

Technical Guide

2015 – OLED TV

Model No. OLED-201510



Ver. 1.0

Panasonic®

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Revision History

Version	Issued/Revised date	Revised content
Ver. 1.0	6 th . Nov. 2015	First version

INDEX

1.Lineup and Function Comparison

2.About OLED

3.Board Layout

4.Video Signal Processing

5.SOS Protection Circuit and Troubleshooting

6.Set layout of OLED

7.Service & handling instructions for OLED

1. Lineup and Function Comparison

OLED TV Model Concept

- Strengthen Panasonic Brand image by this model. Introduce this model with consider about “CURVED” design Trend with our top level of picture quality and Smart functionality
- As reference position of Panasonic TV, pursuit of black performance based on self emitting device characteristic and also pursuit of thinness with advanced quality cosmetic design
 - Unmeasurable contrast and highest quality video performance based on self emitting device advantage
 - Stylish and high quality cosmetic design with 360 degree utilize with thinnest OLE device
 - Comply with basic 4K functionality such as HEVC, HDMI2.0(with HDCP2.2), and VP9

■ Target User

- The Customer who pursuit “NEW” trend for TV
- Cinema Lover who pursuit DEEPEST black performance

■ Unique Sales Point

1. Design
 - 360 degree design with thin and curved image
2. High Quality video/High function performance
 - Best Black reproduction based on self emitting device
Unmeasurable black reproduction
 - Dynamic Cinema
Realize wide dynamic range performance with deep black and White peak on OLED character
3. Function
 - Compatible with 4K IPTV(Netflix, Amazon, You tube)

■ Basic Function

- Model Name: TX-65CZ950E
- LGD Module w/5000R, One body type TV
- HEVC, VP9, 3D(Passive)
- Design oriented w/ALCANTARA material

■ Sales area

- Euro(B/E/W), Russia



LCD: black float



OLED: deep black



FRONT VIEW



REAR VIEW

Thin design
6.5mm at edge

New Model Number

Continental Europe

T	X	-	6	5	C	Z	9	5	0	E	*
T=TV (fixed)	H = Asia C = Americas X = Europe		Inch		Year	Series	Design/ Grade	Function/ Derived model		Country/ Region	(Extra)

<Year> : 1 digit alphabet (2014=A, 2015=C, ...)

<Series> : 1 digit alphabet (S=Smart, Non=no smart , X=4k, R=Curved 4k, Z=OLED)

<Design/Grade> : 3 digit number (hundred's digit =Design/Grade,
ten's digit and one's digit = function difference or derived model)

< Examples >

UK/Ireland

T	X	-	6	5	C	Z	9	5	2	B	*
---	---	---	---	---	---	---	---	---	---	---	---

DACH (Germany, Austria)

T	X	-	6	5	C	Z	W	9	5	4	*
---	---	---	---	---	---	---	---	---	---	---	---

Switzerland

T	X	-	6	5	C	Z	C	9	5	4	*
---	---	---	---	---	---	---	---	---	---	---	---

Russia

T	X	-	6	5	C	Z	R	9	5	0	*
---	---	---	---	---	---	---	---	---	---	---	---

Lineup and Comparison of the Functions (Europe/CIS)

		2014	2015	
Model Name		TX-65AX900E	TX-65CZ950E OLED	TX-65CR850E Curved LCD
SoC		Pro5+GCX2	Pro5+GCX2+MT5810	MT5810+GCX2
Function/ Easy Operation	My Home Screen	1.0	(No MHS, No Firefox OS)	2.0 powered by Firefox OS
	WiFi	N	Y	Y
	HDMI	4 ports	4 ports	3 ports
	SD Card	Y	N	Y
	DisplayPort	Y	N	N
	3D	Y(Active)	Y(Passive)	Y(Active)
	Multi Window	Y	Y(only Picture-and-Picture)	Y
	Mic/Camera/Sensor	Mic/Camera/Motion Sensor	N	Motion Sensor
Picture/Sound	Real 10bit	N	Y	N
	HDR	N	Y	N
	VP9 4K decode	N	Y(except Media Player)	Y
	Speaker System	18W Front Squawker 4W x2 Woofer 10W x1	60W Front Tweeter 10W x2 Box Bottom Sq 10W x2 Woofer 10W x2	40W Front Tweeter /Sq 10W x2 Woofer 10W x2
Design	Screen radius of curvature	Infinity(Flat)	Curved 5000R	Curved 4000R
	Pedestal	Slant type, arc	Upright, buffed slim pipe	Slant type, arc
	Cosmetic cover	N	Y (ALCANTARA fabric finish, detachable)	N

The detail lineup and specification are different in each countries.

2. About OLED

About OLED

■What is OLED?

OLED (Organic Light Emitting Diode)

Using an organic compound in the luminescent material, it is a kind of light-emitting element using a phenomenon called "Organic EL (organic electroluminescence)".

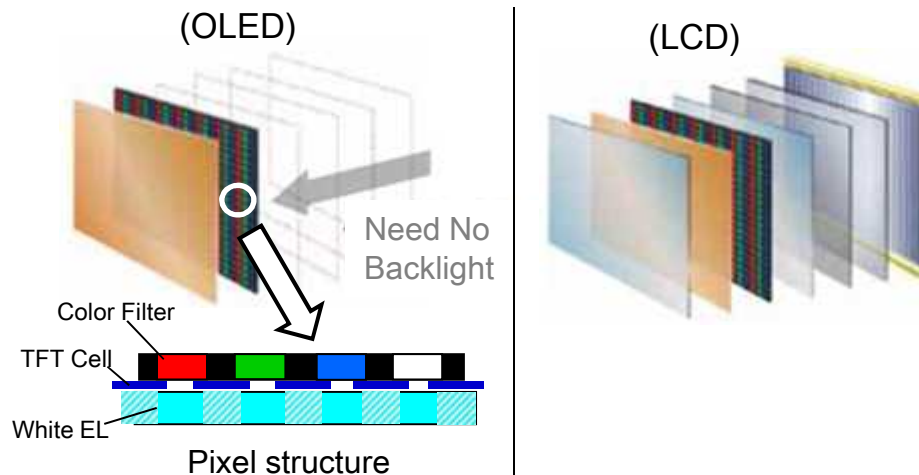
The OLED is deposited organic materials to electrodes formed on a glass substrate, has a sandwiched structure with the electrodes, it is able to control the intensity with the current flow from the electrode.

Compared to the LCD, the advantages are,

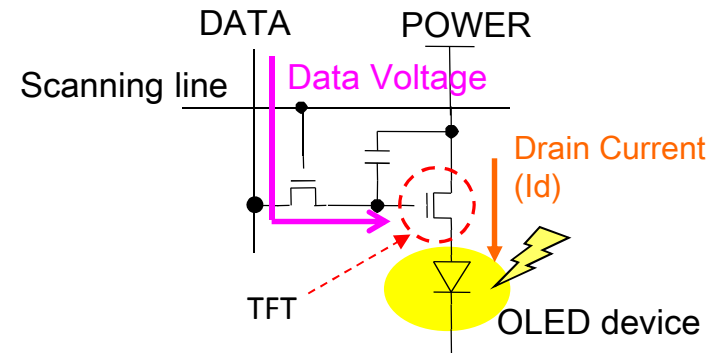
- ① Contrast improvement by self-luminous
- ② Lower power consumption
- ③ Excellent Response speed

■Panel structure

Slim & light-weight without backlight



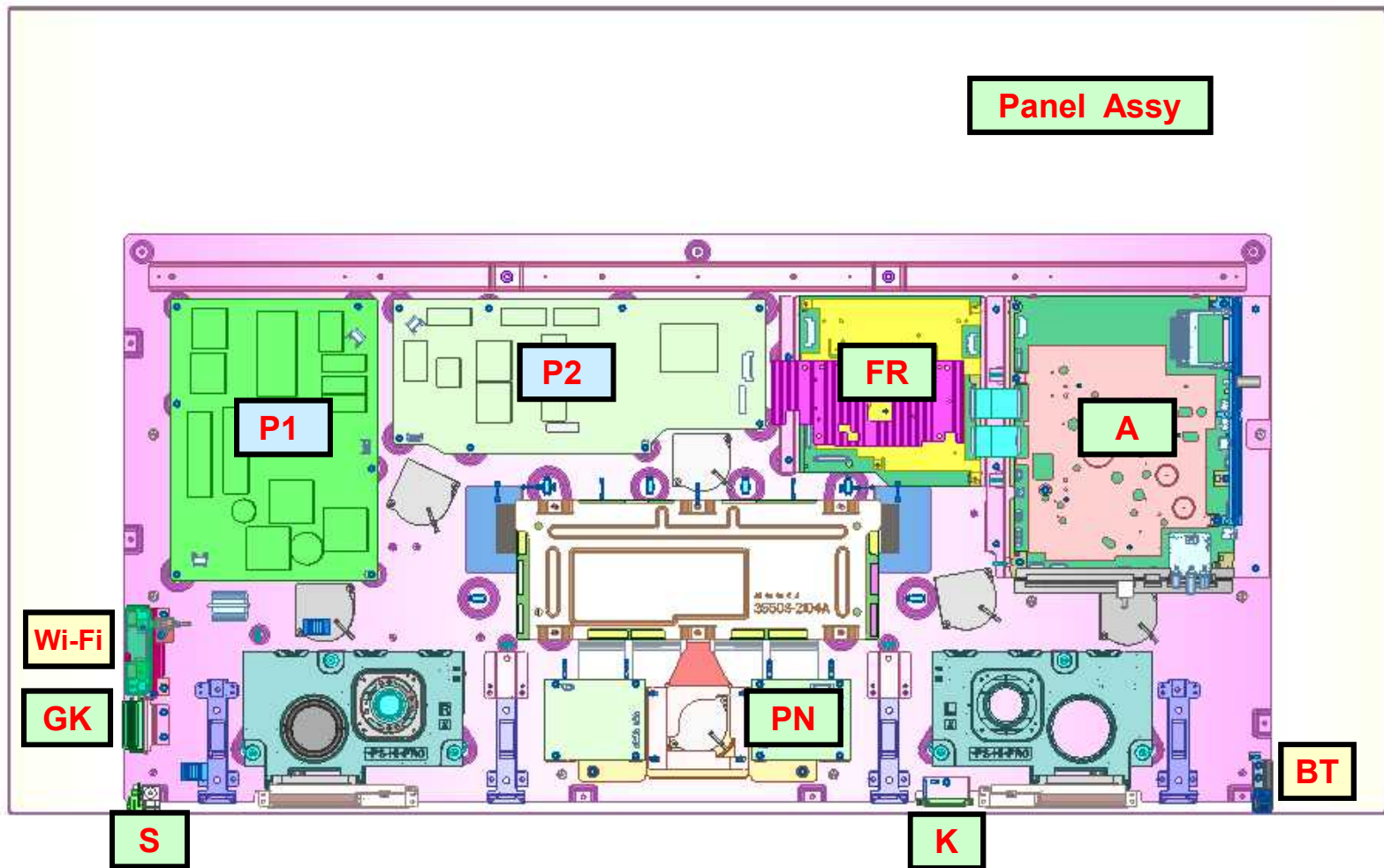
■Light-emitting theory of OLED



Each voltage supplied to "data line" and the "power line" makes TFT "ON", the current flows to the OLED device and it emit light. Brightness of the device is controlled by the current value.

3. Board Layout

Board Layout (CZ950 series)



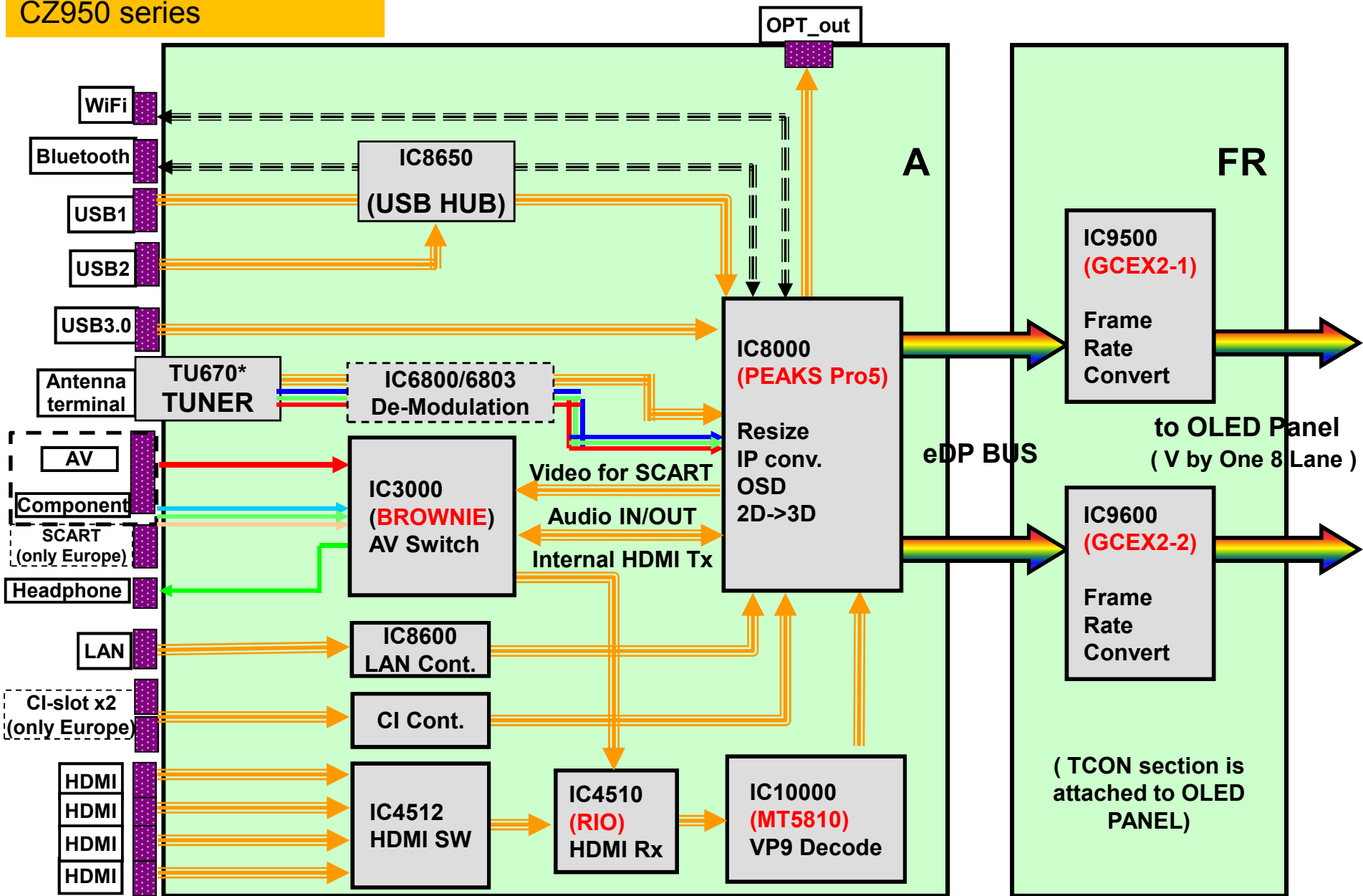
Board Name	Function
A-Board	Main Board
P1-Board	Power supply (not repairable)
P2-Board	Power supply (not repairable)
PN-Board	Temperature Sensor

Board Name	Function
FR-Board	Image processor (GCX2), Audio AMP
K-Board	Remote Receiver, Power LED, C.A.T.S
GK-Board	Control Buttons
S-Board	Main Power Switch

4. Video Signal Processing

Video/Audio Signal Process

CZ950 series



The input terminals are different by the models or countries.

5. SOS Protection Circuit and Troubleshooting

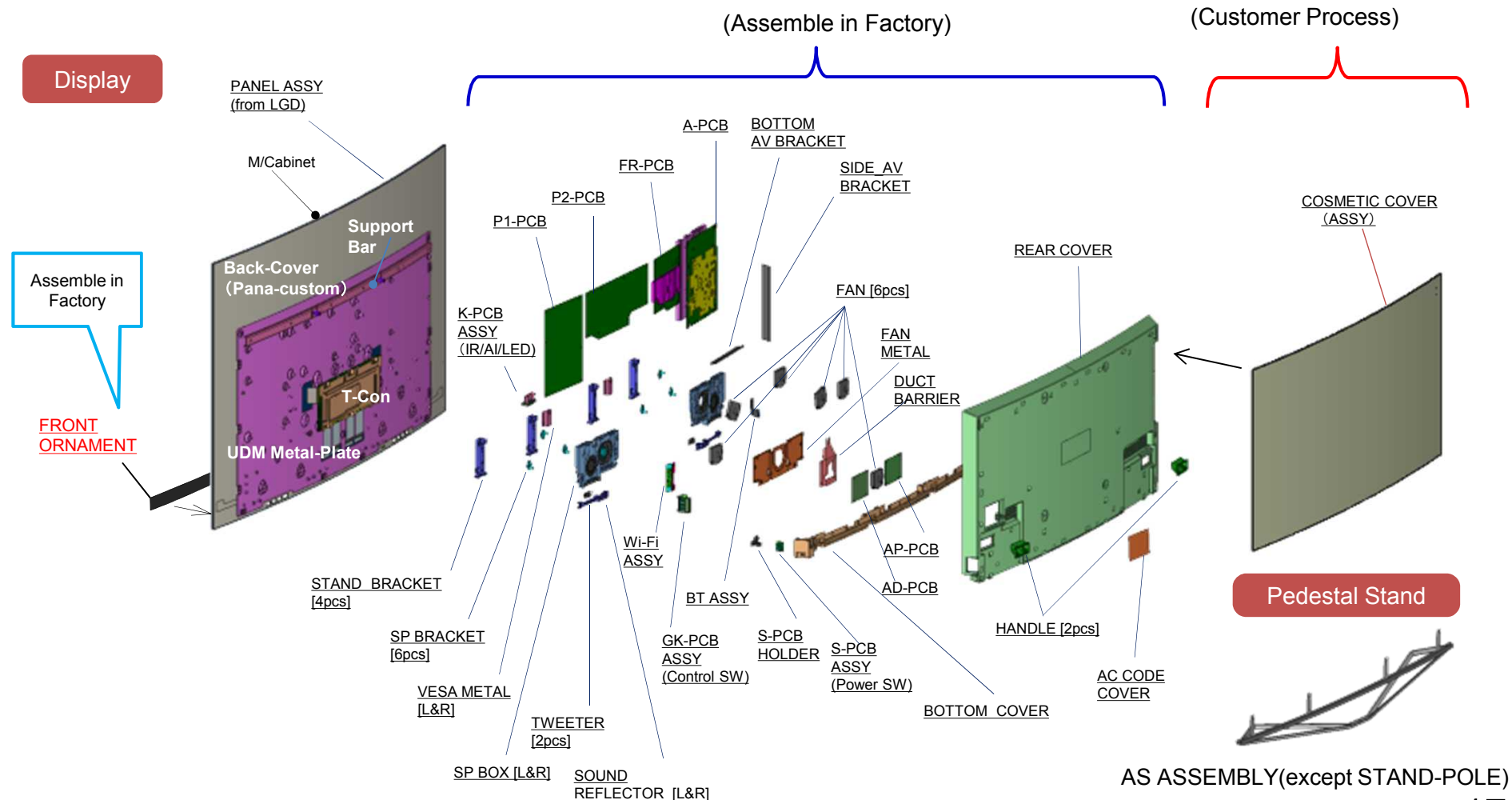
SOS table of TX-65CZ950 series

LED (times)	Failure	Estimated Failure parts	Note
1	Panel_SOS	OLED panel	New
2	EVDD(24V)_SOS	OLED panel / P2 board	New
7	SUB 3.3V_SOS	A board/ P2 board	=AX900
8	Power_SOS	P2 board	New
9	SOUND_SOS	A board/ Speaker	=AX900
10	GCX_SOS (GCEX2 initialization error)	FR board	=AX900
13	Emergency SOS	A board	=AX900

6. Set layout of OLED

Set layout

- ◆ Put COSMETIC-COVER onto REAR-COVER by customer.
- ◆ OLED panel module is supplied as complete module.
[OLED-PANEL + MIDDLE-CABINET(AL/outline) + BACK-COVER + UDM-CHASSIS + T-CON]
FRONT-ORNAMENT is assembled in FACTORY.



7. Service & handling instructions for OLED

How to move OLED TV set, how to lay OLED TV set/panel

1. How to move OLED TV set

Two people are required to move the OLED TV set to prevent the panel from bending.

Due to large screen and thin design, OLED panel is weaker than other present TV set.

Handle at metal plate of the OLED panel.

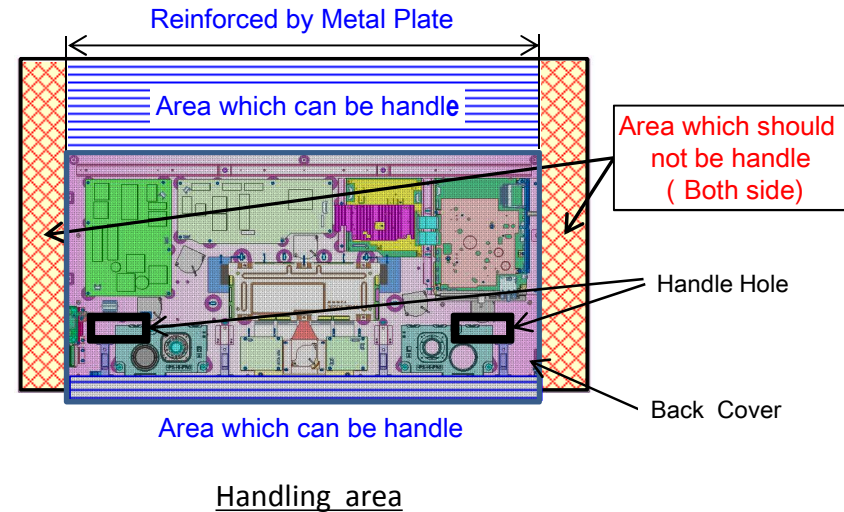
Due to weakness of OLED panel, do not handle at the area which is not reinforced by the metal plate.

Don't move the TV without Back Cover.

Prior to handle, please make sure that the Back Cover is fixed with at least four screws.

Handling the Bottom Cover will drop the TV set.

Use handle holes on the Back Cover.

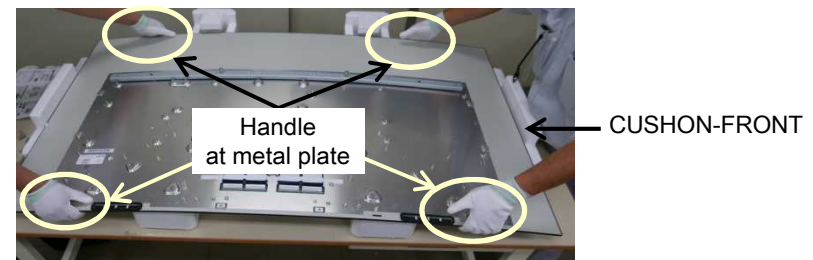


2. How to lay OLED TV set/panel

Handle at metal plate of the OLED panel.

Same reason as above.

CUSHON-FRONT is necessary for laying the OLED TV set or OLED panel on the table. (See next page also.)

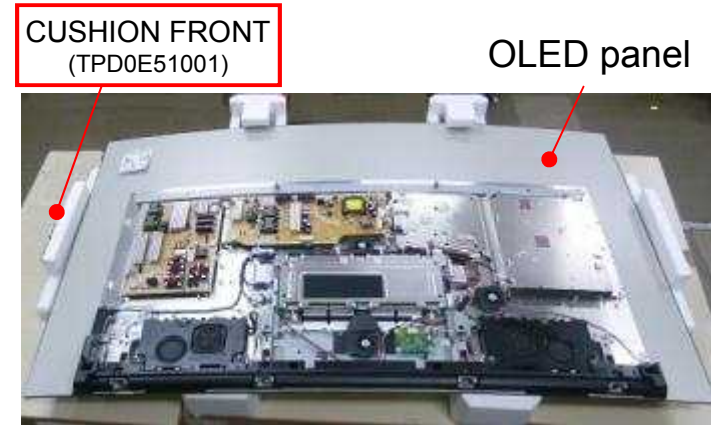


When laying the OLED panel

How to exchange OLED panel and Packing spec. of OLED repair panel

1. How to exchange OLED repair panel

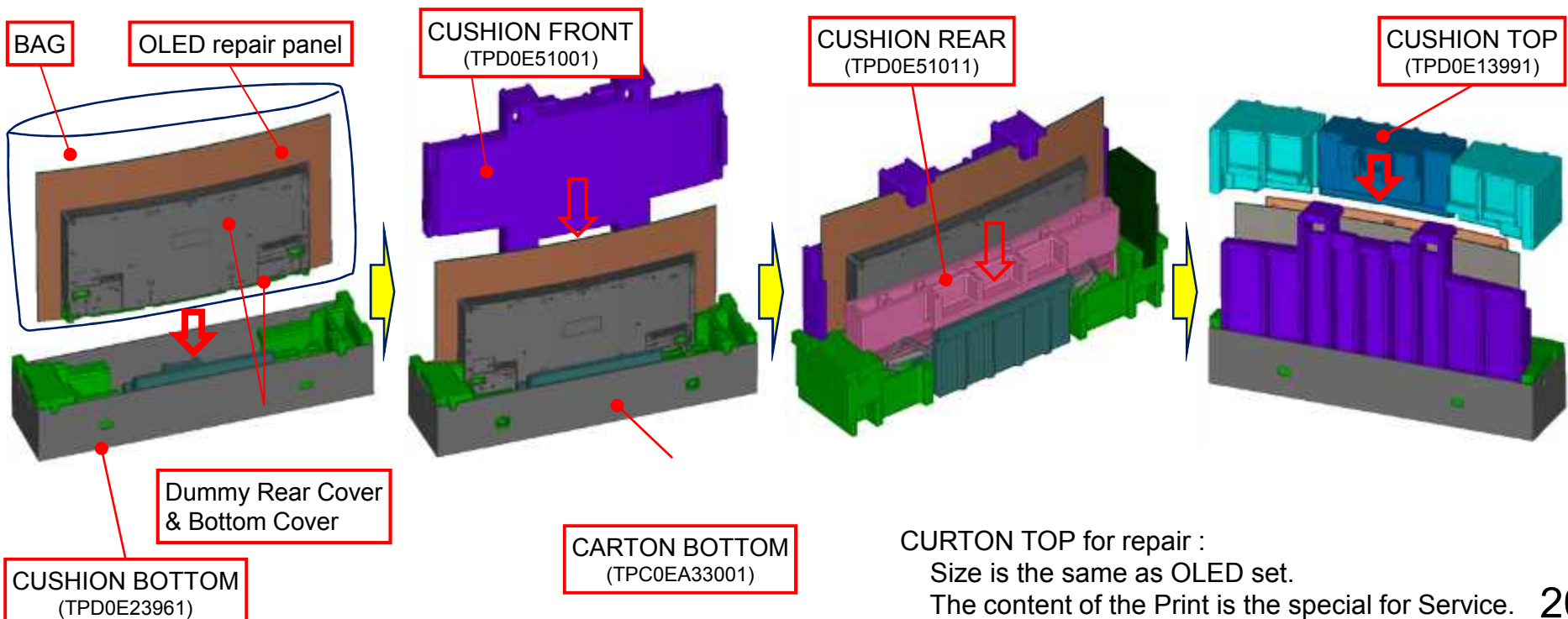
When exchanging OLED panel, place the cushion-front bundled in packing of OLED repair panel between the panel and the table to prevent the panel from bending.



How to put the OLED panel on the table

2. Packing of OLED repair panel

The packing specification for OLED repair panel uses one OLED set (TX-65CZ950) which includes CARTON BOTTOM and All cushions of OLED repair panel.



IC parts exchanged at the same time

- Combination of exchange IC simultaneously / CZ950 series

1. Pro5 IC(IC8000) + eMMC(IC8920) (=AX900)

When Pro5 IC (IC8000) is replaced, eMMC (IC8920) should be also replaced with new one the same time.

When eMMC (IC8920) is replaced, Pro5 IC (IC8000) is not necessary to be replaced the same time.

2. MT5810 IC(IC10000) + eMMC(IC14000) (New/ CZ950)

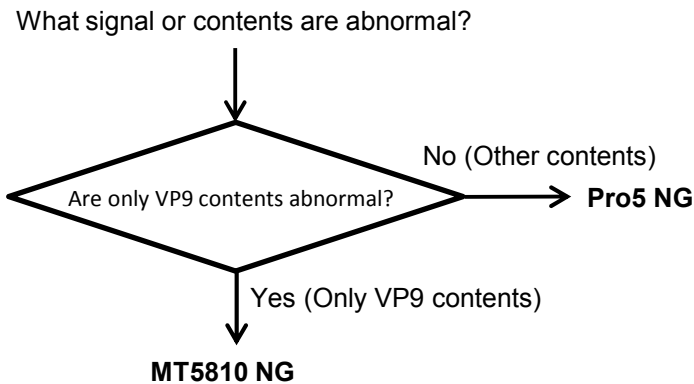
When MT5810 IC (IC10000) is replaced, eMMC (IC14000) should be also replaced with new one the same time.

When eMMC (IC14000) is replaced, Pro5 IC (IC10000) is not necessary to be replaced the same time.

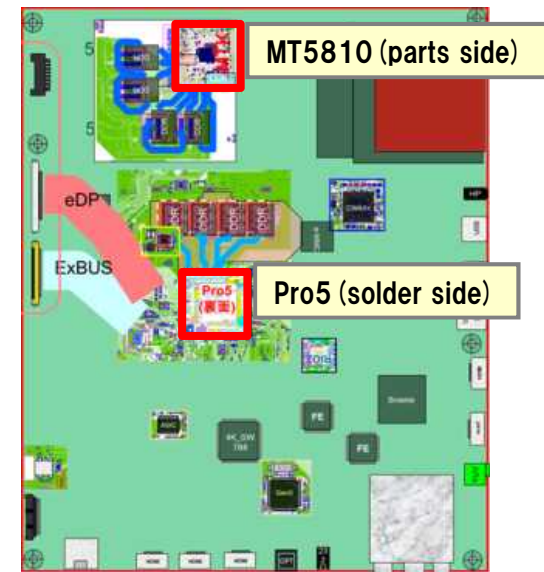
- How to re-encrypt after the replacement IC (=AX900)

After the replacement of IC (IC8000+IC8920, IC10000+IC14000), SELF CHECK with factory shipment setting should be done.

How to diagnosis between Pro5 and MT5810



* Only VP9 contents are played back by using MT5810.



Selfcheck (Changing items from AX900)

- (1) Add the information of Easter
 - (1-a) software/EEPROM /LSI-DATA version
 - (1-b) result of Device Check
- (2) Delete inch/panel type information

<How to display SelfCheck MENU> (=AX900)

- Self-check indication only:
Panel Vol - + remote control “Blue” button
- Self-check indication and forced to factory shipment setting:
Panel Vol - + remote control “Menu” button (Press>=3sec)

(2) e.g. 50FHD → deleted

SELF CHECK FAILED

H14TUN	OK	PEAKS-SOFT	3. 040	MODEL ID	0b
H15TUN2	OK	PEAKS-EEP	01. 07. 0005		03000101
H90STBY	OK	LSI-PACKAGE	0. 014		00004000
H30AVSW	OK	LSI-RELEASE	1. 09		
H07TEMP	OK	STBY-SOFT	1. 02. 00		
H17LAN	OK	STBY-EEP	1. 00. 33bd		
H00FE	OK	STBY-ROMCOR	0. 00. 00		
H00SAT-TU	OK	GCX DATA	a4010201		
H96ID	OK				
H97ID2	OK				
H45BT	OK				
H42WIFI	01				
H03FAN	OK				
H36GCX	OK				
H37GCX2	OK				
H71TCON	OK				
H80HDMISW	OK				
H81HDMISW2	OK				
H92MEM1	OK				
H91MEW2	OK				
H00LAN	OK				
H00ID3	OK				

Add Soft Ver MT5810 (Easter)

Add key for MT5810 (Easter)

delete

Device Check area

Version

Other (model id & SOS history)

Delete “H52CAMERA” form AX900

< (1-a) Information of Easter side>
 DEC-SOFT : MT5810 version
 DEC-EEP : MT5810 EEPROM version
 LSI-PACKAGE :LSI-PACKAGE version
 LSI-RELEASE :LSI-DATA version
 STBY-SOFT :STBY(uP) version
 STBY-EEP :STBY(uP) EEPROM version

*If PRO5 can not get these information,
 “-----” is displayed instead of version.

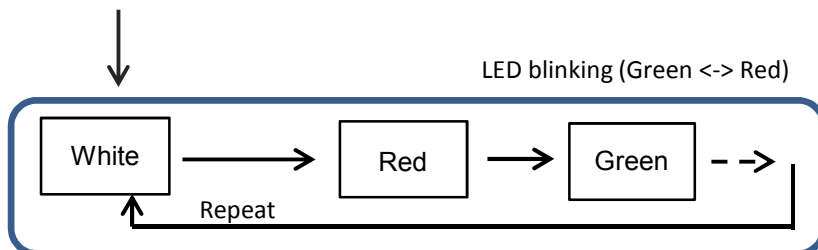
< (1-b) Result of Device Check of Easter>
 H00LAN :ether device & MAC address check
 (A-board)
 H00ID3 :DTCP-IP KEY check (A-board)

OLED Panel Test mode

You can diagnose a failure(abnormal picture) of CZ950 series
by using Panel test mode of OLED (Panel Free Run mode and FR test mode)

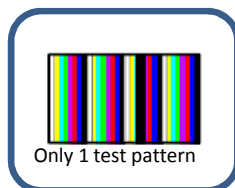
How to enter : While pressing [VOLUME (-)] button of the main unit,
press [YELLOW] button of the remote control three times.

Panel Free Run
(=AX900)



How to move : Press [OK] button of the remote control three times.

FR Test mode
(=AX900)



Only 1 test pattern

Condition :

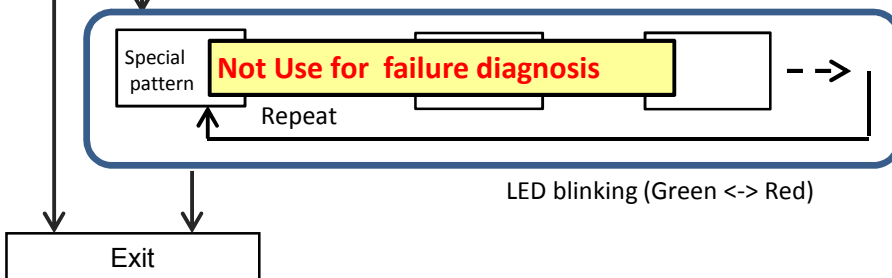
The input of the signal is essential for display of FR test pattern.

In case of no signal , FR test pattern will not be able to be displayed.

LED blinking (Green <-> Red)

How to move : Press [OK] button of the remote control three times.

New Panel Free Run
(OLED special mode)
* Not use for diagnosis



How to exit : Switch off the power with the [POWER] button on the main unit
or the [POWER] button on the remote control..

How to diagnosis (=AX900)

(Symptom)

Picture : abnormal

Sound : normal

Enter Panel Free Run mode

Panel Free Run mode

Still abnormal picture
is displayed on test pattern
of Panel free run

Yes

OLED panel NG

No (picture: normal)

FR Test mode

Abnormal picture
is displayed
on FR test pattern

Yes

FR board NG

No (picture: normal)

A board NG