TCL
SERVICE MANUAL

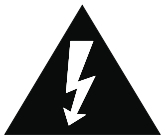
L28E3500 MS82MT-LA

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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product

1. CAUTION

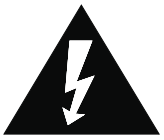
CAUTION:
Use of controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.







CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lighting flash with arrowhead symbol, with an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to the person.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

Read all of these instructions. Save these instructions for later use. Follow all Warnings and Instructions marked on the audio equipment.

1. Read Instructions- All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions- The safety and operating instructions should be retained for future reference.
3. Heed Warnings- All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions- All operating and use instructions should be followed.

FOR YOUR PERSONAL SAFETY

1. When the power cord or plug is damaged or frayed, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
2. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
3. Do not allow anything to rest on or roll over the power cord, and do not place the TV where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
4. Do not attempt to service this television set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
5. Never push objects of any kind into this television set through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television set.
6. If the television set has been dropped or the cabinet has been damaged, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
7. If liquid has been spilled into the television set, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
8. Do not subject your television set to impact of any kind. Be particularly careful not to damage the picture tube surface.
9. Unplug this television set from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

10.1. Do not place this television set on an unstable cart, stand, or table. The television set may fall, causing serious injury to a child or an adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television set. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

10.2. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



PROTECTION AND LOCATION OF YOUR SET

11. • Do not use this television set near water ... for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
    • Never expose the set to rain or water. If the set has been exposed to rain or water, unplug the set from the wall outlet and refer servicing to qualified service personnel.

12. Choose a place where light (artificial or sunlight) does not shine directly on the screen.

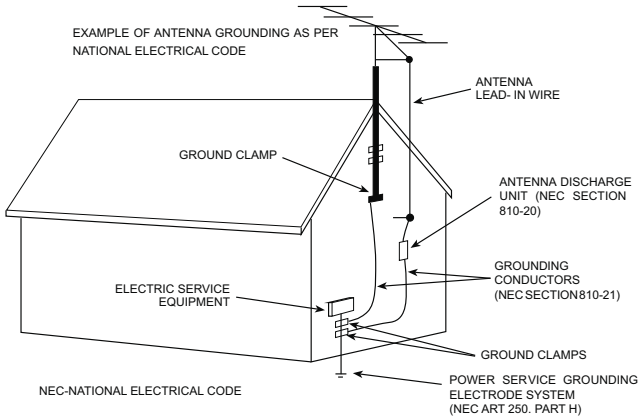
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.

14. The set has slots, or openings in the cabinet for ventilation purposes, to provide reliable operation of the receiver, to protect it from overheating. These openings must not be blocked or covered.
    • Never cover the slots or openings with cloth or other material.
    • Never block the bottom ventilation slots of the set by placing it on a bed, sofa, rug, etc.
    • Never place the set near or over a radiator or heat register.
    • Never place the set in a "built-in" enclosure, unless proper ventilation is provided.

PROTECTION AND LOCATION OF YOUR SET

15.1. If an outside antenna is connected to the television set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges, Section 810 of the National Electrical Code, NFPA No. 70-1975, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrode, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



15.2. Note to CATV system installer : (Only for the television set with CATV reception)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric lights or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

17. For added protection for this television set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage due to lightning and power-line surges.

OPERATION OF YOUR SET

18. This television set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at your home, consult your television dealer or local power company. For television sets designed to operate from battery power, refer to the operating instructions.
19. If the television set does not operate normally by following the operating instructions, unplug this television set from the wall outlet and refer servicing to qualified service personnel. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television set to normal operation.
20. When going on a holiday : If your television set is to remain unused for a period of time, for instance, when you go on a holiday, turn the television set "off" and unplug the television set from the wall outlet.

IF THE SET DOES NOT OPERATE PROPERLY

21. If you are unable to restore normal operation by following the detailed procedure in your operating instructions, do not attempt any further adjustment. Unplug the set and call your dealer or service technician.
22. Whenever the television set is damaged or fails, or a distinct change in performance indicates a need for service, unplug the set and have it checked by a professional service technician.
23. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off. If the snapping or popping is continuous or frequent, unplug the set and consult your dealer or service technician.

FOR SERVICE AND MODIFICATION

24. Do not use attachments not recommended by the television set manufacturer as they may cause hazards.
25. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
26. Upon completion of any service or repairs to the television set, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.

EM BUSINESS CENTER
FTV PRODUCT MANAGEMENT DEPT.

SPECIFICATION RELEASE

Version: V2.1 **Issued Date:** 2013.03.27

Model:L28E3500/MS82MT-LA



PICTURE	
Category	LCD TV
Naturalight Technology	Yes (Natural Light Engine Ⅱ)
Dynamic Contrast	Yes
Color Temperature	Warm / Normal / Cold
Backlight Adjustable	Yes
Scale Mode	Zoom,Expand,Original,Natural
Picture Effect	Standard, Bright, Soft, Personal
Film Mode (3:2 pull down)	AUTO
VGA Dot to Dot Display	Yes (Natural)
Light Sensor	--

Picture Enhancement	
Comb Filter	3D
Adaptive Deinterlacing	3D
Blue Stretch	Yes
Black Stretch	Yes
Motion Compensation	Yes
DLTI	Yes
DCTI	Yes
Dynamic Skin Correction	Yes

PANEL SPECIFICATION	
Back light Unit	LED
Panel supplier	CSOT
Aspect Ratio	16:9
Panel Size (inch)	27.5"
Display Resolution	1366*768
Brightness (cd/m2)	240
Contrast Ratio	3000:1
Response Time Tr/Tf	6.5ms
Viewing Angle (H/V)	178°/178°
Life Time	30,000hrs
Color	16.7M

SOUND	
Speakers	Integrated speakers (Bottom side)
Audio Power Output	2×2.5W
Woofer Power Output	--
Smart Volume	Yes
Sound Effect	Stereo, Music, Movie, News,Personal
Sound Control	Balance, Sound EQ Adjust;
Sound Features	MTS（BTSC）
	Scene Selecting（DeskTop mode and HangUp mode）

FUNCTION	
OSD Language	English/Spanish/Portuguese
OSD Features	Motion Bmp Style
Source in OSD	Source Bmp Icon Selecting
CC (Closed Caption)	Yes (CC1~CC4,Text1~Text4;
	CC OFF,CC ON,CC On Mute,)
Clock/Sleep Timers	Yes
Wake up/Turn off time	Yes
Wake up Source/Chanel	Yes
Watch Time Limit	Yes
Startup Setting	Yes(User can set a picture for turning on Logo display)
Smart Switch	Yes(Signal Auto Detecting and Changing Source)
Picture Freeze	Yes
DNR（Dynamic Noise Reduction）	Off、Low、Middle、High
Hotel Menu	In factory mode
USB Connection	Movie：Support H.264、RM/RMVB、XVID、FLV DivX、MPEG2、MPEG4、VC1 Photo: Support JPEG、BMP、PNG; Music: support MP3、WMA、M4A;

Design and specifications are subject to change without notice!

SIGNAL FORMAT CAPABILITY	
Component Video Format	Y,PB/CB,PR/CR:up to 1080P
DVI Video Format	Up to XGA for HDMI-PC
HDMI Video Format	up to 1080P
PC Compatibility	Up to SXGA

TERMINALS	
AV1 Input (Composite)	Audio/CVBS---R/L+ Video in side
AV2 Input (Composite)	Video Share with Y
	and Audio share with YPBPR Audio
YPBPR Input	1---in side
Audio Input for YPBPR	1---in side
YCBCR Input	Share with "YPBPR"
Audio Input for YCBCR	Share with Audio for "YPBPR"
VGA(PC) Input	1 (D-Sub,15 Pins)---in side
Audio Input for VGA(PC)	Share with Audio for "YPBPR"
HDMI	1 (HDMI1) ---in side
CVBS Output (Composite)	1 RCA Video Socket ---in side
SPDIF Output	1 (coaxial digital audio output)---in side
Headphone Output	--
RF Input(Antenna)	1 (F Type)---in side
USB	1（Standard）---in side

BASIC INFO.	
TV System	NTSC-M;PAL-M;PAL-N
AV System	PAL,NTSC
Channels	Cable 125 (1～125) , Antenna 68 (2～69)
Chassis	MS82MT-LA
Certification	CB
Power Supply	AC 100V-240V 50/60Hz
Power Consumption-TV on	35W
Power Consumption-Standby	≤1W
Default Color of Front Cabinet	Black
Keyboard Position	Back
Base Stand Detachable	Yes

PACKAGE INFO.	
Unpackaged Dimension for Main Body (L*H*D) (mm)	
With Base Stand (mm)	657.7x450.4x175
Without Base Stand (mm)	657.7x409.9x69.7
Packaged Dimension (L*H*D)	
Main Body (mm)	718X490X128
Speaker Box	
Base Stand	
Net Weight (Kg)	4.5
Gross Weight (Kg)	5.5
Container Loading	
20 feet	693
40 feet	1408
40 feet high	1557

ACCESSORIES	
Operation Manual	English(Default)
Remote Control	For TV control (with two batteries)
Base Stand	Integrated Packaging
Speaker Box	Integrated
Wall Mount	WMB233（Optional）
Others	AV Adapter cable

Drafted by:

Checked by:

Approved by:

TCL Multimedia Technology Holdings Ltd.
R&D Center

Alignment Procedure

MS82MT-AP/LA Chassis



Version: 1.0

Release Date: 2013-03-26

PREPARED BY: ***Kangwei*** **DATE: 2013-03-26**

APPROVED BY:_____ DATE:_____

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History	Description of major changes	Release Date
V1.0		2013-03-26

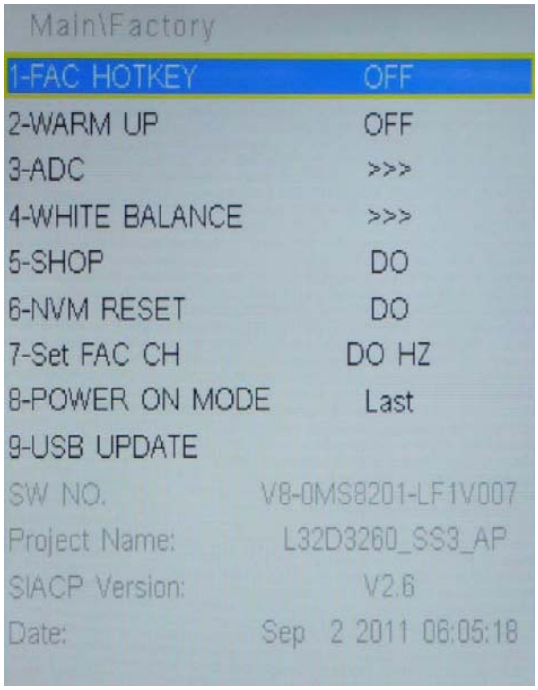
	Chassis	Model
FHD	MS82MT-AP/LA	L28E3500 etc

1. General Description

MS82MT-AP/LA is our latest design especially for LCDTV products selling in Asia Pacific (AP) and Latin America (LA) market. It features by its high integration, easy debugging as well as convenience in terms of maintenance. Fast software upgrade through USB disk facilitates both manufacture and after-sale service. Meantime, a variety of functions involved in Factory Main Menu can not only bring benefits for production, but also satisfy various demands of customer.

Note: Factory Main Menu (FMM) is divided into Factory Menu, Design Menu, Service Menu and Hotel Menu. Factory Menu covers all indispensable functions during manufacture such as White Balance Adjustment, ADC Calibration, USB Upgrading e.g., while the items under Design Menu is exclusively used by R&D engineer, anyone else shouldn't change the settings in the menu. When you wish to learn the product information like project ID, model name, chassis name, software version, release date, you can access to Service Menu. In addition, in Hotel Menu, we also provide a great deal of useful functions for specific applications in hotel.

2. Factory Menu



2.1 Accessing way:

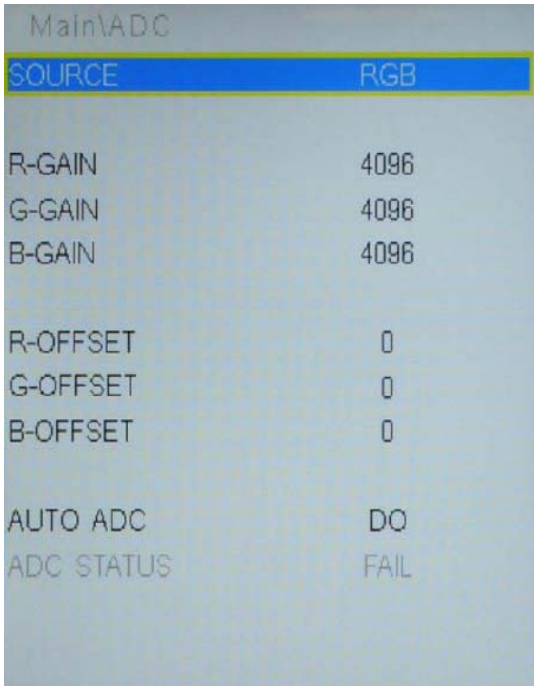
a. In the first place, press **Menu** button of remote control, then select **Contrast** item of **Picture** submenu. Finally, press **9, 7, 3, 5** consecutively.

b. When the **FAC HOTKEY** item of **Factory Menu** is enabled (ON), press **Return** button of remote control.

2.2 Factory Menu

Factory Menu			
Name	**Default**	**Description**	**Status**
FAC HOTKEY	*OFF*	*Factory Menu shortcut button switch* *The item must be disabled (OFF) after production*	*OK*
WARM-UP	*OFF*	*OFF: Normal mode. Display blue screen when no signal. Turn to automatically standby mode if keep the signal unavailable over 15 minutes.* *ON: Aging mode. Display snow dot when no signal. The set will not turn to standby even if the unavailability of signal;press 'function'key to exit warm-up mode.*	*OK*
ADC	*>>*	*ADC calibration (see details below)*	*OK*
WHITE BALANCE	*>>*	*White Balance Adjustment (see details below)*	*OK*
SHOP	*DO*	***It is crucial that the function is executed after production aim to clear information of production process, ensure user cannot access to Factory Menu after executing the item.***	*OK*
NVM RESET	*DO*	*Restore default value except WB and ADC data.*	*OK*
SET FAC CH	*DO*	*Preset the channel table of factory. Option: HZ, WX, EGYPT-EL, ALGERIA e.g. To preset the channel table of certain factory, firstly, choose the corresponding factory name, then press OK button of remote control and wait until the disappearance of Factory Menu,*	*OK*
Power On Mode	*LAST/STB*	*ON: the set will power on after switching on power.* *STB: the set will remain standby status after switching on power.* *Last: the set will turn to the status in which it lies when last switching off.* *If without requirement from certain customer,* *by default, the Setting should be Last for MS82S-AP and STB for* *MS82S-LA*	*OK*
USB UPDATE		*Upgrade software. Please see details below.*	*OK*
SW NO.	*OFF*	*Version information of Main Software*	*OK*
Project Name		*Product model*	*OK*
SIACP Version		*Serial port remote control protocol*	*OK*
Date		*Release date and time of main software*	*OK*

2.3 ADC calibration menu



ADC Menu

Press the ▲▼ button in remote control to select certain item and ◀▶ to change the value of ADC data or start ADC calibration.

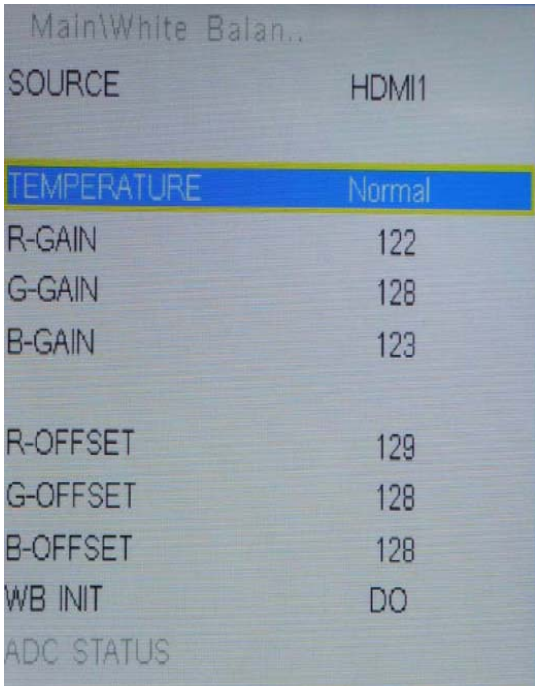
Notes:

1. Only YPBPR and RGB source should be calibrated.

ADC Calibration menu

Name	Default	Description	Status
SOURCE		*Select the source you intend to ADC Calibrate.* *Only YPBPR and RGB are available.*	*OK*
R GAIN	*4096*	*Gain of R channel (cannot be changed after auto calibration)*	*OK*
G GAIN	*4096*	*Gain of G channel (cannot be changed after auto calibration)*	*OK*
B GAIN	*4096*	*Gain of B channel (cannot be changed after auto calibration)*	*OK*
R OFFSET	*0*	*Offset of R channel (cannot be changed after auto calibration)*	*OK*
B OFFSET	*0*	*Offset of B channel (cannot be changed after auto calibration)*	*OK*
G OFFSET	*0*	*Offset of G channel (cannot be changed after auto calibration)*	*OK*
AUTO ADC	*DO*	*Select and execute the item, ADC Calibration starts. It indicates a successful calibration if prompt "OK" is displayed. Otherwise, It is a failing calibration ("FAIL" is displayed).*	*OK*
ADC STATUS		*Show the ADC status of YPbPr/RGB Channel. SUCCESS will be display if YPbPr/RGB Channel has been correctly calibrated. Otherwise FAIL will be displayed*	*OK*

2.4 White Balance Adjustment menu

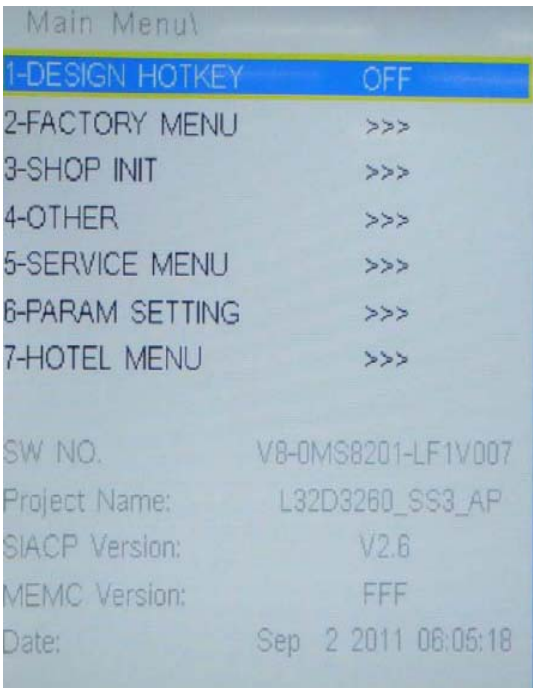


White Balance menu

Press the ▲ ▼ button in remote control to select certain item and ◀ ▶ to adjust White Balance

White Balance Adjustment menu			
Name	**Default**	**Description**	**Status**
Source	*PC*	*Select the source you intend to apply WB adjustment. Only HDMI1, AV1, YPBPR, PC and should be adjusted.*	*OK*
COLOR TEMPERATURE	*Cool*	*Select color temperature you intend to adjust Three groups of color temperature: Normal, Warm, Cool are available for each source.*	*OK*
R GAIN	*-2*	*Gain of R channel (cannot be changed after auto calibration)*	*OK*
G GAIN	*0*	*Gain of G channel (cannot be changed after auto calibration)*	*OK*
B GAIN	*+9*	*Gain of B channel (cannot be changed after auto calibration)*	*OK*
R OFFSET	*+6*	*Offset of R channel (cannot be changed after auto calibration)*	*OK*
G OFFSET	*0*	*Offset of G channel (cannot be changed after auto calibration)*	*OK*
B OFFSET	*-2*	*Offset of B channel (cannot be changed after auto calibration)*	*OK*
WB INIT		*White Balance Initalization. Before WB adjustment, this item should be executed.*	*OK*

3 Factory Main Menu



3.1 Accessing way:

1. In the first place, press **Menu button** of remote control, then select **Contrast** item of **Picture** submenu. Finally, press **1, 9, 5, 0** consecutively.

2. When the **DESIGN HOTKEY** item of **Design Menu** is enabled (ON), press **Return** button of remote control.

Press the ▲ ▼ button in remote control to select certain item and ◀ ▶ to toggle among or execute the available options.

Main Menu

Name	Default	Description	Status
DESIGN HOTKEY	*OFF*	*Design Menu shortcut button switch* *The item must be disabled (OFF) after production*	*OK*
FACTORY MENU	*>>>*	*Access to Factory Menu*	*OK*
SHOP INIT	*>>>*	*Contain many options which can be chosen according to the requirements of customers as default settings when leave factory.* *See details below.*	*OK*
OTHER	*>>>*	*The item includes a number of functions offering convenience for R&D engineer to solve problems. It is exclusively used by R&D.*	*OK*
SERVICE MENU	*>>>*	*Provide many useful information for aftersale service* *Please reference to SERVICE MENU submenu*	*OK*
PARAM SETTING	*>>>*	*Include volume, brightness, contrast, saturation, hue, sharpness, backlight, volume, overscan Adjustment etc. Please reference to PARAM SETTING submenu.*	*OK*
HOTEL MENU	*>>>*	*Include special functions which bring benefits to hotel management. The item is accessible only when HOTEL ENABLE item is enabled (ON).*	*OK*

3.2 SHOP MENU

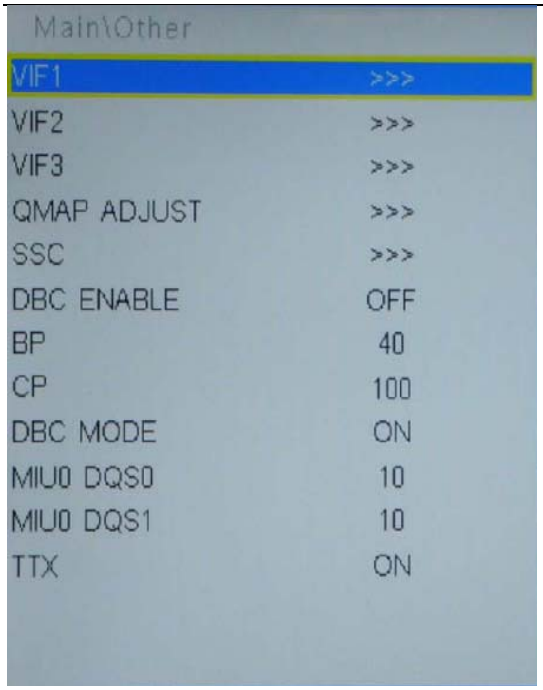


Contain many options which can be chosen according to the requirements of customers as default settings when leave factory. Press the ▲▼ button in remote control to select certain item and ◀▶ to toggle among the available options..

SHOP MENU

Name	Default	Description	Status
VOLUME	30	Volume setting, 0~100 adjustable	OK
PIC MODE	STANDARD	Picture mode. Options: BRIGHT, SOFT, PERSONAL,STANDARD	OK
SOUND MODE	STEREO	Sound effects. Options: STAREO MISIC, MOVIE, NEWS	OK
CH NUMBER	199	Maximum number of accessible channel	NG
OSD LANGUAGE	ENGLISH	AP: English, French, Vietnamese, Russian, Arabic, Farsi, Hebrew, Thai, Portuguese, Mongolian, LA: English, Portuguese, Spanish	OK
Preset CH	0	Preset channel. 0~199 optional	OK
COLOR TEMP	NORMAL	Color temperature. Option: NORMAL, WARM, COOL	OK

3.3 Other Menu

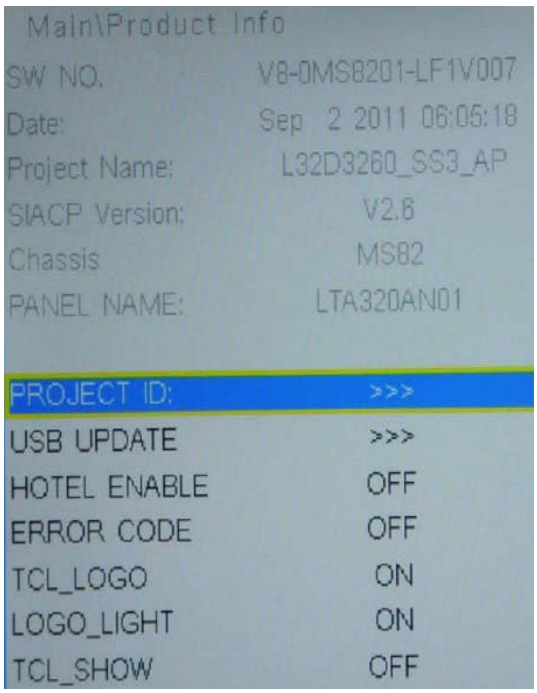


Press the ▲▼ button in remote control to select certain item and ◀▶ to toggle among the available options..

Other Menu			
Name	**Default**	**Description**	**Status**
VIF1		*Exclusively used by R&D.*	*OK*
VIF2		*Exclusively used by R&D.*	*OK*
VIF3		*Exclusively used by R&D.*	*OK*
QMAP ADJUST		*Exclusively used by R&D.*	*OK*
SSC		*Spectrum Spread Control.* *Exclusively used by R&D.*	*OK*
DBC ENABLE		*Dynamic Backlight Enable* *Exclusively used by R&D.*	*OK*
BP		*Parameter of DBC* *Exclusively used by R&D.*	*OK*
CP		*Parameter of DBC* *Exclusively used by R&D.*	*OK*
DBC MODE		*DBC Mode. Exclusively used by R&D.*	*OK*
MU0 DQS0		*Manually adjust DQS1 phase of DDR2* *Exclusively used by R&D*	*OK*
MU1 DQS1		*Manually adjust DQS1 phase of DDR1* *Exclusively used by R&D*	*OK*

TTX	*ON*	*ON: enable teletext OFF: Disable teletext*	*OK*

3.4 SERVICE MENU

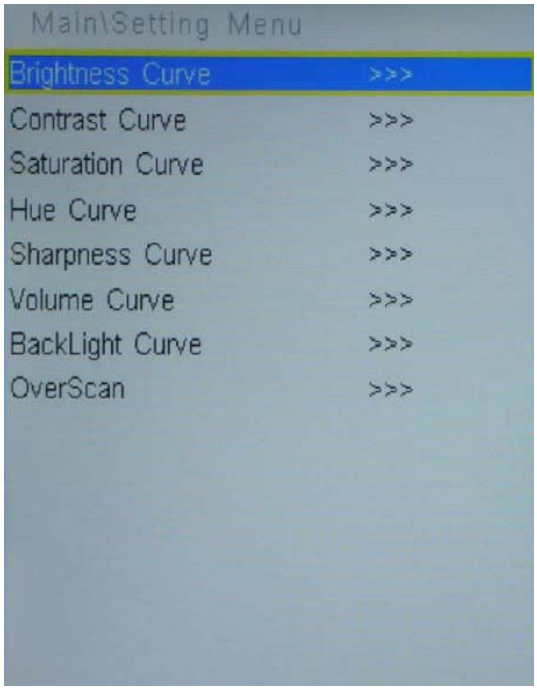


Press the ▲ ▼ button in remote control to select certain item and ◀ ▶ to toggle among the available options..

SERVICE MENU (Product Info)			
Name	**Default**	**Description**	**Status**
SW NO.		*Software virtual code of Main Software*	*OK*
DATE		*Release date, time*	*OK*
Project Name		*Model of product*	*OK*
SIACP Version		*Serial port remote control protocol*	*OK*
Chassis	*MS82S-AP/MS82S-LA*	*Chassis name*	*OK*
PANEL NAME		*Panel code*	*OK*
PROJECT ID		*Select project parameters through project ID.*	*OK*
USB UPDATE		*USB upgrade.*	*OK*
HOTEL ENABLE		*Switch of Hotel Menu.*	*OK*

ERROR CODE			*NG*
TCL_LOGO		*Display TCL Logo or not. On : display, Off: not display*	*OK*
LOGO_LIGHT			*OK*
TCL_SHOW		*DEMO function ON/OFF*	*OK*

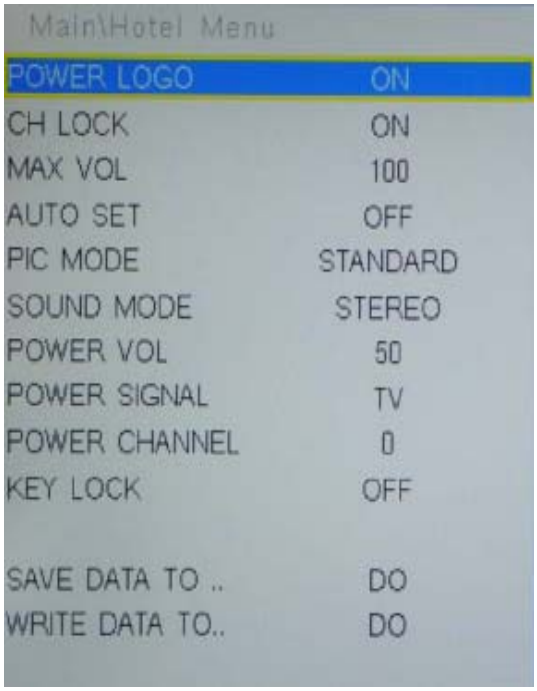
3.5 PARAM SETTING MENU



Press the ▲ ▼ button in remote control to select certain item and ◀ ▶ to enter menu.

PARAM SETTING MENU (Setting menu)			
Name	**Default**	**Description**	**Status**
Brightness Curve	*>>>*	*Brightness curve. Exclusively used by R&D.*	*OK*
Contrast Curve	*>>>*	*Contrast curve. Exclusively used by R&D.*	*OK*
Saturation Curve	*>>>*	*Saturation curves. Exclusively used by R&D.*	*OK*
Hue Curve	*>>>*	*Hue Curve Exclusively used by R&D.*	*OK*
Volume Curve	*>>>*	*Volume curve. Exclusively used by R&D.*	*OK*
Backlight Curve	*>>>*	*Backlight curve. Exclusively used by R&D.*	*OK*
OverScan	*>>>*	*Overscan adjustment. Exclusively used by R&D.*	*OK*

3.6 HOTEL MENU



Press the ▲ ▼ button in remote control to select certain item and ◀ ▶ to enter submenu.

HOTEL MENU			
Name	**Default**	**Description**	**Status**
POWER LOGO	*ON*	*LOGO select*	*OK*
CH LOCK	*OFF*	*Channel scan lock.*	*OK*
MAX VOL	*100*	*Max volume*	*OK*
AUTO SET	*OFF*	*The switch of PIC, SOUND etc.* *When it is ON, these items are selectable.*	*OK*
PIC MODE	*Standard*	*Picture mode.*	*OK*
SOUND MODE	*STEREO*	*Sound mode*	*OK*
POWER VOL.	*50*	*Default volume when power on*	*OK*
POWER SIGNAL	*ATV*	*Default signal source when power on*	*OK*
POWER CHANNEL	*0*	*Default channel no. when power on*	*OK*
KEY LOCK	*OFF*	*Lock the keys.*	*OK*
SAVE DATA TO	*DO*	*Save the settings of Hotel Menu to USB*	*OK*
WRITE DATA TO	*DO*	*Copy the settings of Hotel Menu from USB*	*OK*

4. The steps of debugging

4.1 Device

Color Analyzer CA-210. Video Pattern Generator Chroma2329. Color TV Pattern Generator PM5418, VGA cable, AV cable(RCA),YPBPR(RCA) cable.



Chroma2329



Fluke5418



CA-210

4.2 steps of debugging:

According to the requirement of order, we suggest take the below steps to finish the appropriate settings.

A enter the **Factory Menu**, enable **FAC HOTKEY**

B Check the version of software, release date displayed at the bottom of **Factory Menu**. If the information is correct, you can ignore step C and D.

C Enter **Factory Main Menu**, choose **SERVICE MENU->PROJECT ID,** choose corresponding Project ID number of the product (Please refer to the description in BOM about Project ID number).

D return to **Factory Menu**, check the Product model.

E choose **Factory Menu-> NVM RESET** and press ▶ and wait until prompt OK appears.

F restart the set

G according to the requirement of order, set the items of Shop Menu and Hotel Menu etc.

H After aging under normal temperature, calibrate ADC and adjust white balance.

I choose **Factory Menu-> SHOP INIT** and press ▶ button of remote control to initialize the set.

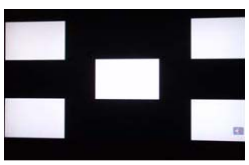
Note: after **step I** (execute **SHOP INIT**), **Hotel Menu** will be disabled by default. Therefore, if order requires hotel function, it is necessary to enable hotel function by set **Factory Main Menu-> Service Menu->HOTEL ENABLE** to **ON.**

4.3 ADC Calibration

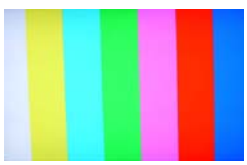
Ⅰ.signal and generator

VGA: Chroma2329 Pattern42, Timing 14(1024x768@60Hz 5 MOSAIC)

YPBPR: Chroma2329 Pattern103, Timing 79(100% Color Bar, 720p)



5 MOSAIC



100% Color Bar

Ⅱ.steps of debug:

1) Access to the **Factory menu->ADC**

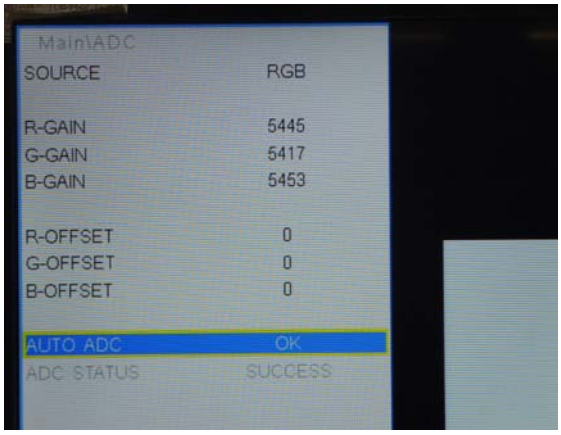
2) Select **PC** source

3) Select **AUTO ADC**, Press ▶ button in your remote control to calibrate the ADC automatically.

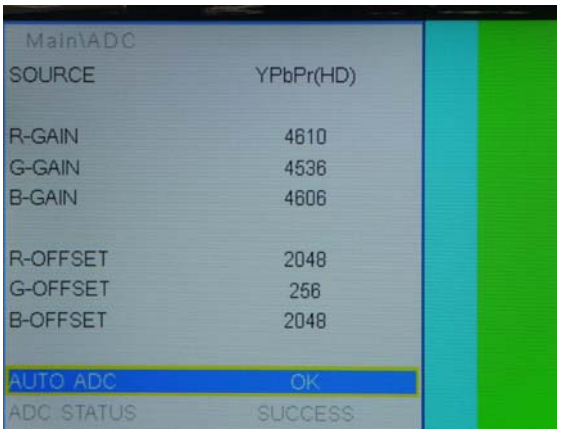
4) Select **YPBPR** source

5) Repeat step 3.

6) When the OK appears the calibration has been finished successfully.



VGA calibration



YPBPR calibration

4.4 White Balance adjustment (Manual)

Before adjustment, you must ensure Color Analyzer has been calibrated. Only AV1, YPBPR, VGA , HDMI 1 need to be adjusted. It is necessary to adjustment HDMI 1 firstly.

a. signal and generator

The pattern of the signal should be used are White (Chroma2329 pattern113) and Grey (pattern 114).The format of signal are respectively 720p for HDMI1 (Chroma2329 Timing 69), NTSC for AV1 (Chroma2329 Timing 37),1024×768@60Hz

(Chroma2329 Timing 14) for VGA and 720p (Chroma2329 Timing 79)for YPBPR

b. steps of adjustment

1) enter the **factory menu->WHITE BALANCE**, select source **HDMI 1** and **COLORTEMP normal**.

2) input grey signal in 720p format

3) change **R OFFSET** and **B OFFSET** to make sure the value of color coordination equal to the value required by enterprise standard (x, y).

4) input white signal in 720p format

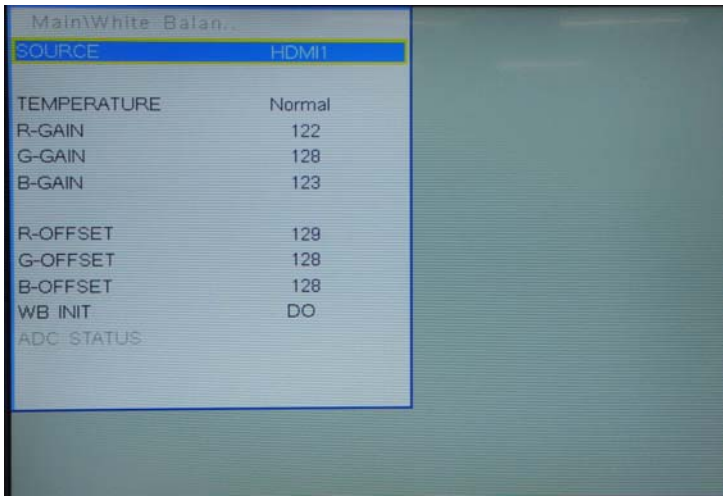
5) change **R Gain** and **B Gain** to make sure the value of color coordination equal to

(x, y).

6) repeat step 2~5 until both of the value of color coordination of white and grey equal to (x, y).

In addition to select **COLORTEMP COOL/WARM,** the adjustment method of **COOL** and **WARM** color temperature is same with that of **NORMAL**. The color coordination we recommend is as follows:

Device：CA-210； Accuracy：±0.015				
Model		WARM	NORMAL	COOL
L28E3500	X	0.294	0.277	0.256
	Y	0.305	0.293	0.268
L24E3500	X	0.280	0.265	0.250
	Y	0.300	0.285	0.265
L24E3510F	X	0.290	0.270	0.248
	Y	0.310	0.292	0.278
L28E4100	X	0.282	0.267	0.250
	Y	0.291	0.280	0.257



HDMI White Balance adjustment

4.5 ADC Calibration and White Balance Adjustment (automatic)

The process of adjusting ADC and White Balance automatically is out of the range of this file. Please refer to the relevant technical file of HuiZhou factory of TCL

5. Chip list of software programming before SMT

Following chips must be programmed before SMT by ALL-11 or other tools.

	Position	Chip type	Chip name	Part number	Software description	Decal
1	U502	Flash	EN25Q32B	13-EN25Q3-2BBEO	main software	SO-8
2	U702	E2PROM	M24C32MN	13-M24C32-MNB	Tcon software	SO-8

Note:

1) The software for U502 and U702 can be program using ISP tool.

2) Every set has its unique HDCP key which is purchased from suppliers or HDCP certification authority. Please check HDCP function in the process of production.

3) Once in a while, the software of main board may be upgraded. Please pay attention to use the latest software before production.

Appendix:

1. Software upgrade through USB disk

1) Please ensure the software you are using has a correct file name **TCL_MS82_UPDATE.bin,** then copy it to the root directory of a USB disk.

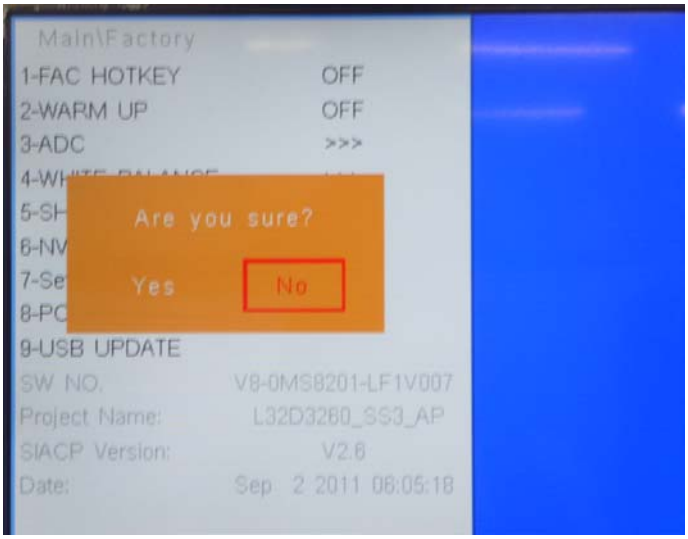
2) Insert the USB disk to the USB socket of the set for which you are going to upgrade program.

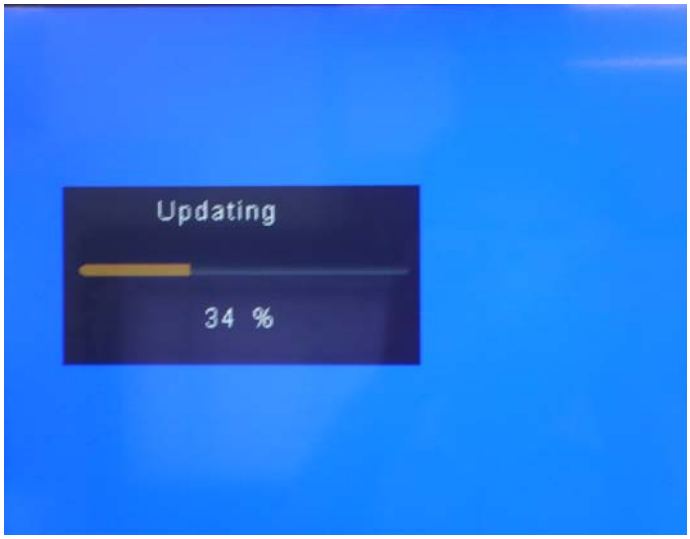
3) Enter the **Factory Menu** (you can choose either a or b way below**)**

a. In the first place, press **Menu** button of remote control, then select **Contrast** item of **Picture** submenu. Finally, press **9, 7, 3, 5** consecutively.

b. When the **Factory hotkey** item of **Factory Menu** is enabled (ON), press **Return** button of remote control.

4) select **USB UPDATE**, press ▶ buttonof remote control, a pop menu will appear prompting whether start upgradeor not. Press **Yes** to start upgrade, press **No** to canel. **Please wait patiently until the set restart automatically after upgrade. Do not cut off the power supply during the process.**





Upgrade Main Software

2. Check software version, release date and Project ID

After upgrading, sometimes you may not certain whether the new software has been successfully updated or not. In this case, you can check the software version and release date in **Factory Main Menu** to make sure the success of upgrading.

In addition, for the convenience of software management, many models of same chassis may share a same software, but are allocated with different Project ID.

In another words, every model has its unique Project ID. Obviously, Both software version and Project ID are highly critical to ensure the set work properly. Therefore, after upgrading software,we suggest you check these information by following method.

1) Enter the **Factory Main Menu**(you can choose either a or b way below

a In the first place, press **Menu** button of remote control, then select **Contrast** item of **Picture** submenu. Finally, press **1, 9 5, 0** consecutively.

b. When the **DESIGN HOTKEY** item of **Factory Main Menu** is enabled (ON), press **Return** button of remote control.

2) Check the version of software, release date displayed at the bottom of **Factory Main Menu**. If the information is correct, you can ignore step C and D.

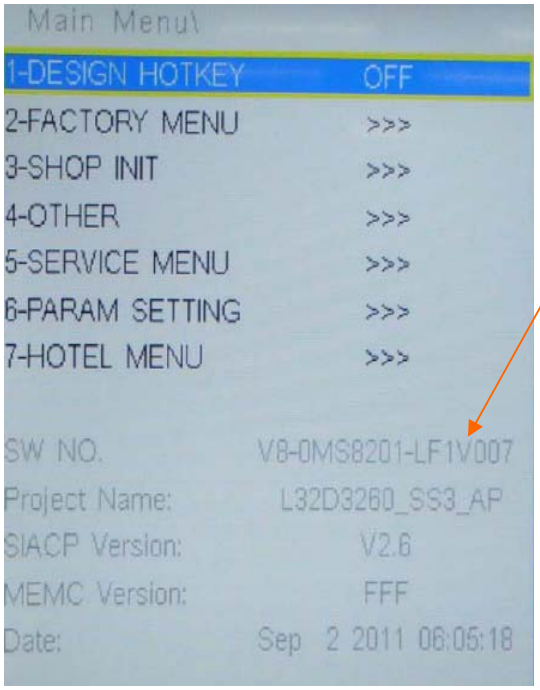
3) choose **SERVICE MENU->PROJECT ID,** choose corresponding Project ID number of the product (Please refer to the description in BOM about Project ID number).

4) choose **Factory Menu** and press **OK** button of the remote**.** Next, select **NVM RESET** and press ▶ and wait until prompt OK appears.

5) choose **SHOP INIT** and press ▶ button of remote control to initialize the set.

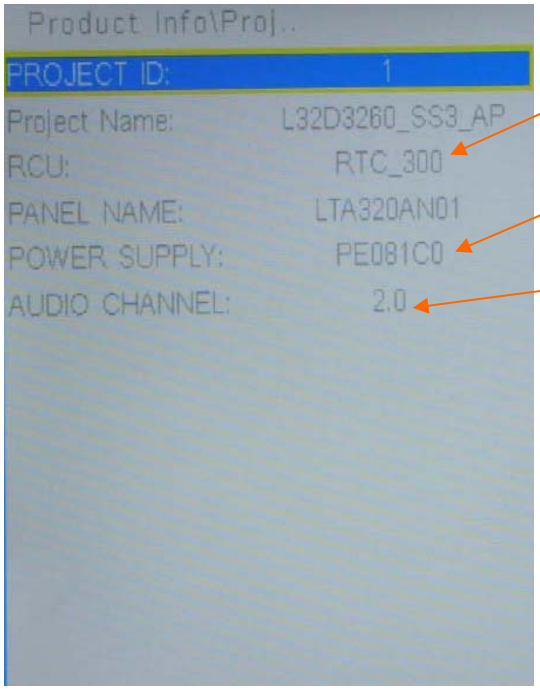
Note: after **step I** (execute **SHOP INIT**), **Hotel Menu** will be disabled by default. Therefore, if order requires hotel function, it is necessary to enable hotel function by set **Factory Main Menu-> Service Menu->HOTEL ENABLE** to **ON.**

6) restart the set.



Product Information

Check product information



Remote Control name

Power Supply name

Audio Channel number

Change project ID

3. FAQ

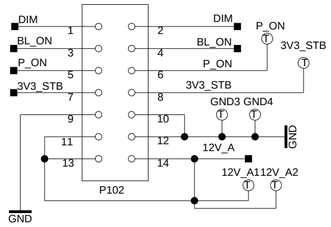
1) Why there is no picture after upgrading software or changing project ID?

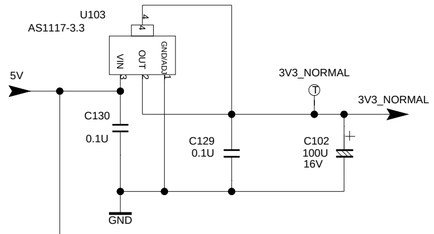
It may be caused by fault of project ID. You can try below method to fix the problem.

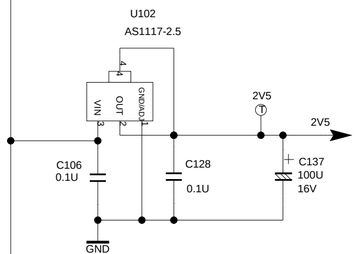
a. If the resolution of the panel of your set is 1366×768(HD panel), you can press Menu, ▶ and **4976** of remote control in series after turning on.

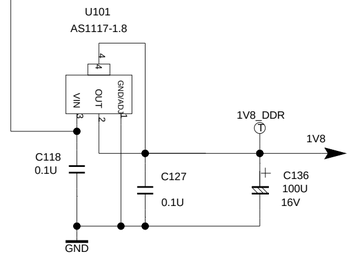
b. If the resolution of the panel of your set is 1920×1080(FHD panel), you can press Menu, ▶ and **4973** in series after turning on.

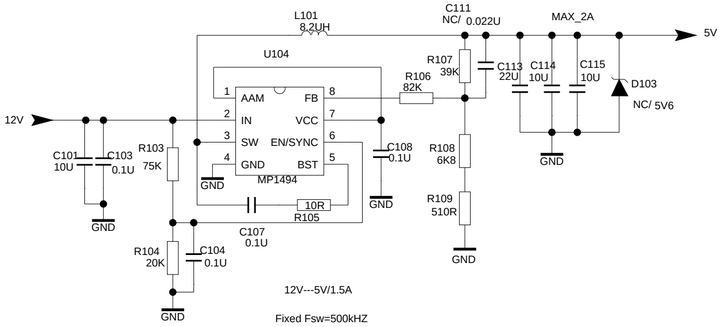
c. If you can see the picture at this time, please recheck the project ID again. If the project ID is still wrong, correct it reference to above description.

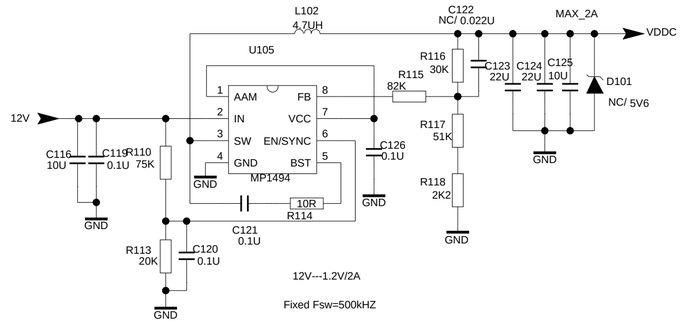


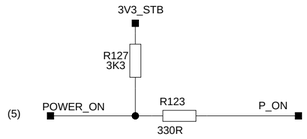


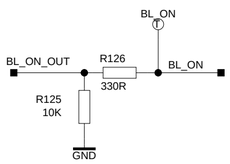


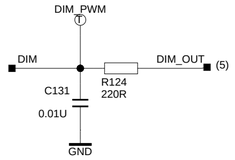


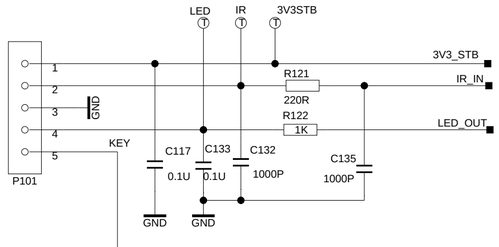


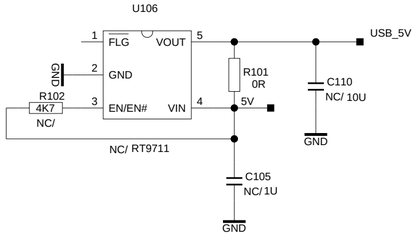


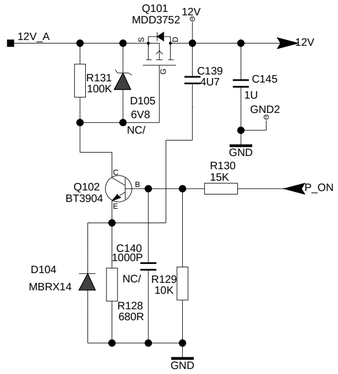


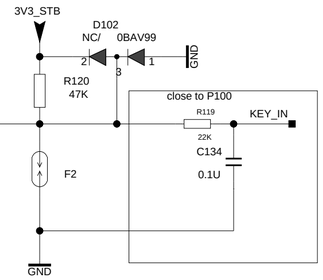












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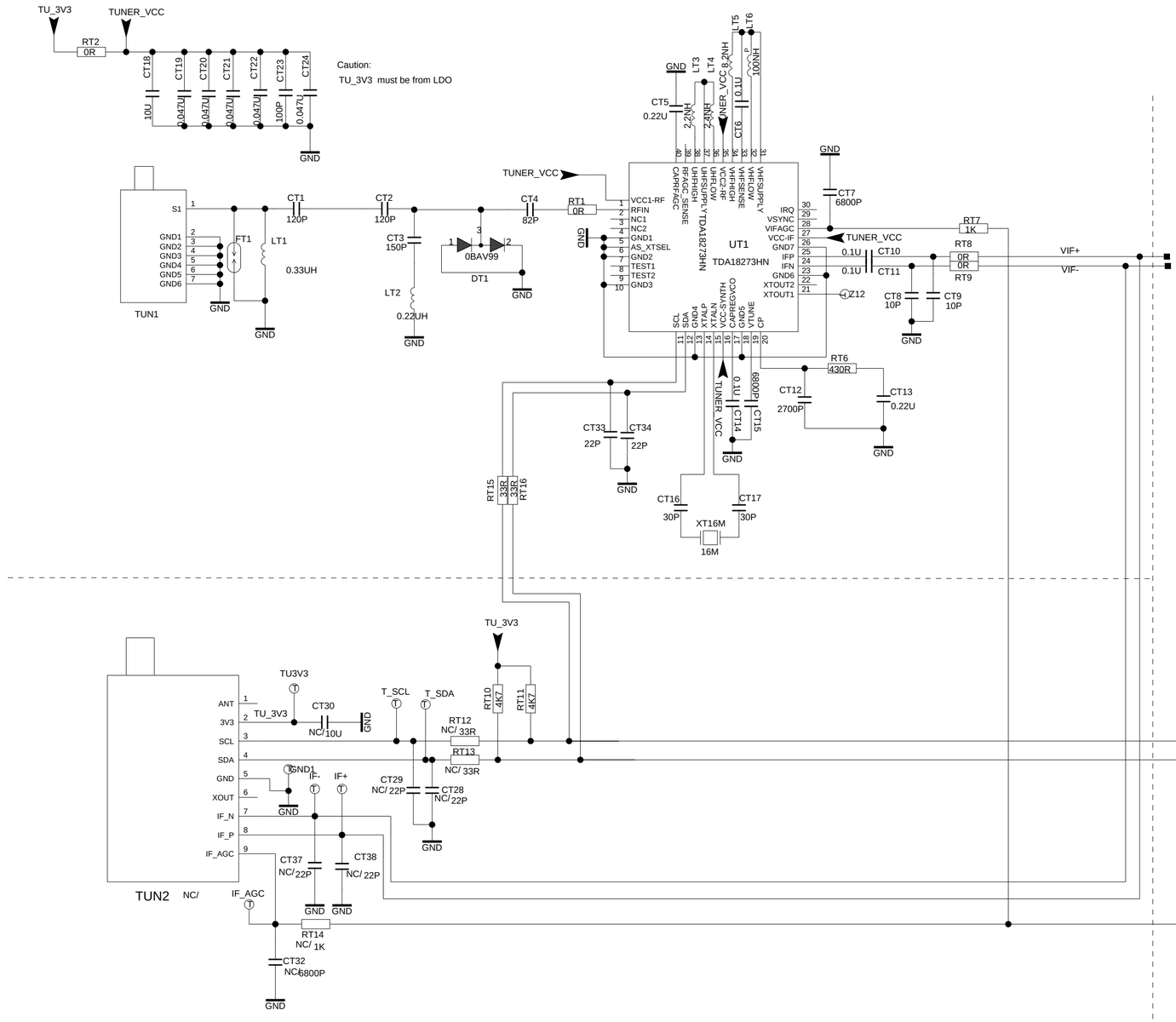
TCL Thomson Electronics Singapore Pte. Ltd.
8 Jurong Hall Road #28-01/06
The JTC Summit SINGAPORE 609434
Tel (65) 63092900 Fax (65) 63092999

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The JTC Summit SINGAPORE 609434
Tel (65) 63092900 Fax (65) 63092999

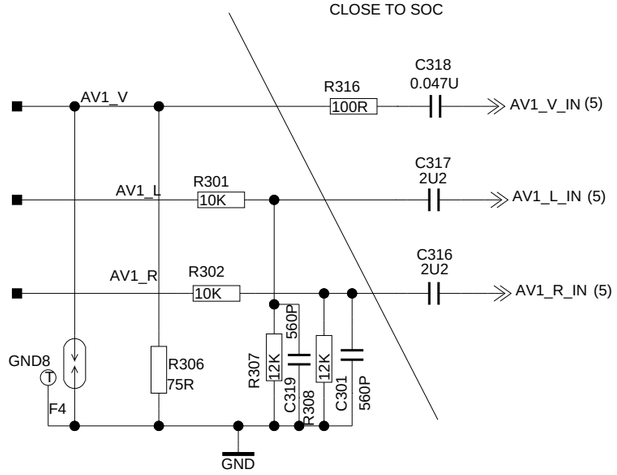
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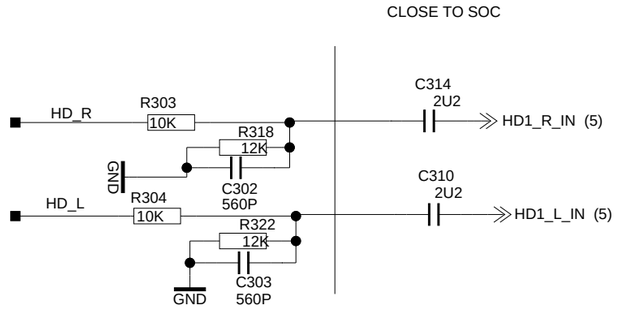
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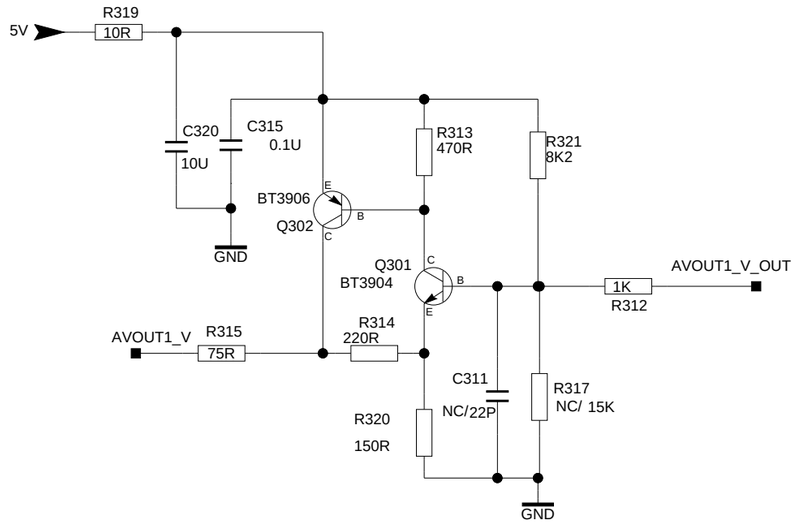
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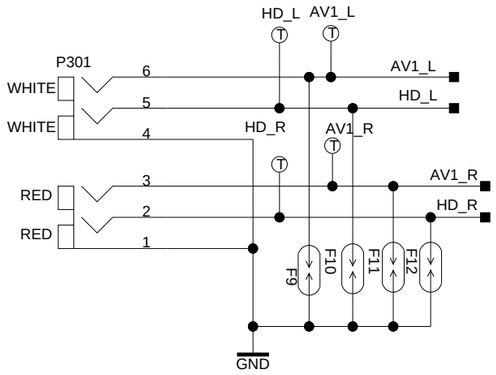


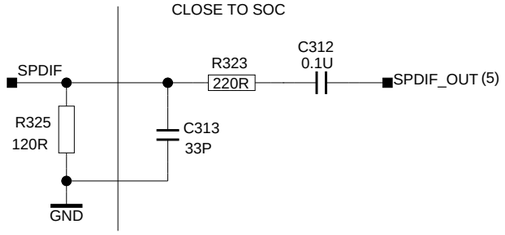
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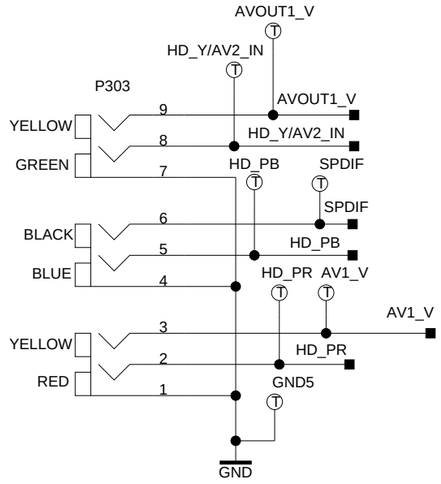


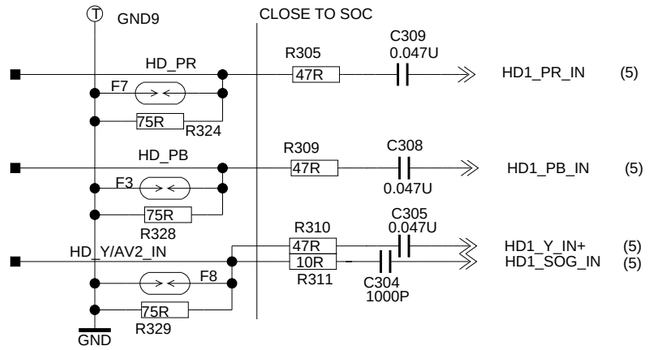


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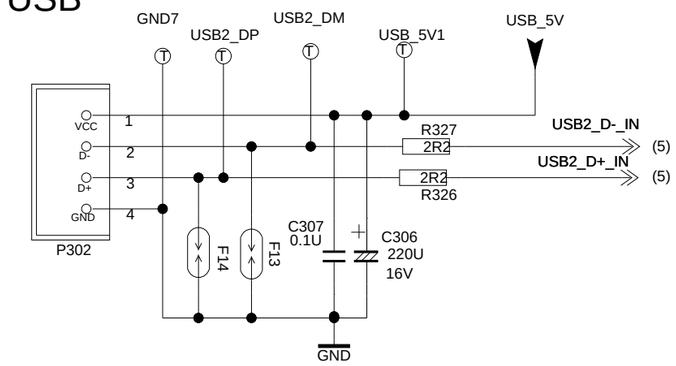








USB



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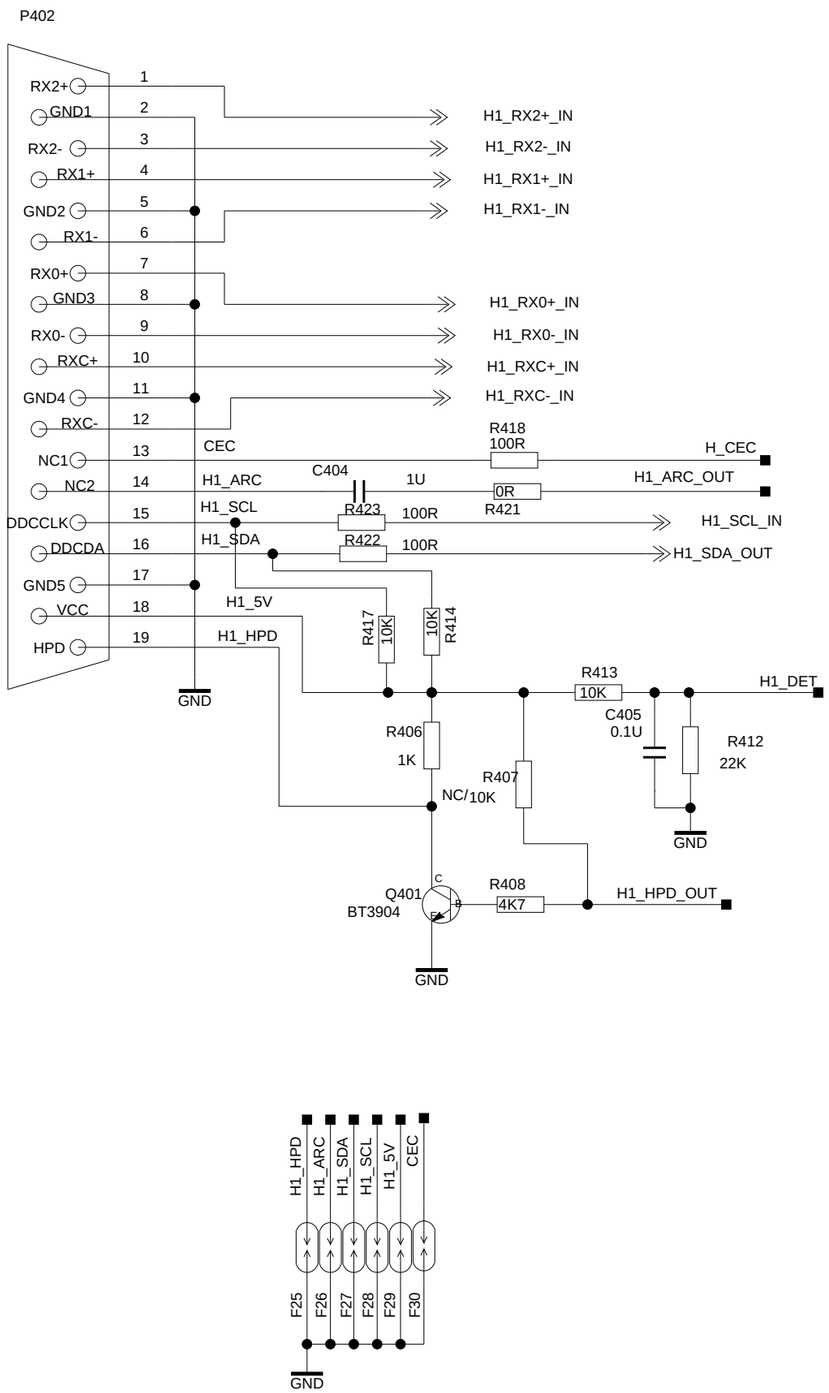
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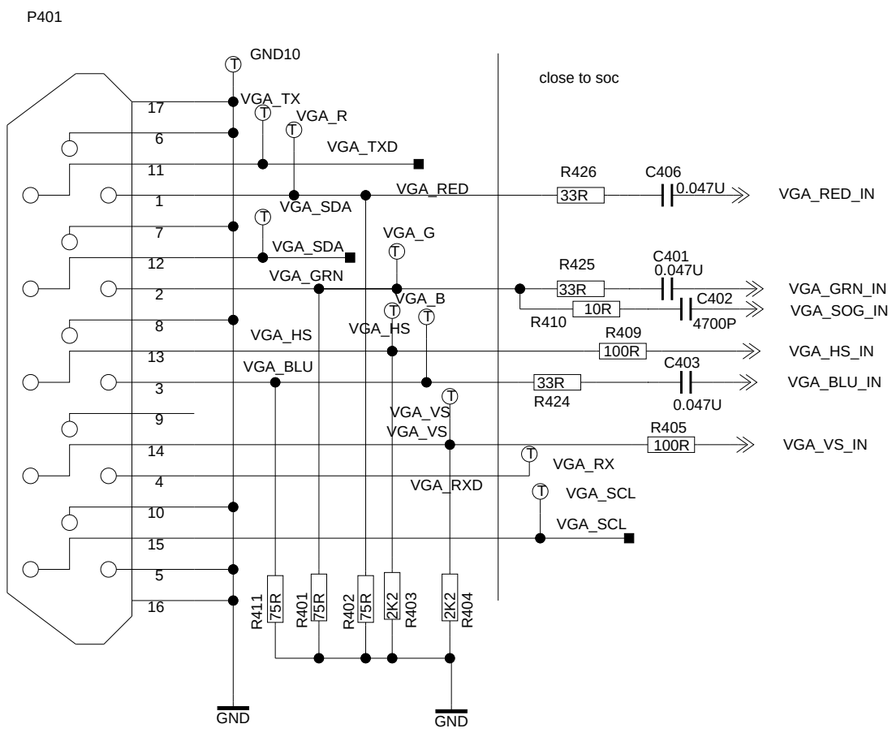
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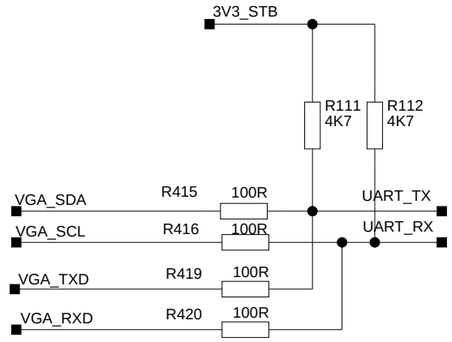
ADDRESS1
ADDRESS2
ADDRESS3
TELEPHONE

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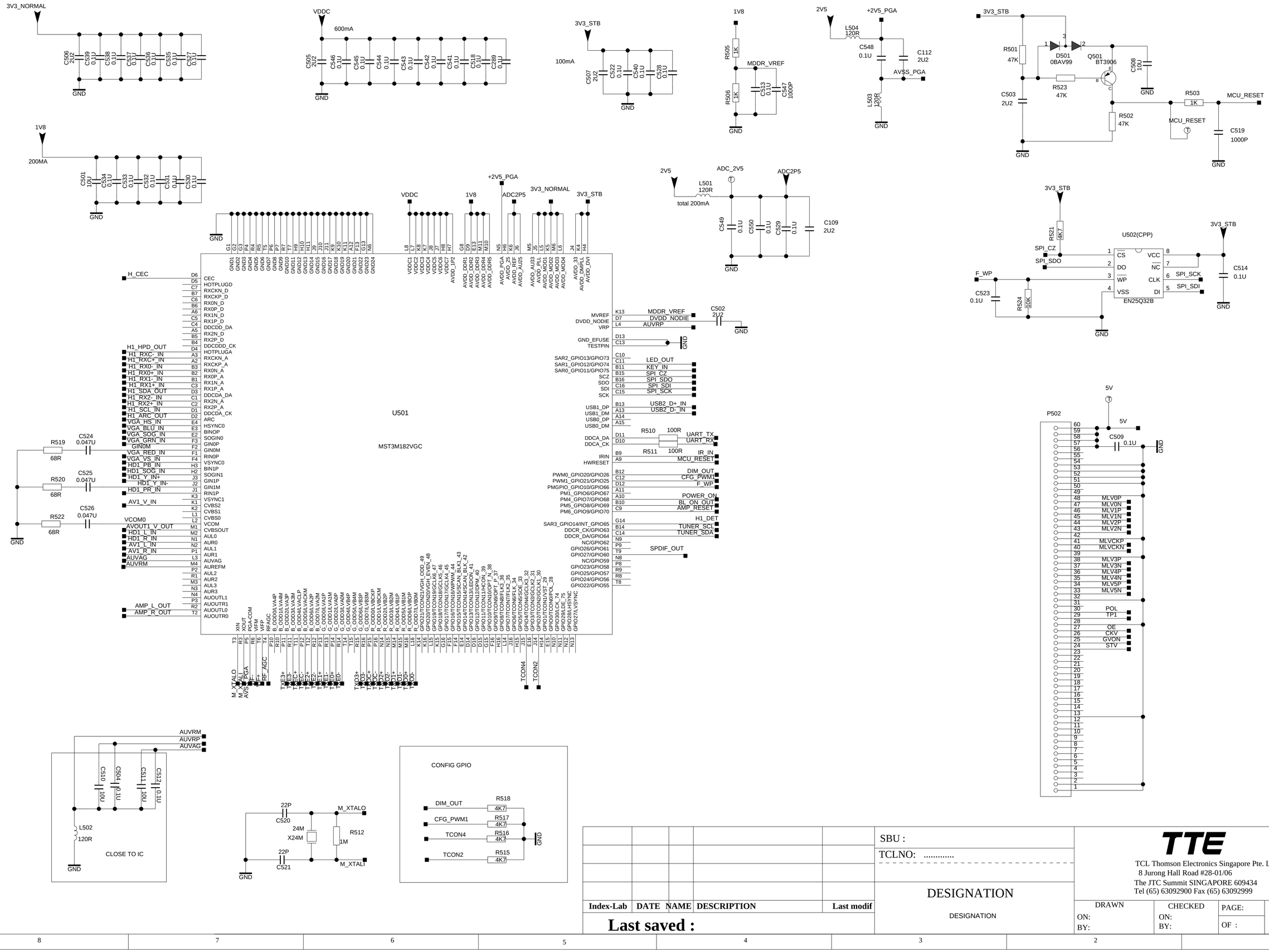
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DESIGNATION

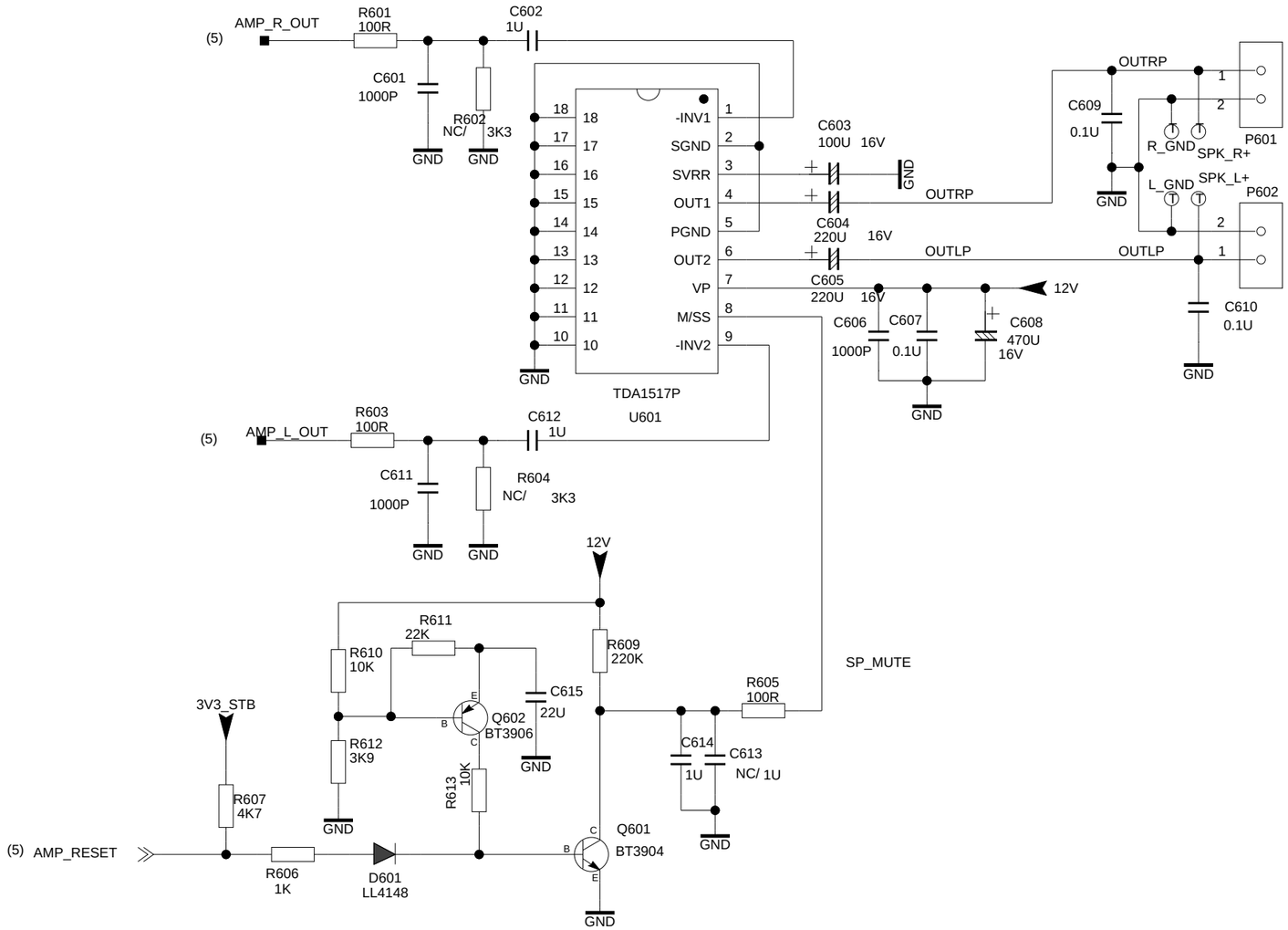
TTE

TCL Thomson Electronics Singapore Pte. Ltd.
8 Jurong Hall Road #28-01/06
The JTC Summit SINGAPORE 609434
Tel (65) 63092900 Fax (65) 63092999

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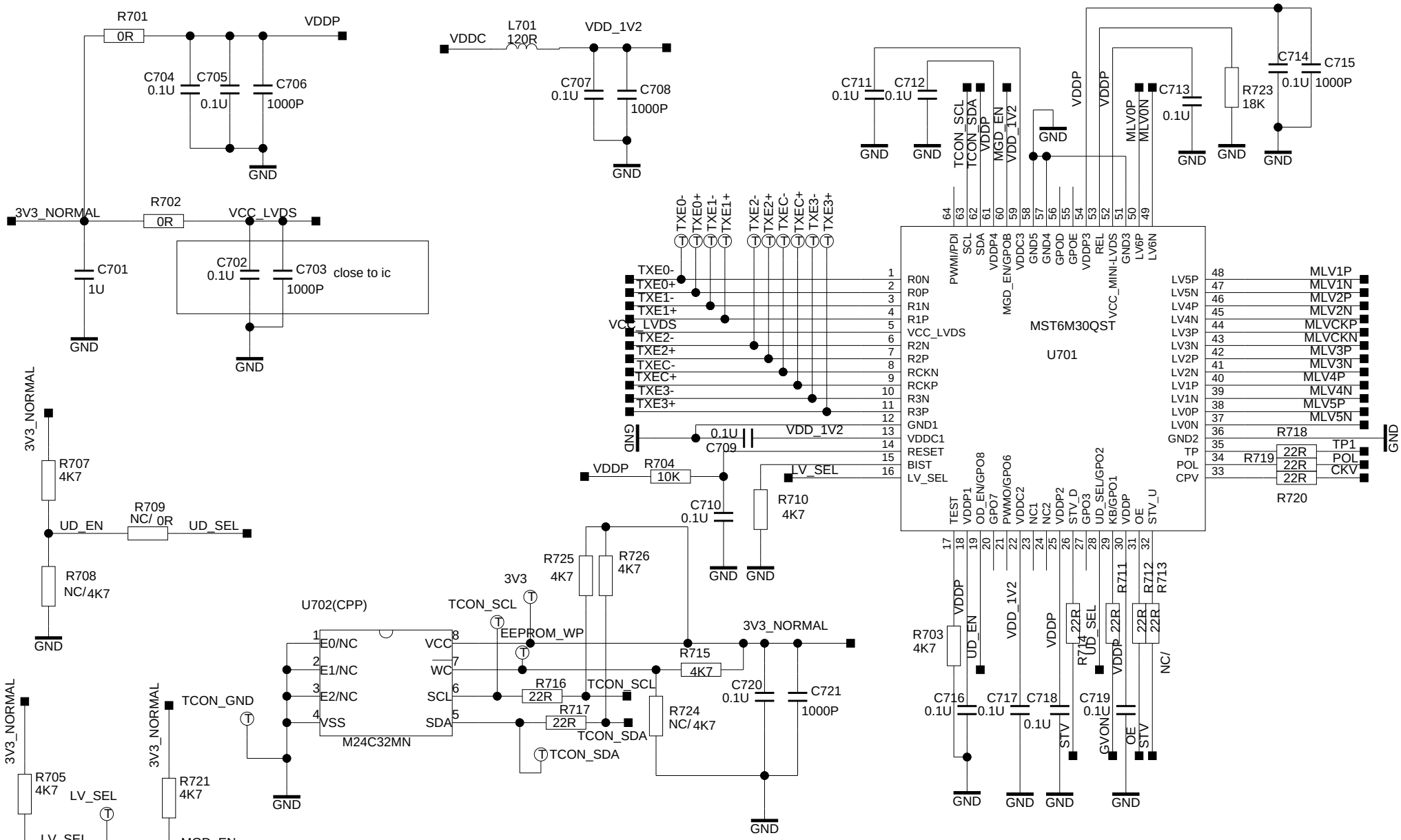
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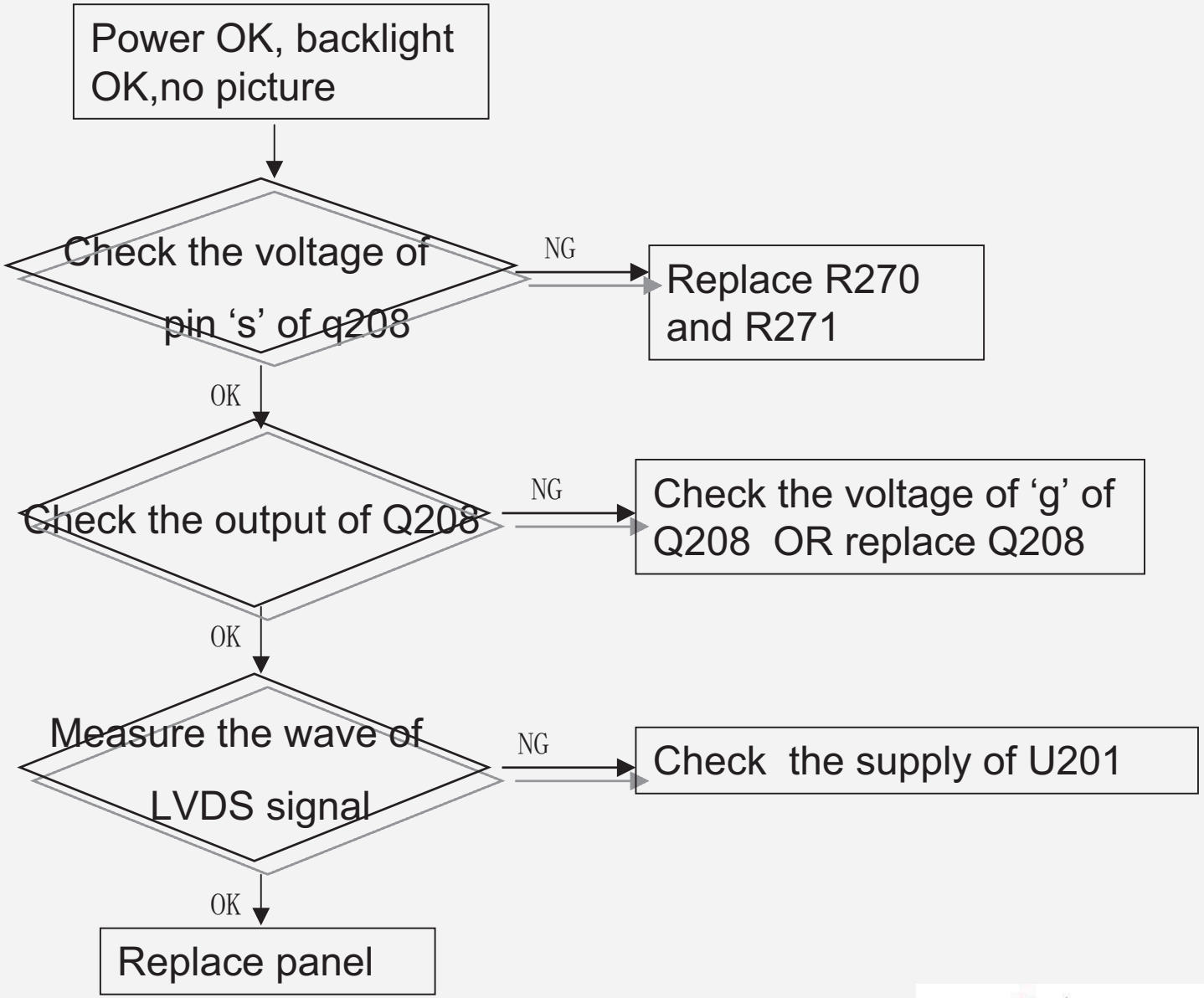
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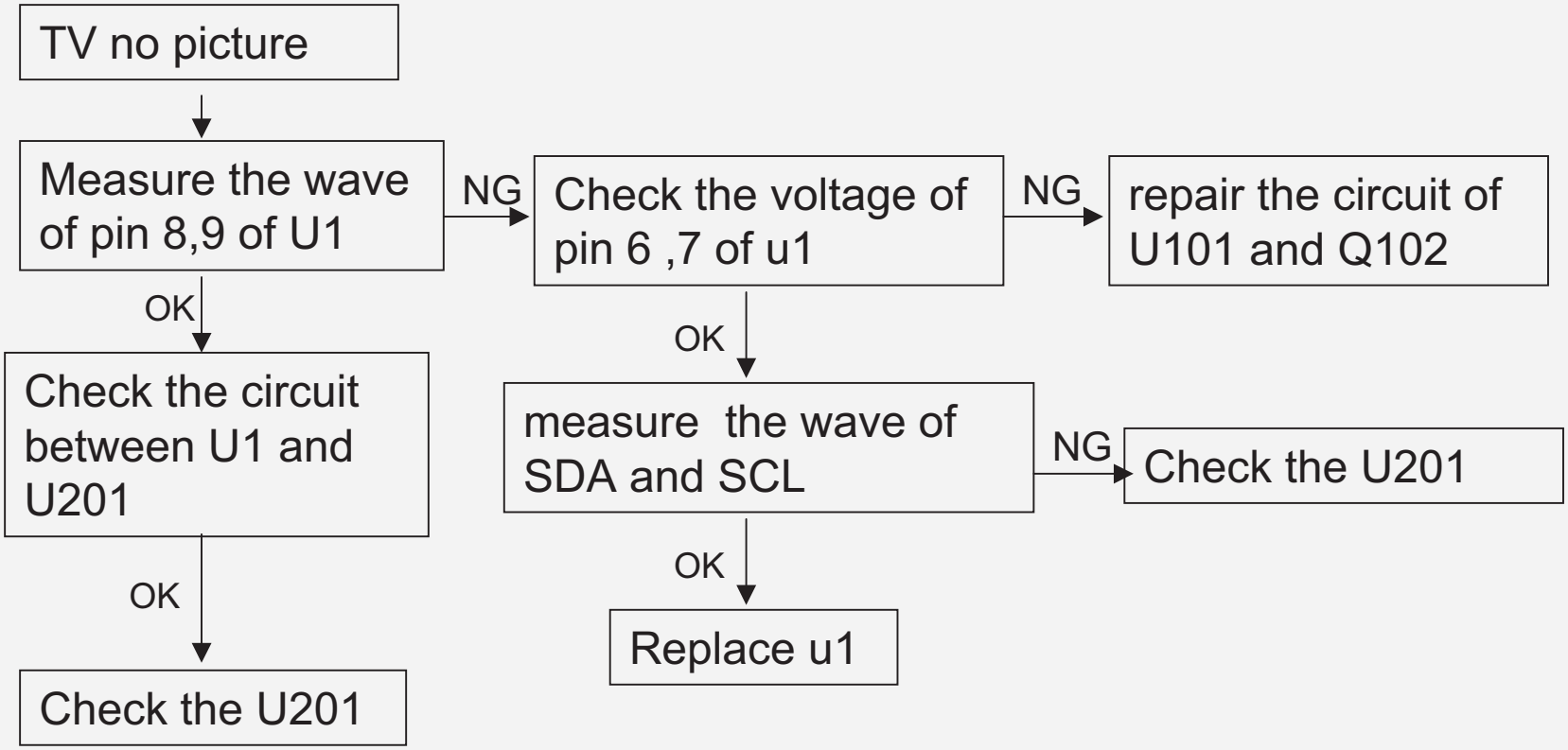
TCL Thomson Electronics Singapore Pte. Ltd.
8 Jurong Town Hall Road #28-01/06
The JTC Summit SINGAPORE 609434
Tel (65) 63092900 Fax (65) 63092999

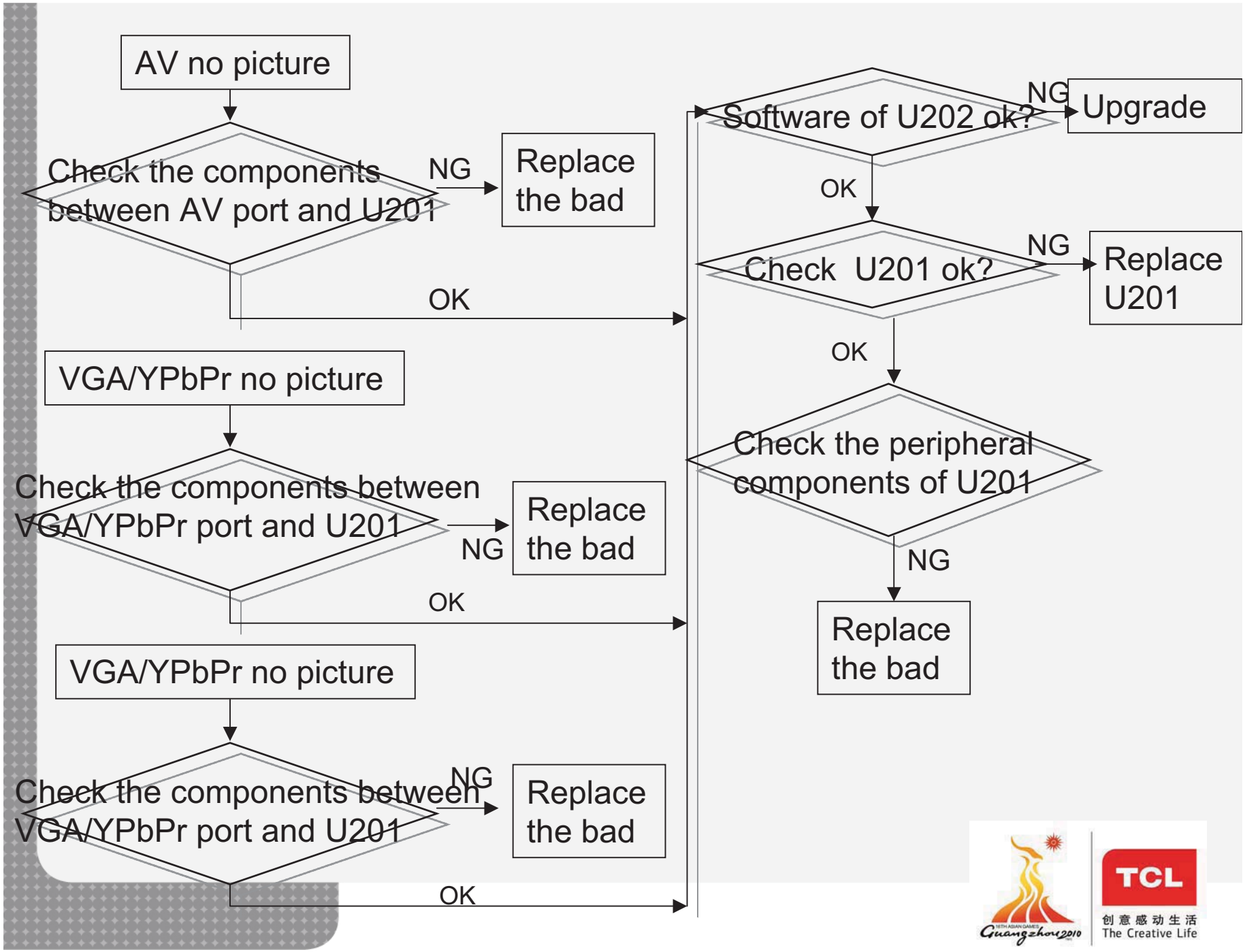
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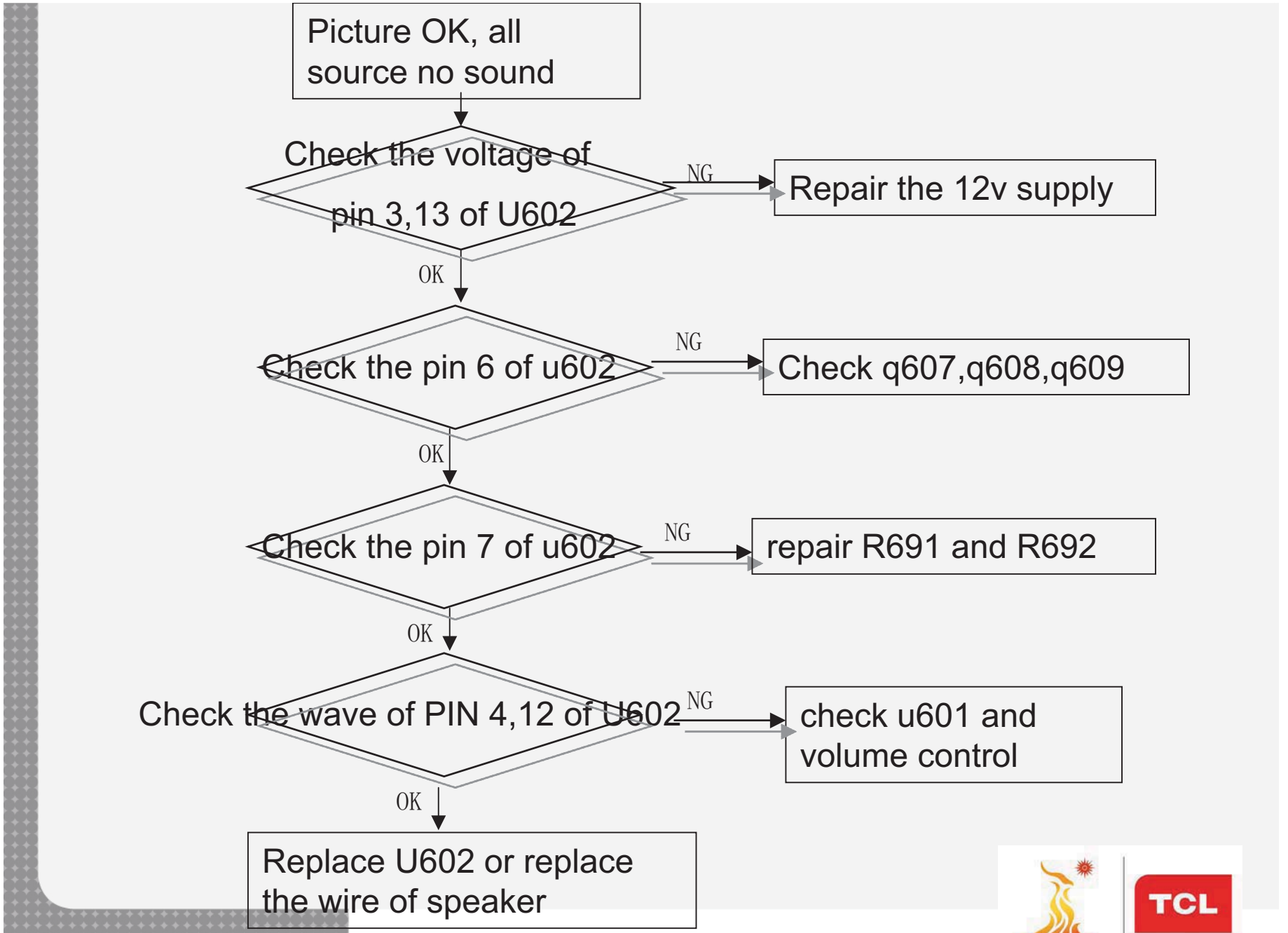
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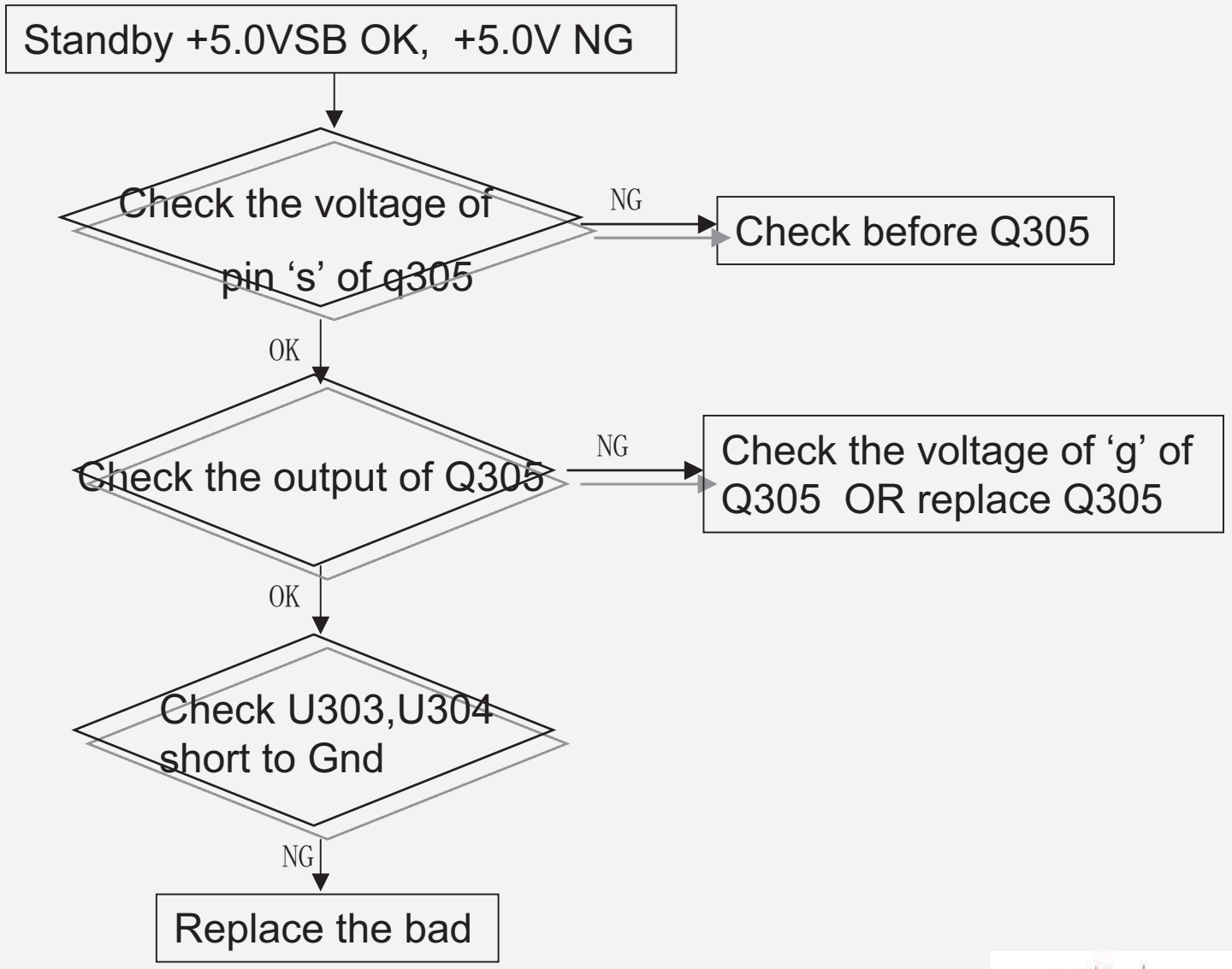

Power OK, backlight OK,no picture
Check the voltage of pin ‘s’ of q208
NG
Replace R270 and R271
OK
Check the output of Q208
NG
Check the voltage of ‘g’ of Q208 OR replace Q208
OK
Measure the wave of LVDS signal
NG
Check the supply of U201
OK
Replace panel


TV no picture
Measure the wave of pin 8,9 of U1
NG
Check the voltage of pin 6 ,7 of u1
NG
repair the circuit of U101 and Q102
OK
Check the circuit between U1 and U201
OK
measure the wave of SDA and SCL
NG
Check the U201
OK
Check the U201
OK
Replace u1

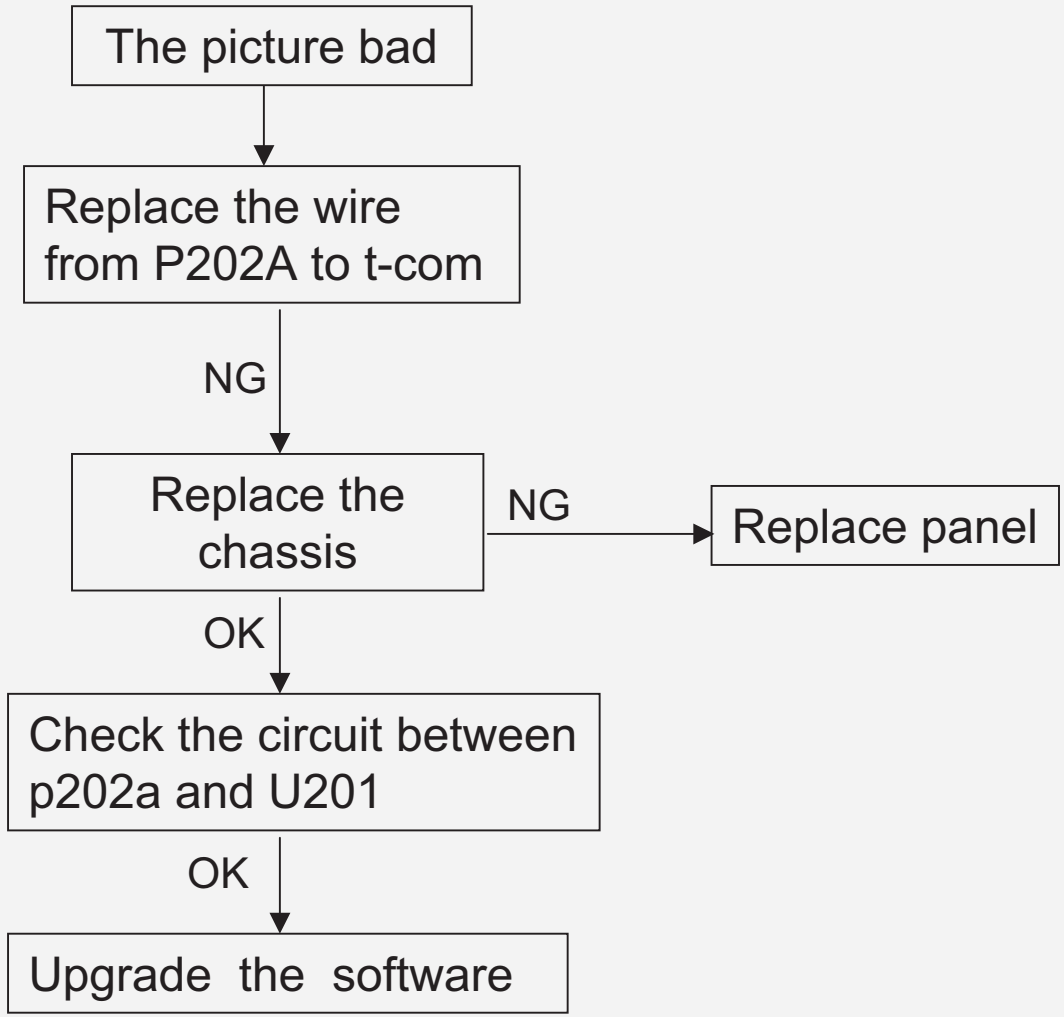

AV no picture
Check the components between AV port and U201
NG
Replace the bad
OK
VGA/YPbPr no picture
Check the components between VGA/YPbPr port and U201
NG
Replace the bad
OK
VGA/YPbPr no picture
Check the components between VGA/YPbPr port and U201
NG
Replace the bad
OK
Software of U202 ok?
NG
Upgrade
OK
Check U201 ok?
NG
Replace U201
OK
Check the peripheral components of U201
NG
Replace the bad



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