



LG Cloud Device

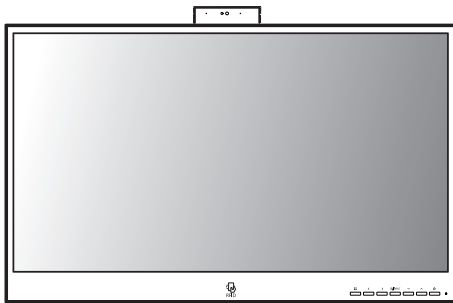
SERVICE MANUAL

CHASSIS : LM22G

MODEL : 24CR670N-6N/ 24CR670N6P
24CR670NK6N/24CR670NK6P
24CR671N-2P/ 24CR671N-6P
24CR671NK6P

CAUTION

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



P/NO : MFL71804641 (2311-REV01)

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by $\triangle$ in the 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 its 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 M Ω and 5.2 M Ω .

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.

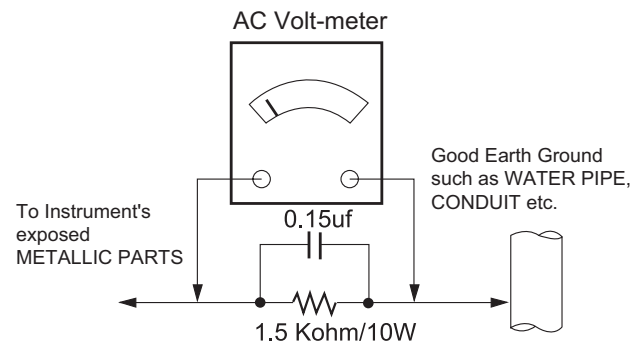
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 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

	Item		Content		Remark
1	Customer		BRAND		LGE Product
2	User Model Name		24CR67*		
3	Sale region		Worldwide		
4	Feature		24"wide LCD Monitor with RFID Module, Webcam		
5	Chassis Name		LM22G		PCB, Product spec., Adjustment spec.
6	GeneralScope	External SW & Adj.	Tact Key (Menu, Left, Right, OK/Input ,Down, Up Power)		7 Tack Key
		Function	OSD, DDC2B, DDC2AB, HDCP, Control Lock, Wide/Original, Smart Energy Saving, Color Weakness, Black level, Reader mode, Flicker safe		
7	Input	HDMI IN	1ea		
		DP OUT	1ea		
		USB-C	1ea		
		USB 2.0	2ea		
		USB 3.1	4ea		
		MIC/Audio Combo	1ea		
		Ethernet	1ea(RJ45)		
		SFP(Fiber)	1ea(Fiber Connection)		
		WiFi+BT	1ea		
		SOUND	1ea(3W Speaker x 2ea)		
8	Power Cord		Length	1.5m ± 0.05m:	
			Weight	0.20kg ± 10%,	
			Color	BLACK	
9	Power	Adapter	Input: 100-240 V ~ 50/60 Hz 1.5 A		
			Output: 19V, 6.32A		
10	Power Rating		Input : AC100~240V 50/60Hz, Output : 19V 6.32A		

2. Engineering Specification

No.	Item		Spec		Remarks
1	Operating Frequency		HDMI	Horizontal	30 - 85kHz
				Vertical	56 - 75 Hz
2	Resolution		HDMI	Max.	1920x1080 @ 75Hz
				Recommend	1920x1080 @ 60Hz
3	Power Input Voltage		Voltage: AC 100 ~ 240Vac, 50-60Hz, 1.8A-0.7A		

3. Signal Timing (Resolution)

3.1. Signal (Video & Sync)

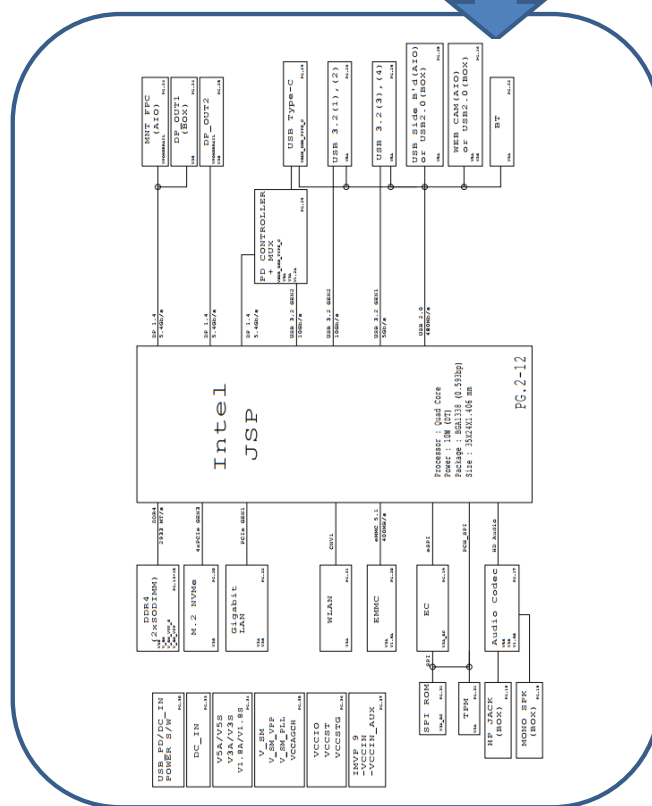
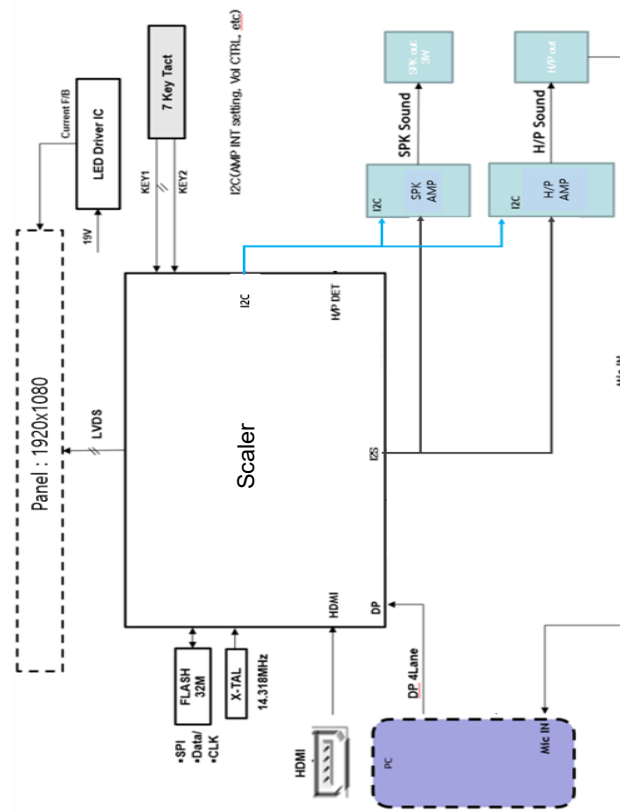
- H/V Timing : HDMI

No.	Section	Pol.	Dot Clock [MHz]	Frequen- cy [kHz]/[Hz]	Total Cycle (E)	Dis- play (A)	Front Porch(D)	Sync. (C)	Back Porch(B)	Resolution	Remark
1	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480	
	V(Lines)	-		59.94	525	480	10	2	33		
2	H(Pixels)	-	31.5	37.5	840	640	16	64	120	640 x 480	
	V(Lines)	-		75	500	480	1	3	16		
3	H(Pixels)	-	28.321	31.468	900	720	18	108	54	720 X 400	
	V(Lines)	+		70.08	449	400	12	2	35		
4	H(Pixels)	+	27	31.47	848	720	16	62	50	720 x 480	
	V(Lines)	+		59.94	528	480	9	9	30		
5	H(Pixels)	+	40	37.879	1056	800	40	128	88	800 x 600	
	V(Lines)	+		60.317	628	600	1	4	23		
6	H(Pixels)	+	49.5	46.875	1056	800	16	80	160	800 x 600	
	V(Lines)	+		75	625	600	1	3	21		
7	H(Pixels)	-	65	48.363	1344	1024	24	136	160	1024 x 768	
	V(Lines)	-		60	806	768	3	6	29		
8	H(Pixels)	+	78.75	60.023	1312	1024	16	96	176	1024 x 768	
	V(Lines)	+		75.029	800	768	1	3	28		
9	H(Pixels)	+	108	67.5	1600	1152	64	128	256	1152 x 864	
	V(Lines)	+		75	900	864	1	3	32		
10	H(Pixels)	+	74.25	45	1650	1280	110	40	220	1280 x 720	
	V(Lines)	+		60	750	720	5	5	20		
11	H(Pixels)	-	83.5	49.702	1680	1280	72	128	200	1280 x 800	
	V(Lines)	+		60	831	800	3	6	22		
12	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280 x 1024	
	V(Lines)	+		60.023	1066	1024	1	3	38		
13	H(Pixels)	+	135	79.976	1688	1280	16	144	248	1280 x 1024	
	V(Lines)	+		75.035	1066	1024	1	3	38		
14	H(Pixels)	-	121.75	65.317	1864	1400	88	144	232	1400 x 1050	
	V(Lines)	+		59.978	1089	1050	3	4	32		
15	H(Pixels)	-	106.5	55.935	1904	1440	80	152	232	1440 x 900	
	V(Lines)	+		59.887	934	900	3	6	25		
16	H(Pixels)	+	108	60	1800	1600	24	80	96	1600 x 900	
	V(Lines)	+		60	1000	900	1	3	96		
17	H(Pixels)	-	146.25	65.29	2240	1680	104	176	280	1680 x 1050	
	V(Lines)	+		59.954	1089	1050	3	6	30		
18	H(Pixels)	+	148.5	67.5	2200	1920	88	44	148	1920 x 1080	
	V(Lines)	+		60	1125	1080	4	5	36		
19	H(Pixels)	+	174.5	83.89	2080	1920	48	32	80	1920 x 1080	
	V(Lines)	+		74.97	1119	1080	3	5	31		

3.2. Video input: HDMI

	Factory support mode (Preset Mode)	Horizontal frequency (KHz)	Vertical frequency (Hz)	HDMI
1	480P	31.5	60	O
2	576P	31.25	50	O
3	720P	37.5	50	O
4	720P	45	60	O
5	1080P	56.25	50	O
6	1080P	67.5	60	O (Recommend Mode)

BLOCK DIAGRAM



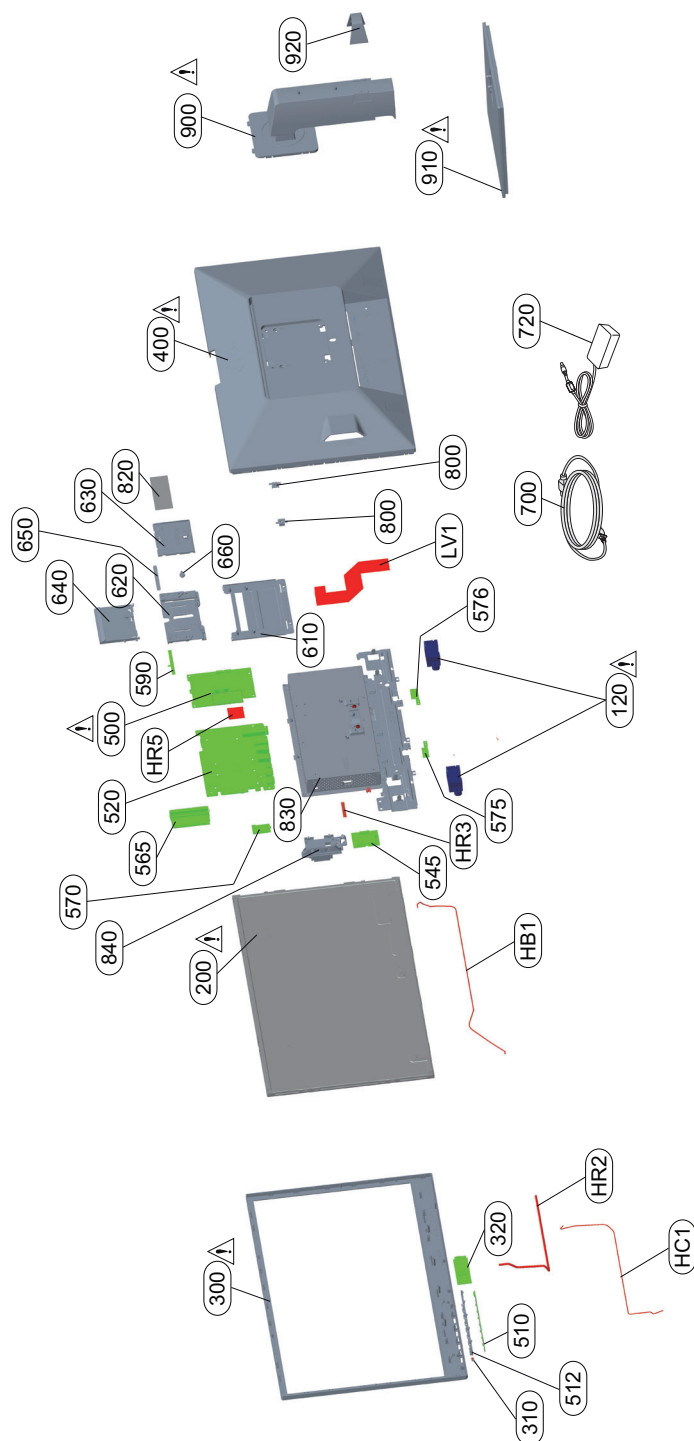
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by in the EXPLODED VIEW.

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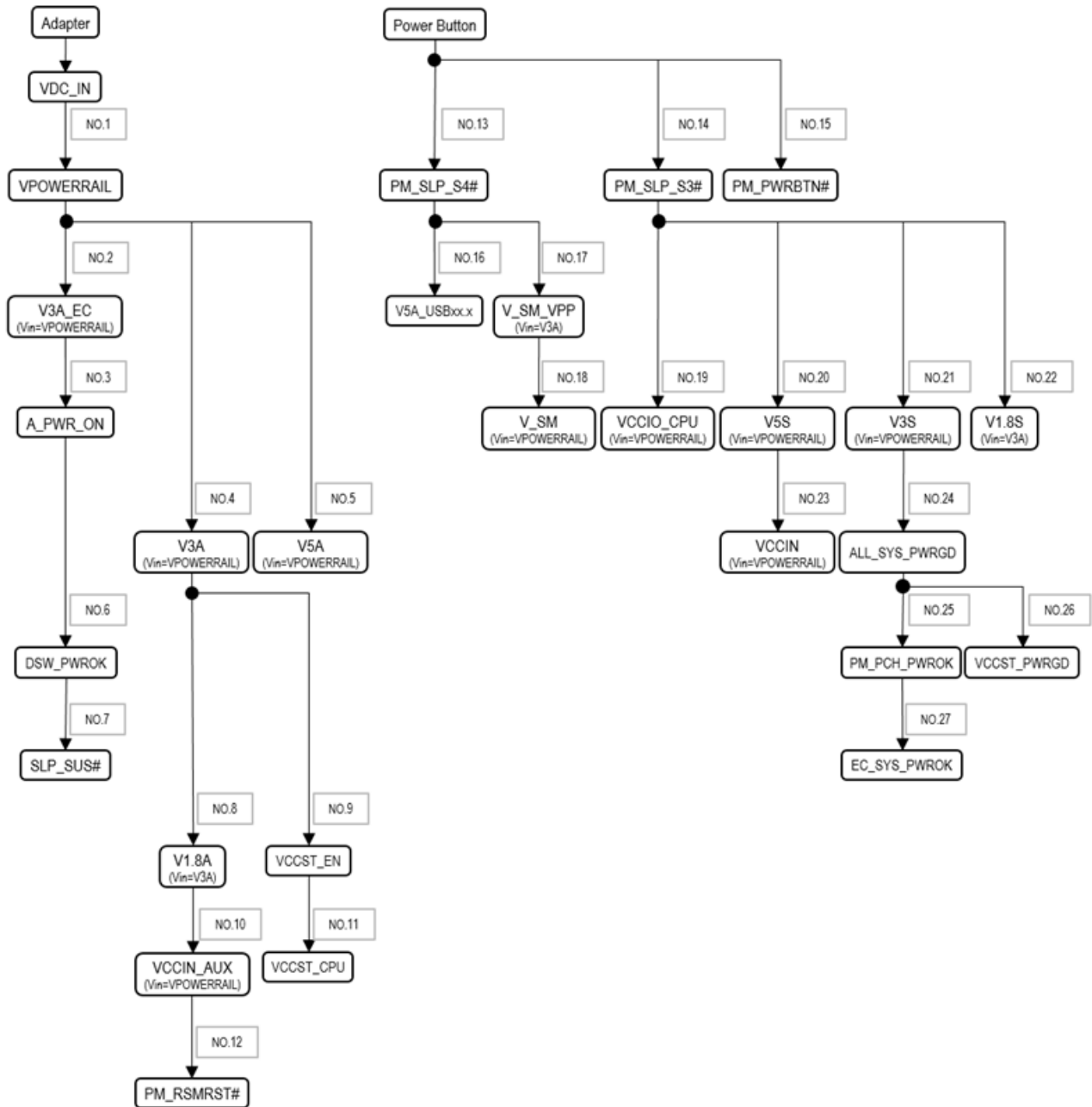
Do not modify the original design without permission of manufacturer.

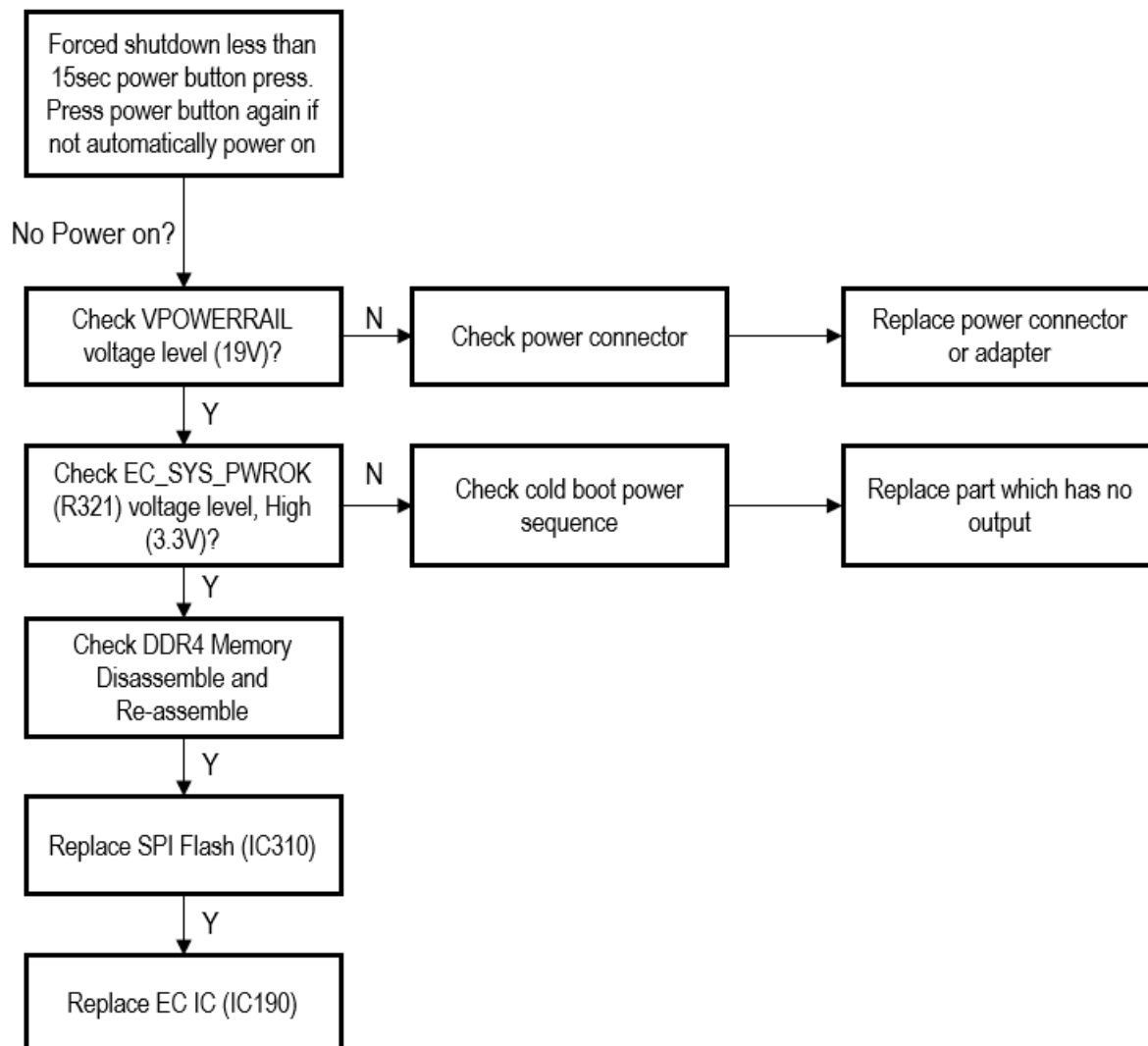


TROUBLE SHOOTING GUIDE

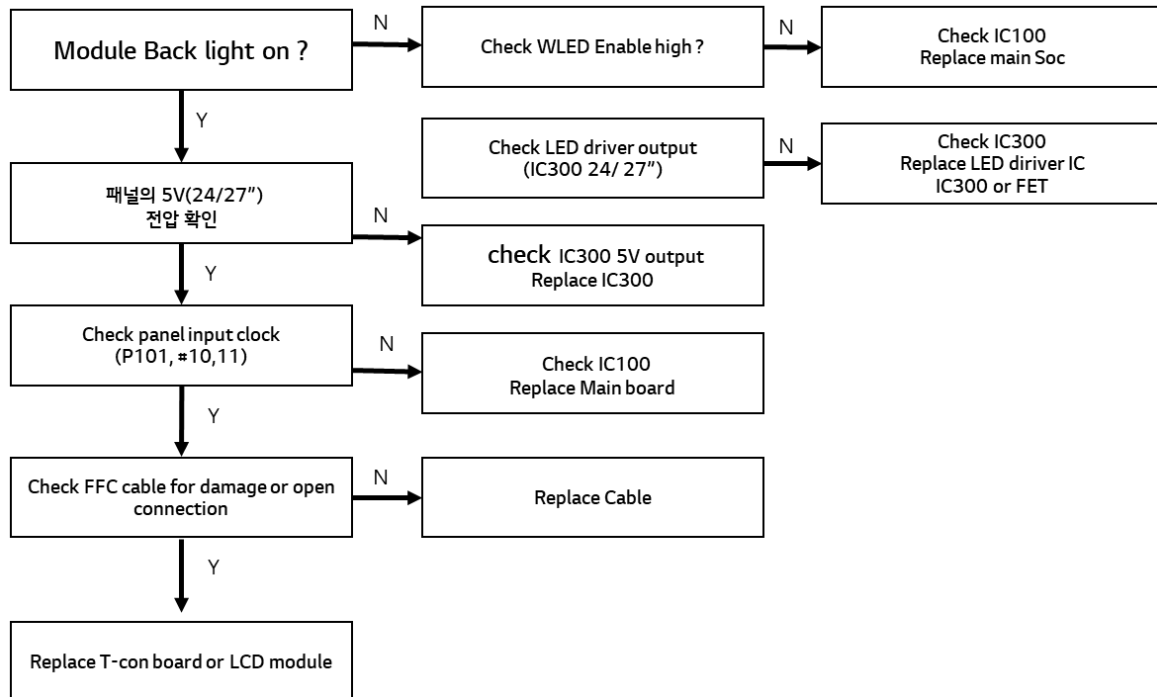
First of all, Check whether there is SVC Bulletin in GSCS System for these model.

1. No Power On Cold-Boot Power Sequence

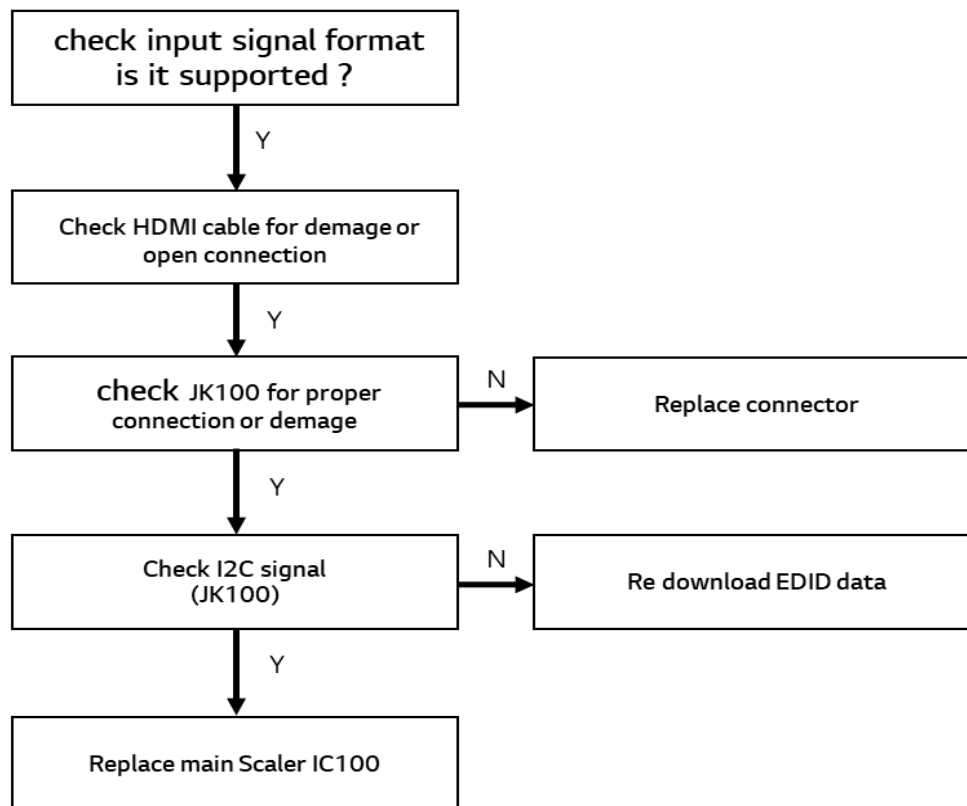




2. No Screen On



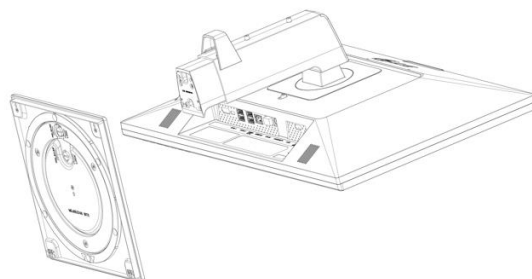
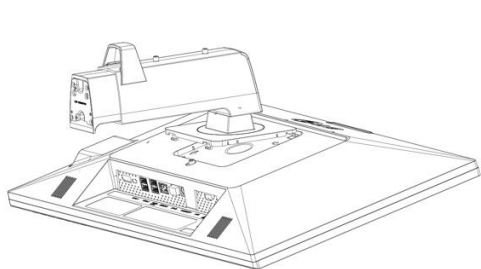
3. No Video - HDMI



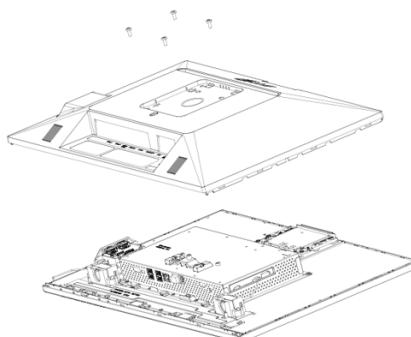
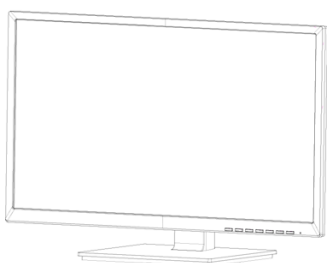
DISASSEMBLE GUIDE

Disassemble

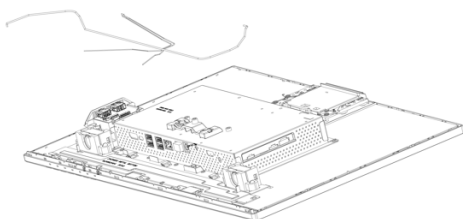
1. Stand



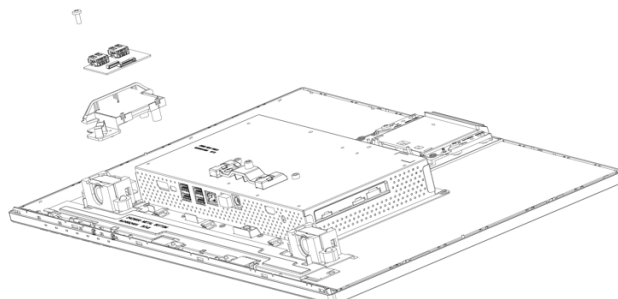
2. Back Cover



3. Cable

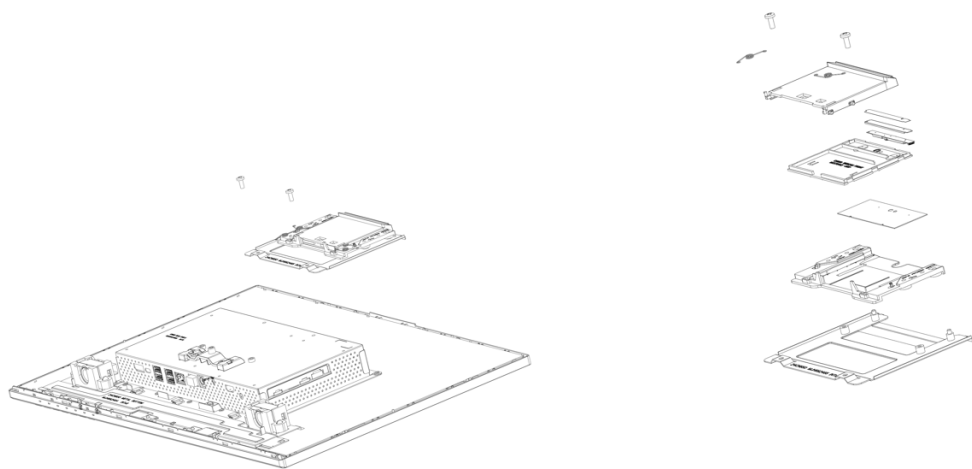


4. Side USB

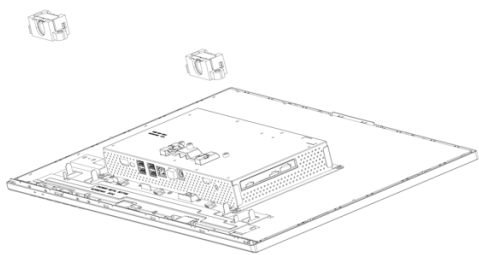


Disassemble

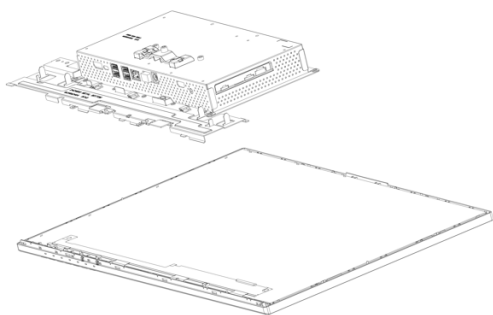
5. Webcam



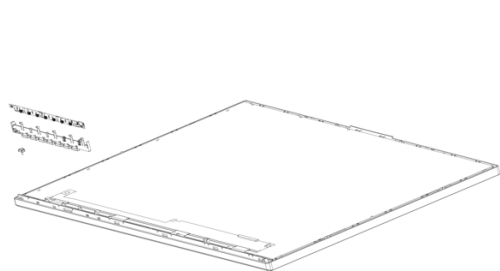
6. Speaker



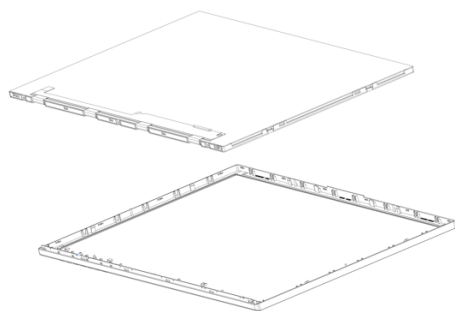
7. Rea Shield



8. Control

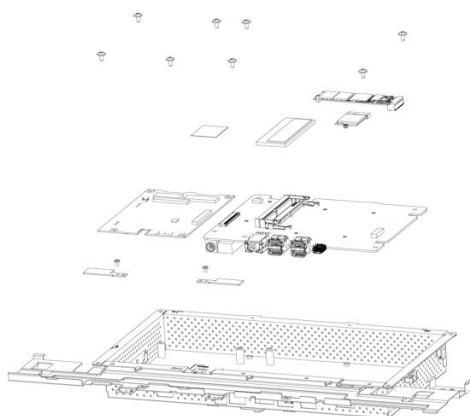


9. Module



Disassemble

10. W-LAN, Memory, SSD, Main B'd



SOFTWARE UPDATE

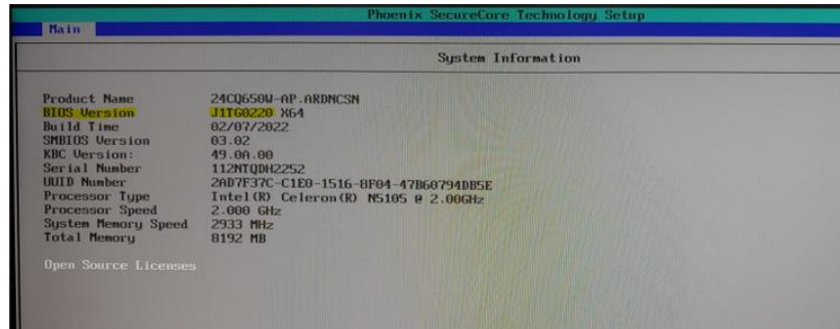
SOFTWARE UPDATE

1. Subject : SW Upgrade Guide

2. Applied Model : xxCQ650 / xxCR650 / xxCR670

3. Check the BIOS Version

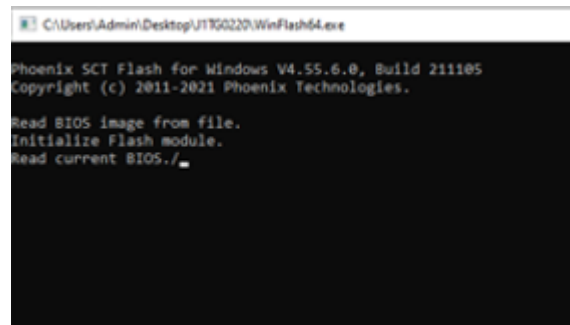
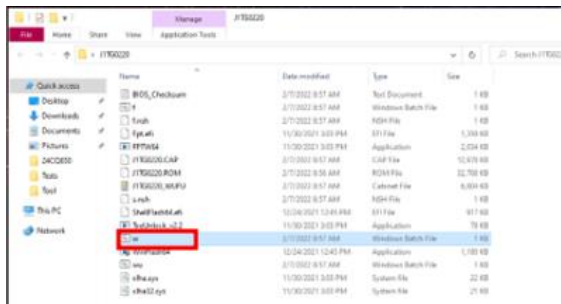
- Press the Power button and press the [F2] Key to enter the “Setup Menu”
- Choose the “main > System Information”, it will be shows the below screen.
- Check the BIOS Version



4. How to upgrade the BIOS:

1) Run the “w.bat” file of shared BIOS flash files.

when run it, it will be shows the below-right screen, and then the set reboot automatically.



2) It will progress to upgrade the BIOS such as below screen, and then the set will reboot automatically.



SOFTWARE UPDATE

5. DMI String Update

- Use the same tool for update the BIOS to update the DMI String
- Run the CMD by run with administrator in the folder of BIOS Flash File

Serial Number Update

- If want to insert the Serial Number such as "1234567890", please refer the below to update it.
- In CMD dialog, run the [WinFlash64.exe /patch /dss "1234567890"]

Product Name Update

- If want to insert the Product name such as "CQ600", please refer the below to update it.
- In CMD dialog, run the [WinFlash64.exe /patch /dps "CQ600"]

UUID Number Update

- If want to insert the UUID, please refer the below to update it.(UUID will produce by random.)
- In CMD dialog, run the [WinFlash64.exe /patch /dus]

Serial Number / Product Name / UUID Number Update(at the same time)

- If want to insert all items at the same time, please refer the below to update it.
- In CMD Dialog, run the [WinFlash64.exe /patch /dus /dps "CQ600" /dss "1234567890"]

```

Administrator: Windows PowerShell - WinFlash64.exe /patch /dus /dps "CQ600" /dss "1234567890"

PS C:\Users\Admin\Desktop\J1TG0220> cmd
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin\Desktop\J1TG0220>WinFlash64.exe /patch /dus /dps "CQ600" /dss "1234567890"

Phoenix SCT Flash for Windows V4.55.6.0, Build 211105
Copyright (c) 2011-2021 Phoenix Technologies.

The tool will start flashing in 5 seconds, press ESC to abort.
Initialize Flash module.
Read current BIOS.
Read current BIOS completely.
Warning: Do not close the Command Prompt window before the flash completes!
Begin Flashing.....
Region name: bios
Total blocks of the image = 2048.
|+-----+-----+-----+-----+-----+-----+-----+-----+
..*.....
Image flashing done.

Flashing finished.

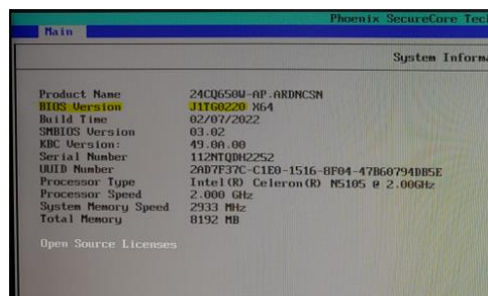
BIOS is updated successfully.

WARNING: System will shutdown or reboot in 5 seconds!

```

6. How to check the DMI Information

- Press the Power button and press the [F2] Key to enter the “Setup Menu”
- Choose the “main > System Information”, it will be shows the below screen.
- Check the changed DMI information.



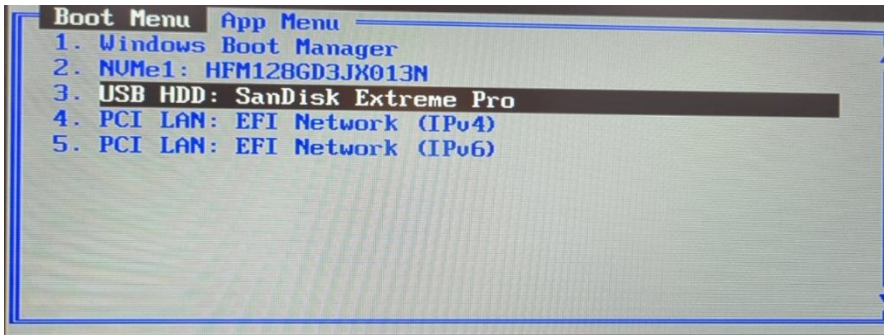
SOFTWARE UPDATE

7. How to install the windows image

STEP 1 : Ready WinPE booting USB and copy the Windows OS image to USB

STEP 2 : Applying OS image

- 1) Turn on thin client and enter the boot device selection with pressing F10.
- 2) Boot with the booting USB.



- 3) Go to the image directory and run image write script file
(ex. cd CQ6_LG_IMAGE\24CQ650_19044IE_EN08\
24CQ650_19044IE_EN08.bat)

```
Administrator: X:\windows\system32\cmd.exe

Current Active Power Scheme is High performance
The command completed successfully.
Current Boot Mode:UEFI Mode

Move to USB Disk volume(G:)

Volume in drive G is ImageSET
Volume Serial Number is CE11-0FF5

Directory of G:\

08/01/2021  11:34 PM  <DIR>          CK5_GIGA_BIOS
08/01/2021  11:38 PM  <DIR>          CK5_LG_IMAGE
08/01/2021  11:40 PM  <DIR>          CK5_VXL_IMAGE
08/01/2021  11:30 PM  <DIR>          CL6_LG_IMAGE
08/01/2021  11:32 PM  <DIR>          CL6_PEGA_BIOS
08/01/2021  11:32 PM  <DIR>          CL6_VXL_IMAGE
02/06/2022  06:51 PM  <DIR>          CQ6_LG_BIOS
03/02/2022  06:25 PM  <DIR>          CQ6_LG_IMAGE
08/03/2021  05:25 PM  <DIR>          MOBILE
               0 File(s)              0 bytes
               9 Dir(s)      3,483,246,592 bytes free

G:\>cd CQ6_LG_IMAGE\24CQ650_19044IE_EN08
G:\CQ6_LG_IMAGE\24CQ650_19044IE_EN08>24CQ650_19044IE_EN08.bat_
```

SOFTWARE UPDATE

4) After installing the image, eject boot USB first, and exit console.

```
Administrator: X:\windows\system32\cmd.exe - 24CQ650_19044IE_EN08.bat

Microsoft Windows [Version 10.0.16281.1000]

#####
# LG Image install script
#
# Image ID   : 24CQ650_19044IE_EN08
# Start time : Thu 03/03/2022  0:27:45.04
#####

Fixed Hard Disk Information
-----
Index  InterfaceType  Size          Status
0      SCSI           128034708480  OK
-----

This system has only one fixed hard disk.
System disk to apply Image : 0

Microsoft DiskPart version 10.0.16281.1000

Copyright (C) Microsoft Corporation.
On computer: MININT-F60F3CU
>
```

```
Administrator: X:\windows\system32\cmd.exe - 24CQ650_19044IE_EN08.bat

DiskPart successfully removed the drive letter or mount point.

DiskPart successfully set the partition ID.

DiskPart successfully assigned the attributes to the selected GPT partition.

Volume ###  Ltr  Label          Fs      Type        Size     Status       Info
-----
Volume 0     W    THINSYSTEM     NTFS    Partition   88 GB     Healthy
Volume 1     T    LGCDM-META     FAT32   Partition   100 MB    Healthy
Volume 2     P    LGCDM-IMAGE    exFAT   Partition   20 GB     Healthy
Volume 3                     Recovery       NTFS    Partition   10 GB     Healthy   Hidden
Volume 4     S    SYSTEM         FAT32   Partition   360 MB    Healthy   Hidden
Volume 5                     LGEFI         FAT32   Partition   700 MB    Healthy   Hidden
Volume 6     F    WINP64         FAT32   Removable   500 MB    Healthy
Volume 7     G    ImageSET       NTFS    Removable   118 GB    Healthy

Leaving DiskPart...

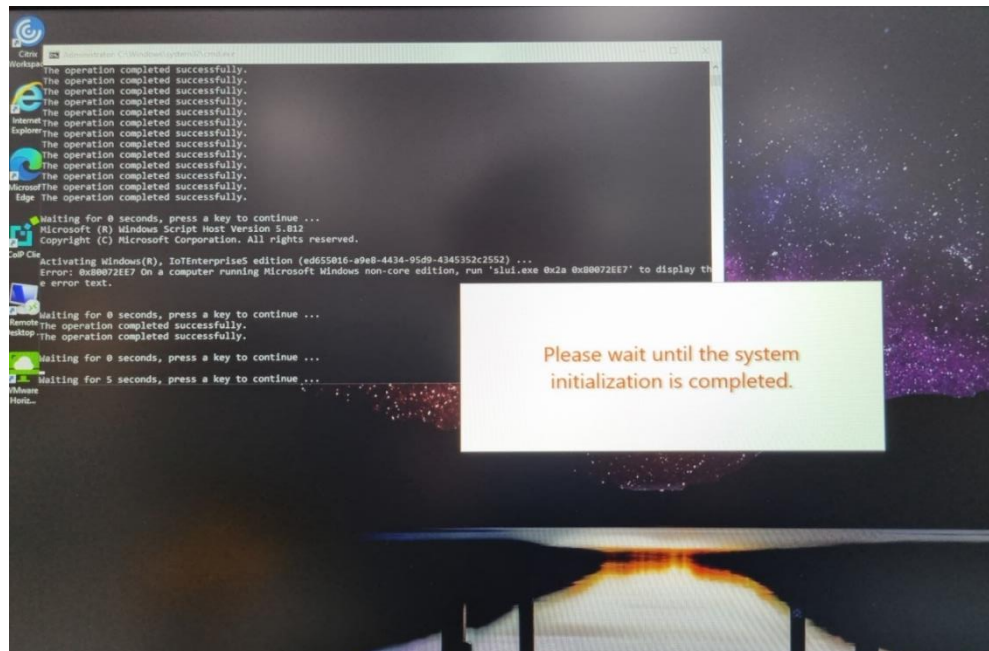
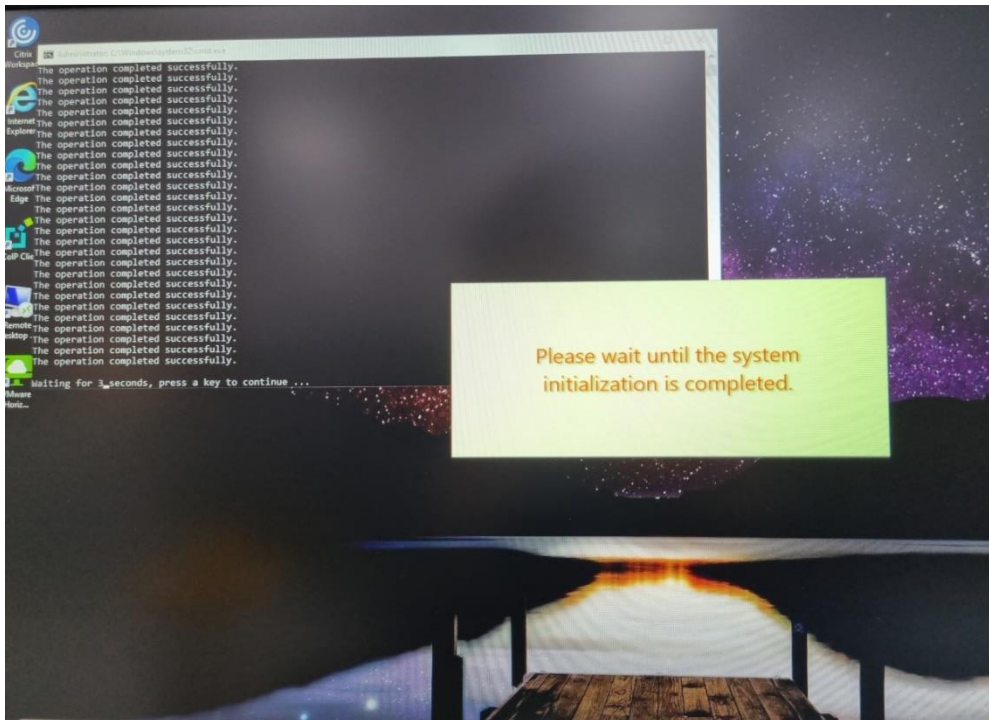
set partition id successfully.

SMBIOSBIOSVersion
J1TG0220 X64
Name
JasperLake Platform

Started at  0:29:43.57 and Finished at  0:40:14.10
Press any key to continue . . .
```

SOFTWARE UPDATE

5) Thin client will restart 2~3 times automatically(under 10min), cause of system configuration.

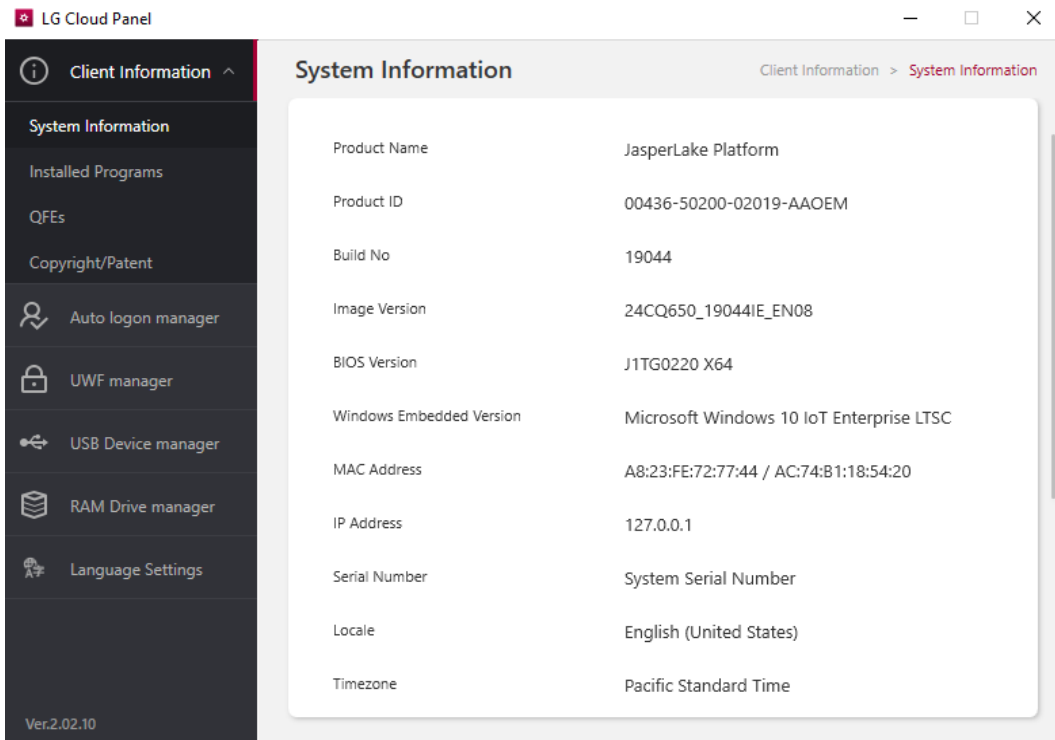
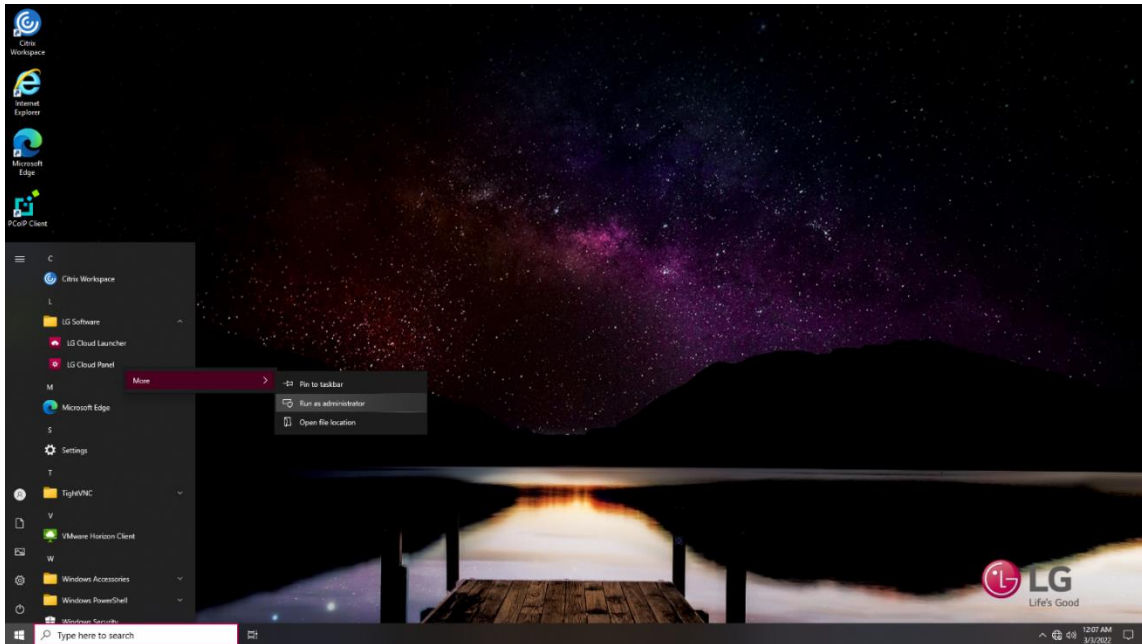


SOFTWARE UPDATE

8. How to check the windows image version

Execute LG Cloud Panel App on “Admin” account.

If you are “User” account, execute LG Cloud Panel App run as administrator
(Password is “Admin”)



SOFTWARE UPDATE

9. Firmware Version Check

- After power On, Change to HDMI Mode on the Input Menu
- DC power off(by Power button)
- Press the Power button and Menu Key at the same time during 3 sec
- After Screen On, press the Menu Key to shows the OSD button

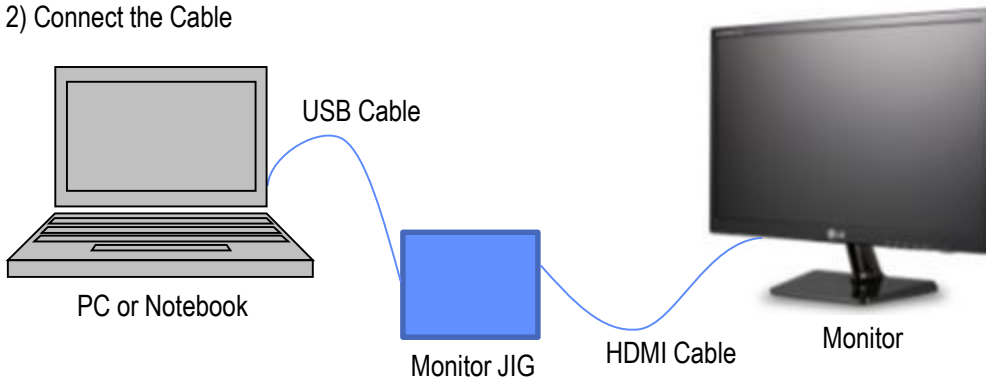


10. How to update the firmware:

1) Preparation the F/W :

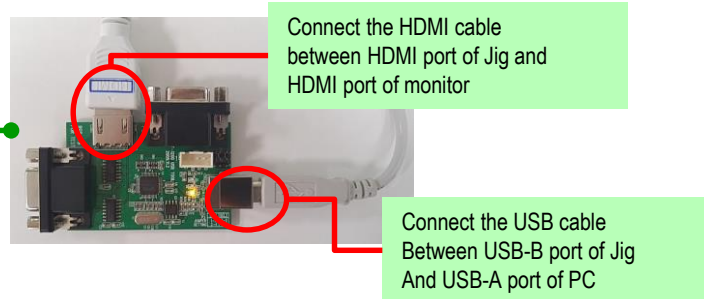
- 24CQ650_Realtek_RTD2536WEC_V310_0408 A0FE_Rev5155_220223.bin

2) Connect the Cable



3) Update F/W

- Method: Refer the attached file



4) After update the F/W, It will do the Factory Reset

