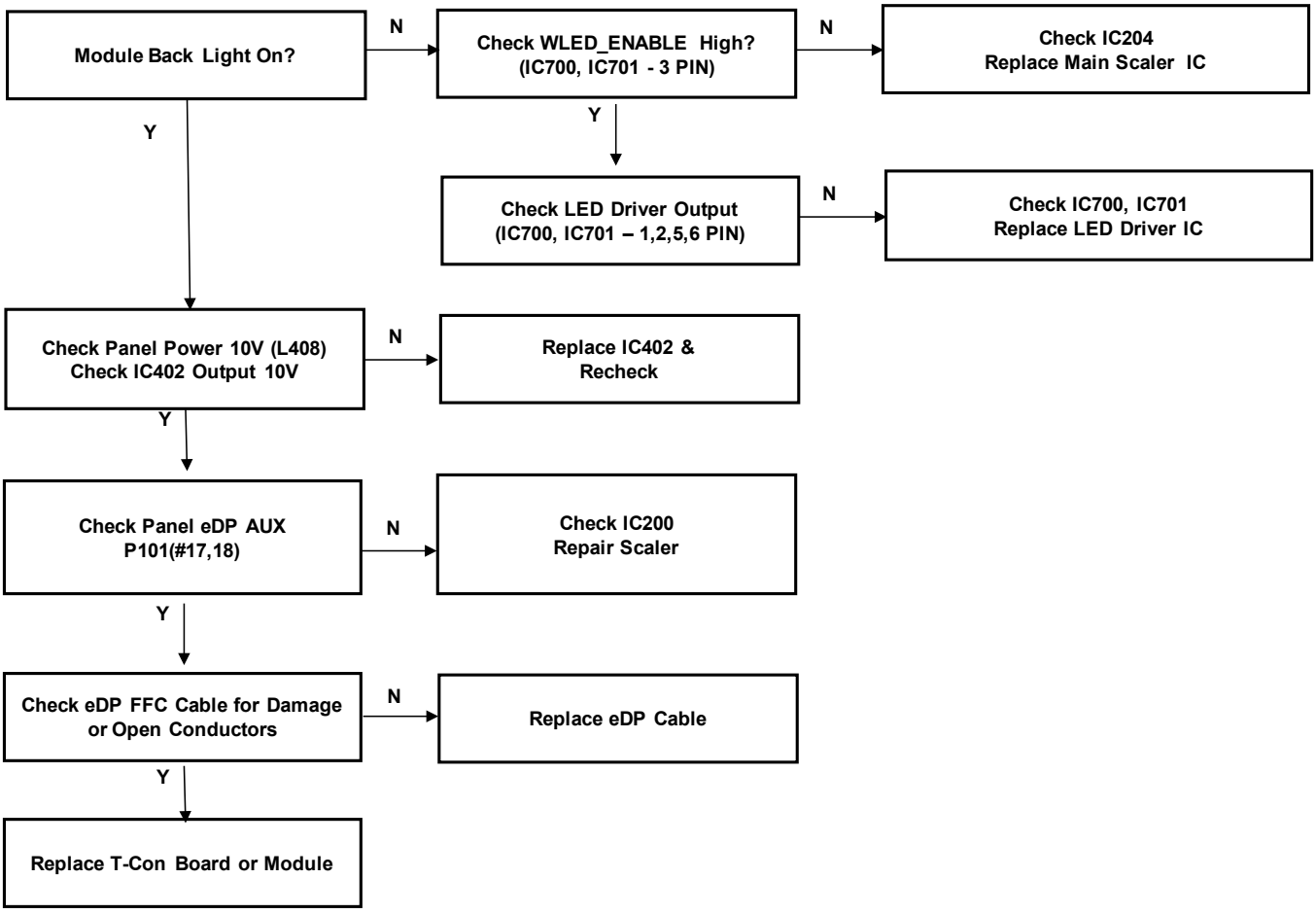
- 128 Byte transfer of EDID Buffer of MICOM

TROUBLE SHOOTING GUIDE

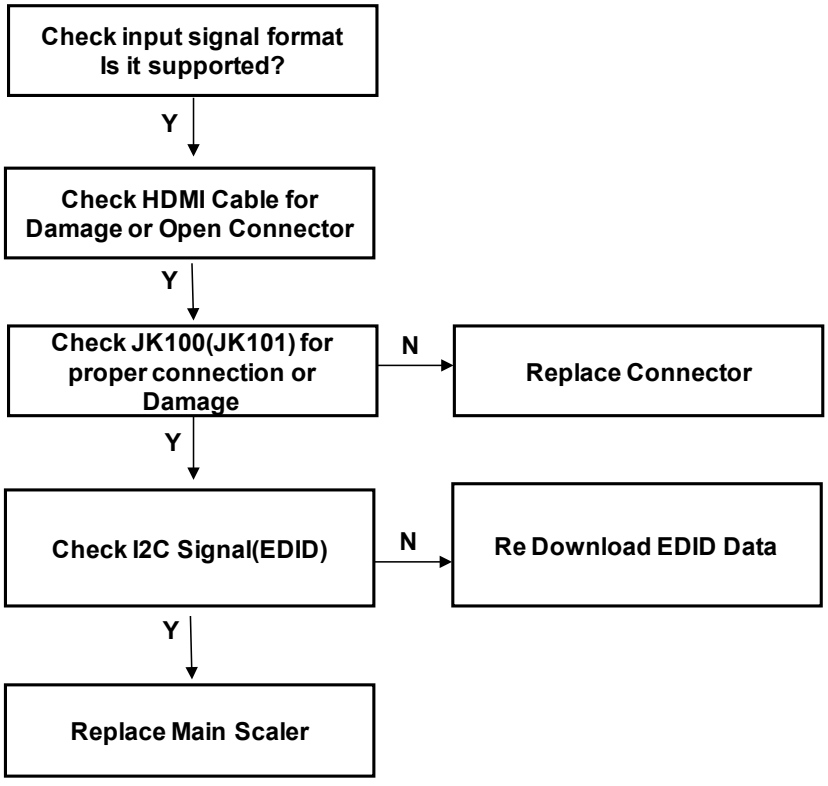
1. No Power



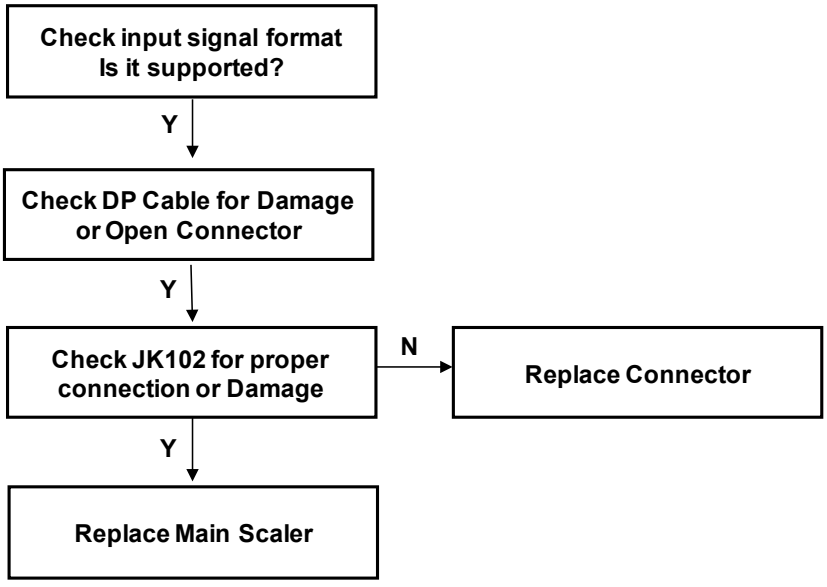
2. No Screen on



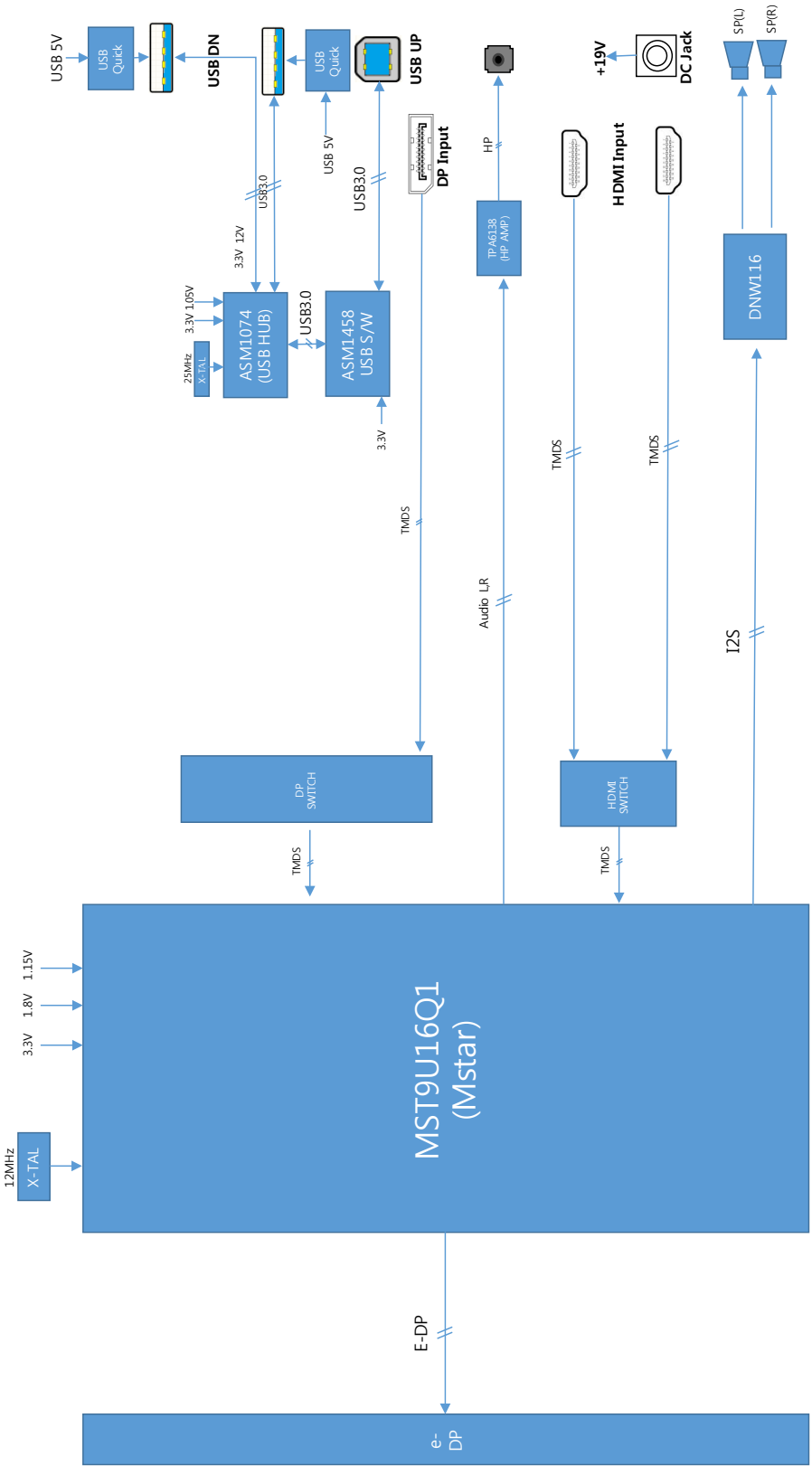
3. No Video – HDMI



4. No Video – DP



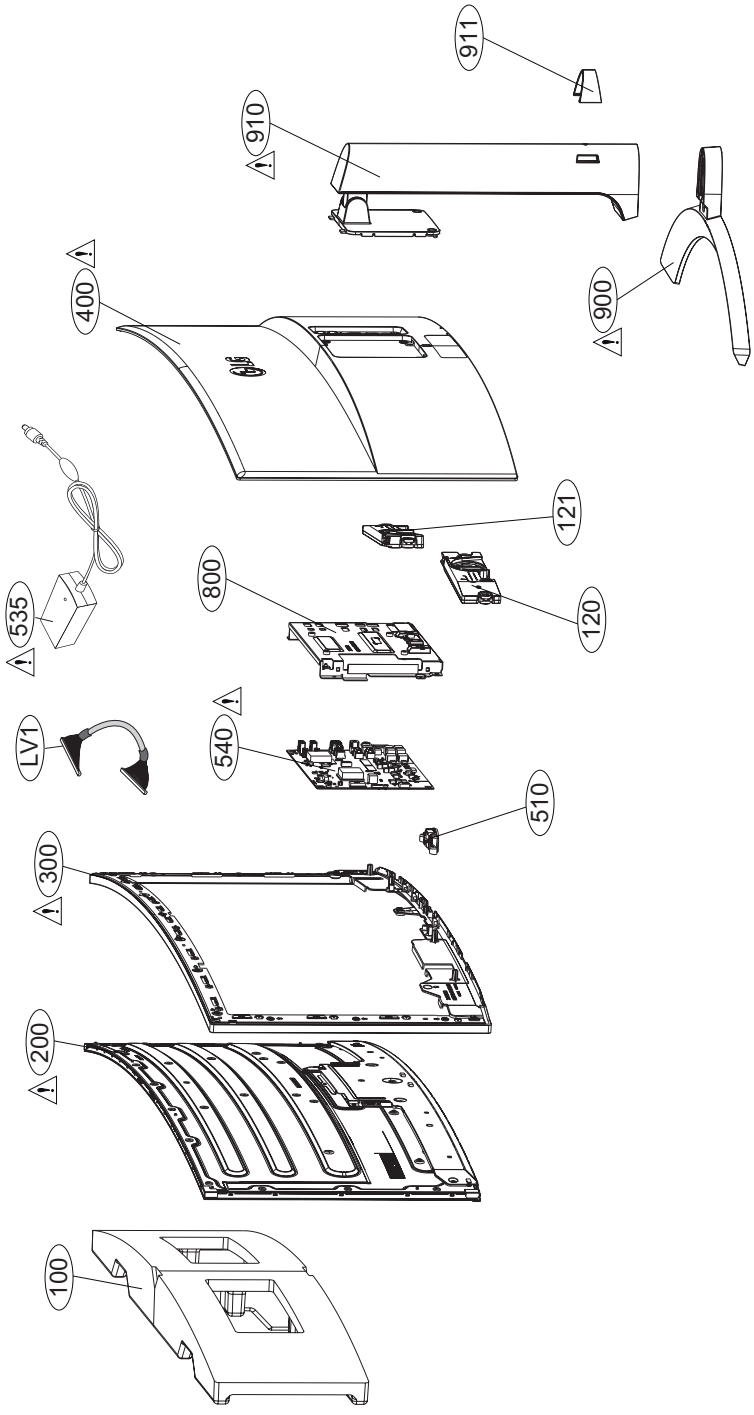
BLOCK DIAGRAM



EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

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