

SONY®

HD CAMERA INTERFACE UNIT

HFU-X310

SERVICE MANUAL

1st Edition

⚠ 警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

Laser Diode Properties

Wave length : 1310 nm
Emission duration : Continuous
Laser output power : 0.51 mW (max.)

CAUTION

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

CAUTION

The use of optical instruments with this product will increase eye hazard.

CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

This HD Camera Interface Unit is classified as a CLASS 1 LASER PRODUCT.

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Manual Structure

Purpose of this manual

This manual is the service manual for HD Camera Interface Unit HFU-X310.
This manual is intended for use by the trained system engineers and service engineers, and describes information on the premise of component level service.

Relative manuals

Besides this service manual the following manuals are available for this unit.

- **Operation Manual (Supplied with this unit)**

This manual is necessary for application and operation of this unit.
Part number: 3-869-794-XX

- **CD-ROM Manual (Supplied with this unit)**

This manual contains the Japanese, English, French, German, Italian, and Spanish operation manuals (PDF) of HFU-X310.
Part number: 3-869-953-XX

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**

This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in B&P Company equipment.
The service manual contains a list of semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
Part number: 9-968-546-XX

- **Service Manual HFBK-HD1 (Available on request)**

Contains the information on the premise of component level service of the optional board HFBK-HD1.
Part number: 9-968-161-XX

- **Service Manual HFBK-SD1 (Available on request)**

Contains the information on the premise of component level service of the optional board HFBK-SD1.
Part number: 9-968-162-XX

- **Service Manual HFBK-XG1 (Available on request)**

Contains the information on the premise of component level service of the optional board HFBK-XG1.
Part number: 9-968-187-XX

Section 1

Installation Overview

1-1. Power Supply and Power Cord

1-1-1. Power Supply

The switching regulator is used for the power supply of this unit.

Power requirements: 100 to 240 V AC, 50/60 Hz
Current consumption: 0.60 A max. (With 2 optional boards and the RM-B750 Remote Control Unit connected)

1-1-2. Recommended Power Cord

This unit does not come with a power cord.

To get a power cord, please contact your local Sony Sales Office/Service Center.

Note

A power cord 1-551-812-11 is supplied for units to be shipped to the U.S.A.

WARNING

- Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
- Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).

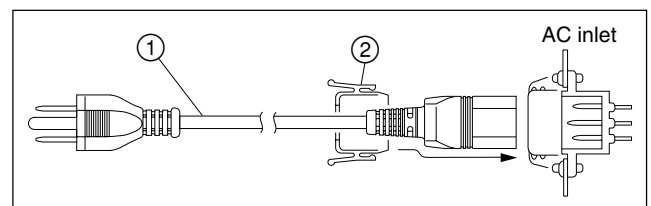
If you have questions on the use of the above Power Cord/Appliance Connector/Plug, please contact your local Sony Sales Office/Service Center.

WARNING

- Never use an injured power cord.

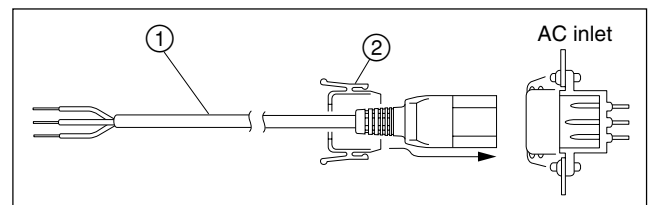
For customers in the U.S.A. and Canada:

- ① Power cord 125 V 10 A (2.4 m): △ 1-551-812-11
- ② Plug retainer: 2-990-242-01



For customers in European countries:

- ① Power cord 250 V 10 A (2.4 m): △ 1-782-929-12
- ② Plug retainer: 2-990-242-01



1-2. External Connectors

1-2-1. Connector Input/Output Signals

GENLOCK IN/OUT: BNC type

Analog HD (3-level sync) or SD (2-level sync) sync VBS
1.0 V p-p 75 Ω , loopthrough

HD-SDI IN: BNC type

Conforming to SMPTE 292M

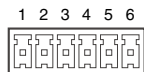
REMOTE (8P FEMALE)



(External view)

No.	Signal	Specifications
1	TX (+)	SERIAL DATA OUT
2	TX (-)	
3	RX (+)	SERIAL DATA IN
4	RX (-)	
5	VIDEO OUT (G)	GND for VIDEO OUT
6	UNREG OUT	+12 V
7	UNREG GND	GND for UNREG
8	VIDEO OUT (X)	1.0 V p-p, 75 Ω
Shield	CHASSIS GND	CHASSIS GND

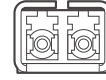
Multiconnector (6P)



(External view)

No.	Signal	Specifications
1	NC	RS232C TX
2	NC	RS232C RX
3	GND	GND
4	Red Tally	Red Tally Control IN
5	Green Tally	Green Tally Control IN
6	NC	Remote System Reset

OFC (Optical Fiber Cable connectors) LC connectors (Single mode) send/receive



(External view)

1-2-2. Connection Connector/Cable

Connection made with the connector panels during installation or service, should made with the connectors or complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connection Connector/Cable
GENLOCK IN/OUT	1-564-742-11 PLUG, BNC or Coaxial cable BELDEN 8281 or equivalent
REMOTE (8P, FEMALE)	1-766-848-11 plug, 8P Male, or CCA cable assembly (optional) CCA-5-30 (30 m) CCA-5-10 (10 m) CCA-5-3 (3 m)
HD-SDI IN	1-569-370-12 PLUG, BNC or Coaxial cable BELDEN 1694A or equivalent
OFC	Optical fiber cables (Single mode, LC connectors at both ends) Refer to Section 1-2-3.
MULTICONNECTOR (6P)	1-819-529-11 PLUG CONNECTOR (CONVERSION) (supplied with this unit) For tally control from other than a camera controller

1-2-3. Notes on Selecting/Using Optical Fiber Cables

Be very careful of the following when selecting optical fiber cables for optical transmission between HDC-X310/X310K and HFU-X310.

Specifications of optical fiber cable

Type of fiber: Single-mode fiber
Optical connectors: LC connectors (conforming to MSA)
End surface of fiber: SPC (spherical polishing)
Spherical polishing with a return loss of -40 dB or more

Recommended LC connector

An LC pair connector

Notes on selecting other optical fiber cables

Verify whether tension member is required or not.
Verify what strength is required against lateral pressure or other stress.

Notes on laying optical fiber cables

Lay optical fiber cables carefully taking their specifications fully into consideration.

1-2-4. Note in connecting OFC connector

It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the camera.

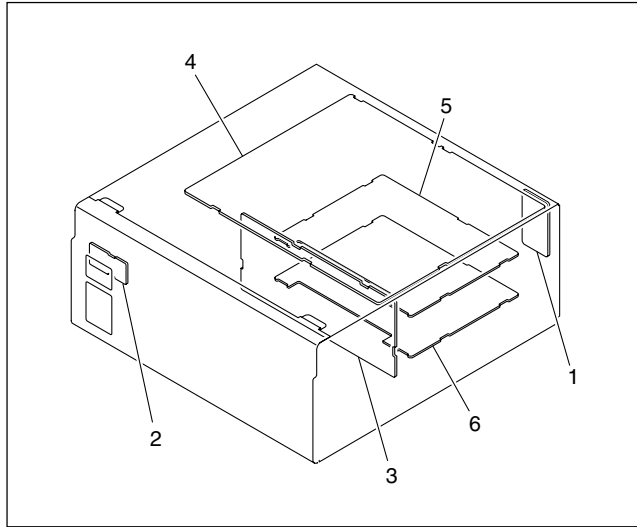
- OFC connector of this unit
- OFC connector of the HDC-X310/X310K
- Optical fiber cable

For details on a cleaning method, refer to Section 2-7 “Cleaning of Connector/Cable”.

Section 2

Service Overview

2-1. Location and Function of Boards



No.	Name	Circuit Function
1	CN-2722	REMOTE Connector Board
2	LED-438	POWER/ALARM/TALLY Indicator
3	MB-1080	Mother Board
4	OVP-8	Optical Fiber Interface
5	HIF-31 (OPTION)	HD Interface Board
6	VIF-36 (OPTION)	SD Interface Board

2-2. Circuit Description

OVP-8 Board

Overview of functions

In connection to HDC-X310 with an optical fiber cable, HFU-X310 allows remote camera operation. This OVP-8 board, the main board of HFU-X310, is equipped with the functions below.

1. Sending/receiving video data by optical signals
2. Converting video data from optical to electrical signal
3. Receiving electrical video signals through HD-SDI
4. Synchronization using analog reference signal
5. Connection to a Sony remote controller such as RM-B750
6. Receiving signals from multi-purpose connector
7. Other functions

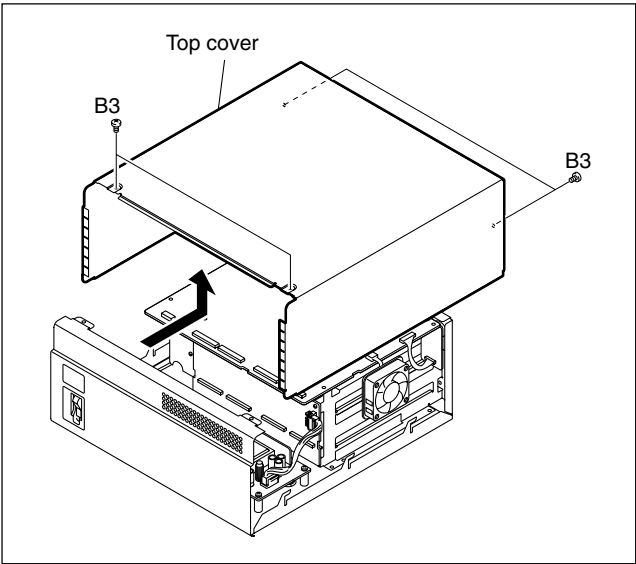
Details of functions

1. Sending/receiving video data by optical signals
With the optical fiber connection between HFU-X310 and HDC-X310, the OVP-8 board sends/receives video data and control data using the optical signals. The camera video signal and timing signal are transmitted simultaneously from HDC-X310 to HFU-X310. The OVP-8 board sends sync signals to the HDC-X310 to synchronize the HDC.
2. Converting video data from optical to electrical signal
The OVP-8 board converts signals from electrical (optical) signal to optical (electrical) signal between HDC and HFU. The optical module inserted into the external slot performs this photoelectric conversion. Each signal is processed by 111 MHz. Since each clock must oscillate in the same way to synchronize optical signals, the HDC5HF allows auto selection of the clocks. The received video data passes through the FFC and MB, and is then transferred to the option board for output in various formats. Signals are output as Y/Pb/Pr data of 1440/1080I at a frequency of approx. 55 MHz.

3. Receiving electrical video signals through HD-SDI
In addition to optical connection to the HDC-X310, the OVP-8 board has an HD-SDI input port to connect to other devices equipped with an HD-SDI connector. By using the HD-SDI receiving function in the Xilinx's XC2P7, the board operates exclusively to optical input.
Though the HD-SDI input is 1920/1080I signal, 1920 to 1440 down-sample filtering is required to match the HD-SDI input with the 1440/1080I signal of HDC-X310. Since the optical input does not operate together with the HD-SDI input, the sync signal processing for the camera unit is not performed. HD-SDI takes precedence for 50I/60I setting.
4. Synchronization using analog reference signal
The system can be synchronized with the house sync by inputting the analog HD tri-level sync or analog SD two-level sync from the REF input connector.
The HD tri-level sync or SD two-level sync that is input into this board is automatically identified. The system delay of output video depends on input sync signals and the pattern of inserted option boards in use.
5. Connection to a Sony remote controller such as RM-B750
Connected to a Sony remote controller (700P) for broadcasting, the OVP-8 board is able to control the HDC.
Connect an RM-B750 to the REMOTE connector on the rear panel. Signals from this connector are not processed on this board, but are directly converted to optical signals and are transmitted to the HDC. The down-converted (SD) signals from the option board are output to the REMOTE connector, which allows monitoring pictures from the HDC on the RM-B750 LCD panel.
6. Receiving signals from multi-purpose connector
This board converts the TALLY signal and RS232C signals from the 6-pin multiconnector on the rear panel directly to optical signals, and then sends the optical signals to the HDC. The TALLY signal is sent to the HDC, and is then multiplexed with the TALLY signal from the REMOTE connector. The multiplexed signal is indicated by the TALLY indicator on the front panel.
7. Other functions
The OVP-8 board also has a power supply circuit to generate +2.5 V, +1.5 V, +3.3 V, and ± 5 V for each device, from +12 V that is input into this board.

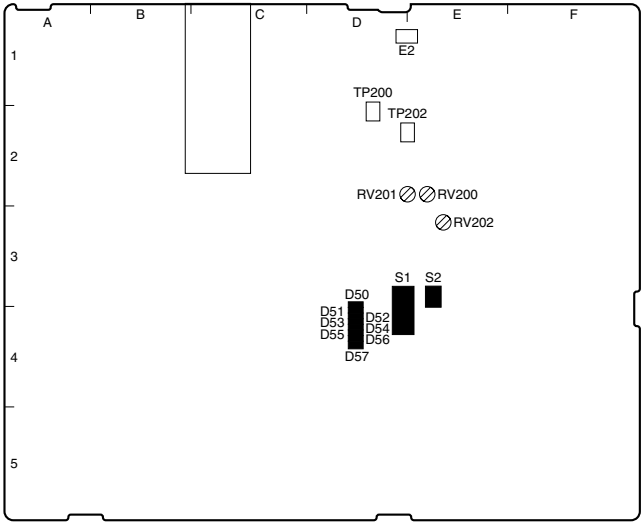
2-3. Removing Cabinet

1. Remove the four screws (B3) to detach the top cover.



2-4. Description of Switch Settings/ Indicator on the Board

OVP-8 board



OVP-8 BOARD (A SIDE)

Note

“()” below shows the address (location) on the board.

Switch

Ref. No.	Description	OFF	ON	Factory setting
S1 (D-4)	1, 2	—	—	—
	3 *1	Auto	#8	OFF
	4 to 7	—	—	—
	8 *1	60I	50I	OFF
S2 (E-3)	Not used	—	—	—

*1: Used when adjusting frequency

Indicator

Ref. No.	Description
D50-57 (D-4)	Factory use

2-5. Tools and Equipment

2-5-1. Tools

Part No.	Name	Note
J-7120-140-A	PLD data download cable	Download the PLD data
A-1128-527-A	Extension board, EX-987	Extending the option board and card board.

2-5-2. Equipment

Equipment	Model name	Usage/Note
HD multi purpose camera	HDC-X310K/X310 or HDC-X300K/X300	
HD/SD interface board	HFBK-HD1 or HFBK-SD1 (Optional board)	
Optical fiber	Single Mode Fiber	About 10 m with LC connector
5C-FB coaxial cable		Used when the optional board HFBK-HD1 is installed. Within 2 m with BNC connector 5VDS03-1.5C
5C-2V coaxial cable		Used when the optional board HFBK-SD1 is installed. Within 2 m with BNC connector CCXC-9DBS (With connector for composite) CCMC-9DS (With connector for Y/C)

2-5-3. Measures

Use the calibrated equipment or equivalent as listed below for the adjustments.

Measuring equipment	Model name
Oscilloscope	Tektronix TDS3054B or equivalent
Frequency counter	Advantest TR5821AK or equivalent
SD/HD-SDI Waveform monitor	Tektronix WFM-700 or equivalent
Color monitor	Sony PVM-1320 or equivalent Used when the optional board HFBK-SD1 is installed.
HD Color monitor	Sony HDM-D20F1 or equivalent Used when the optional board HFBK-HD1 is installed.

2-6. Writing and Rewriting the FPGA Configuration Memory

HFU-X310 uses the FPGA that supports the e-Production (EPR) system to write and rewrite the internal data.

If the part listed below needs to be replaced or to be upgraded, contact your Sony Sales Office/Service Center.

Note

The part number of configuration memory for FPGA in which data is not written yet, is shown in “Section 4 Spare Parts”.

Therefore, if part replacement is required, write the data by the following procedure.

As the FPGA cannot be replaced, replace entire board when the PLD or FPGA is defective.

Corresponding PLD/FPGA

PLD (FPGA)/ROM	EPR connector	Project file No.
IC2/OVP-8	CN12/OVP-8	E_000_002_43_xx
IC7/OVP-8 *1		
IC8/OVP-8 *1		

*1: IC7/OVP-8, IC8/OVP-8 is the configuration memories for IC-2/OVP-8.

Equipment required

- PLD download fixture (Sony part number: J-7120-140-A) :
The cable connected PC to this unit.

Note

When connecting the fixture to the board, remove the fixture cable from the fixture itself.

Connect the opposite side to the fixture main unit before starting to use the fixture.

- PC : A PC having parallel port.

A PC in which the PLD Download Tool software is already installed.

For the applicable OS and the operating environment, refer to “Download Tool Operating Instruction for Device Programming”.

Data write procedure

Data write procedure in the PLD or FPGA configuration memory is outlined below.

For details of data write procedure, refer to “Download Tool Operating Instruction for Device Programming” which is available in the same site where the PLD Download Tool software is available.

1. Prepare the Project file.

Note

Download the Project file from the Sony Database Server.

2. Turn off the power of this unit. Connect the PC parallel port to the EPR connector of the target board using the PLD download fixture (cable).
3. Turn on the power of this unit.
Start the Download Tool software and read the Project file.
4. Program the PLD or FPGA configuration memory with the Download Tool software.
5. Upon completion of programming, check that error message is not displayed. Turn off the power of this unit and back on.

2-7. Cleaning of Connector/Cable

It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the HDC-X310/X310K.

- OFC (optical fiber cable) connectors of this unit
- OFC (optical fiber cable) connectors of the HDC-X310/X310K
- Optical fiber cables

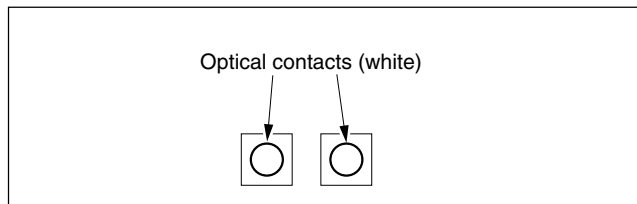
Use a cleaning wiper for cleaning. (Refer to Section 2-8-2.)

Cleaning procedure

[Optical fiber cable connectors]

Clean the tip of the white optical contacts using the optical connector cleaner.

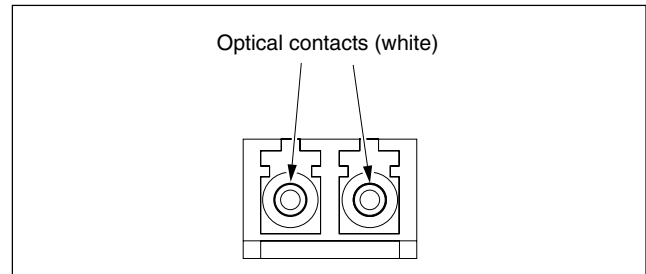
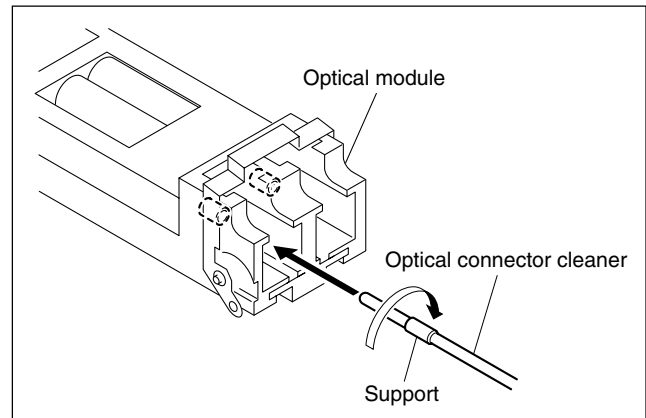
If contamination is heavy, remove it with 99 % alcohol and then wipe with a dry wiper.



[Optical module in the OFC connector]

1. Insert the cleaning wiper straight. Ensure that it is held straight when inserting.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.
3. While pressing the cleaning wiper against the tip of the optical contact, rotate the optical connector cleaner by 4 to 5 turns clockwise. Holding the optical connector cleaner at around its support facilitates to apply the pressure.

If contamination is heavy, remove it with 99 % alcohol and then wipe with a dry wiper.



2-8. Note on Service

2-8-1. Adjustment/Settings after Replacement of Board

This section describes the actions required when replacing board or when replacing ROM or PLD on the board. No action is required for boards other than the following.

OVP-8 board

1. Write the data to the FPGA configuration memory (IC7, IC8 on the OVP-8 board).
Refer to Section 2-6 for details.
2. Write the data in the PLD (IC2).
Refer to Section 2-6 for details.

2-8-2. Notes on Handling Optical Connectors

From the perspectives of optical fiber structure and optical transmission, it is very important to maintain optical fiber end surfaces in good condition for the performance of optical transmission distance.

To maintain the fiber end surfaces in good condition, be sure to clean the fiber end surfaces before connecting the optical fiber cables to the optical module or to the relay optical connectors.

Since the degree of cleaning the fiber end surfaces varies between individuals, repeated cleaning (twice or three times) is recommended.

Cleaning (Refer to Section 2-7 for details.)

Wiping using a wiper is a general method of cleaning the fiber end surfaces.

If contamination is heavy, remove it with 99 % alcohol and then wipe with a dry wiper.

Recommended wiper for cleaning

Product name: BEMCOT™ M-1

Manufacturer and Sales:

OZU CORPORATION

Material Supplier: ASAHI KASEI FIBERS CORPORATION

URL: <http://www.asahi-kasei.co.jp/bemliese/e/wm/02.htm> (ASAHI KASEI FIBERS CORPORATION)

BEMCOT™ is a trademark of ASAHI KASEI FIBERS CORPORATION

Product name: Cleaning kit CLETOP
Supplier: NTT-ME Corporation
URL: <http://nttiivs.ntt-me.co.jp/cb/cletop/index.html>

Other measuring equipment helpful for maintenance

- Fiber end surface inspector

Select commercially available one compatible with an LC connector, which can visibly monitor a fiber end surface through the scope with quantitative data.

Manufacturer and Sales:

FLUKE NETWORKS

Product name: FiberInspector VIDEO MICROSCOPE FT600

URL: <http://www.flukenetworks.com/jp/Cabling/Fiber+Cabling/FT300+FiberInspector/Overview.htm>

- Optical fiber cable connection check

Connection checker

Whether an optical fiber cable is connected correctly can be checked.

Select one that meets 1300 nm optical wavelength.

Manufacturer and Sales:

NTT Advanced Technology

Product name: Optical Fiber Visual Fault Checker (OVC-21) or equivalent

URL: http://www.keytech.ntt-at.co.jp/optic1/prd_0043.html

Optical light source

Select one that meets 1300 nm optical wavelength.

Manufacturer and Sales:

Yokogawa Electric Corporation

Product name: LD Light Source “AQ4270-01” or equivalent

URL: <http://www.yokogawa.co.jp/tm/Bu/index-optcom.htm>

Optical power meter

Receiving power can be determined to check whether it is adequate for optical communication.

Select one that meets 1300 nm optical wavelength.

Manufacturer and Sales:

Yokogawa Electric Corporation

Product name: Optical Powermeter “AQ2160-02” or equivalent

URL: <http://www.yokogawa.co.jp/tm/Bu/index-optcom.htm>

2-9. Replacing Optical Module

Note

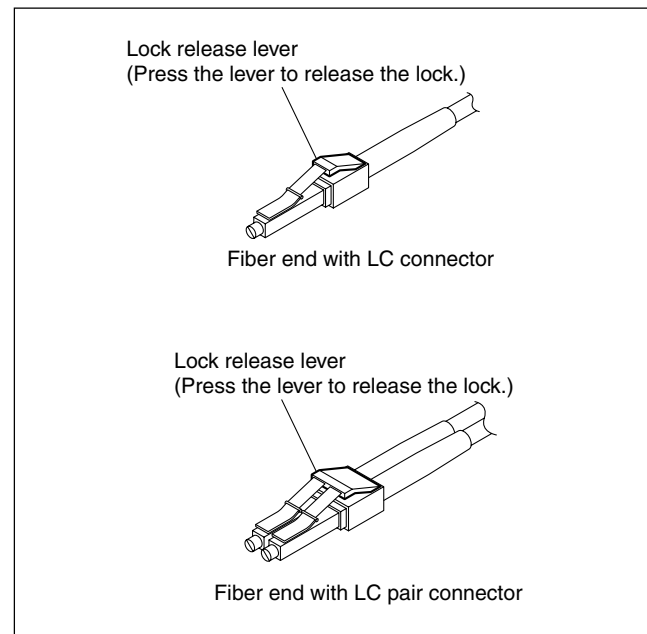
Confirm that the unit is powered off before replacing the optical module.

Removal

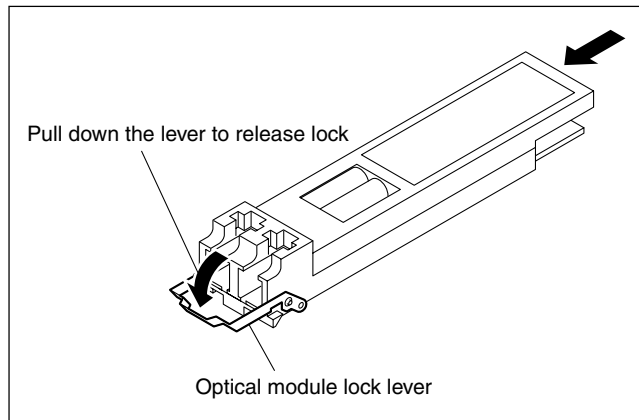
1. Pull the optical fiber off the optical module while pressing the lock release lever on the LC connector at the optical module/fiber coupling section.

Note

After removal of the fiber, keep it carefully so that its end surface is free from dust or dirt.



2. Pull down the lock lever on the optical module to the front side.



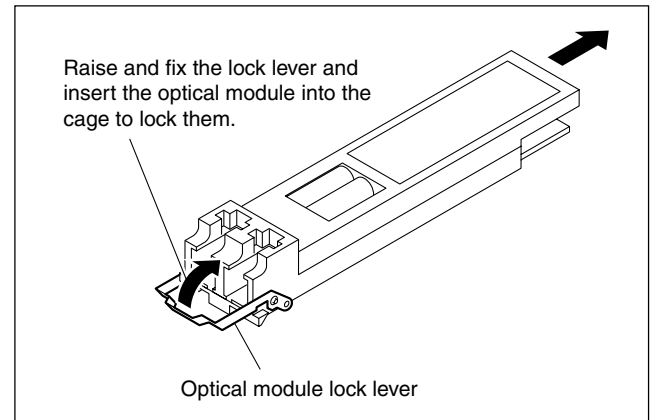
3. Pull out the optical module.

Note

If the optical module still cannot be removed, pull down the lock lever again to the front side, and then pull out the optical module. To keep the removed optical module, cover the connector coupling section with a rubber cap to prevent dust from entering.

Installation

4. Raise the lock lever on the optical module.



5. Hold the optical module and insert it into the cage until it clicks. Ensure that the optical module and the cage are locked.

Note

The locking is ensured when the optical module is not pulled off easily.

6. Clean the end surface of the removed fiber. (Refer to Section 2-7.) Then insert the LC connector of the optical fiber cable until the LC connector locks with a clicking sound.

Note

When connect the HDC-X310/X310K to the HFU-X310, using the optical fiber cables, check that the OFC connector marked with ▼ is connected to the connector with the same mark on the optical module.

2-10. Replacing Fuses

WARNING

Fuses are critical parts to ensure safety.

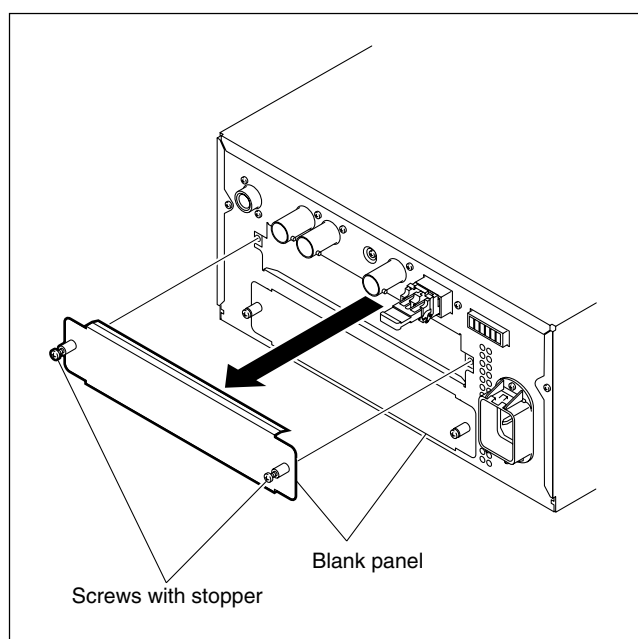
Use of unspecified fuses may cause fire or electric shock.

Always use the specified fuse below for replacement.

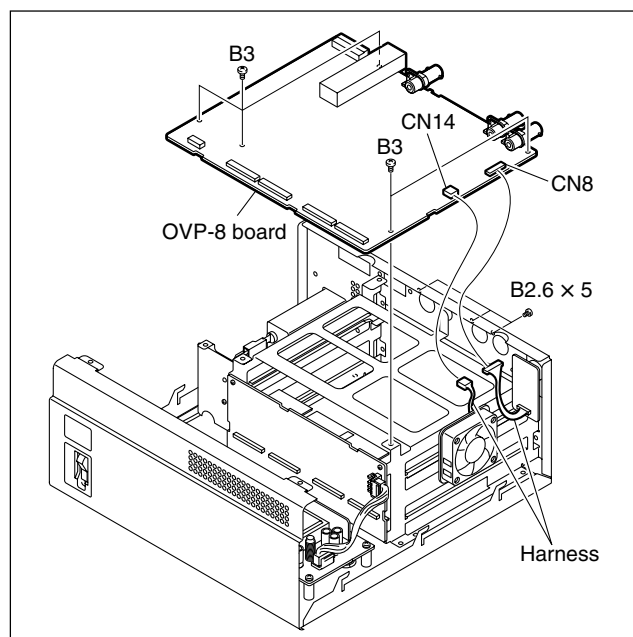
FUSE F1/F2/F3 1.000A: △ 1-533-998-21

Removal

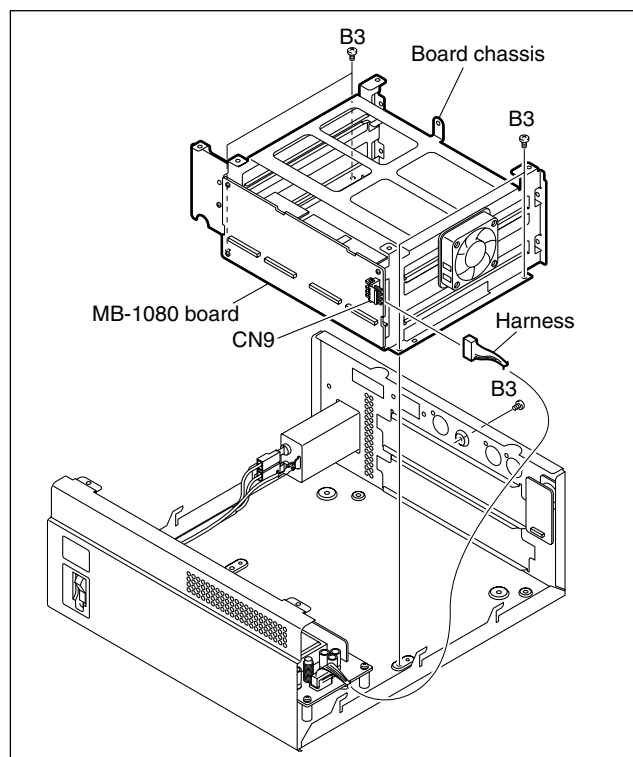
1. Remove the two screws with stopper to detach the two blank panels.



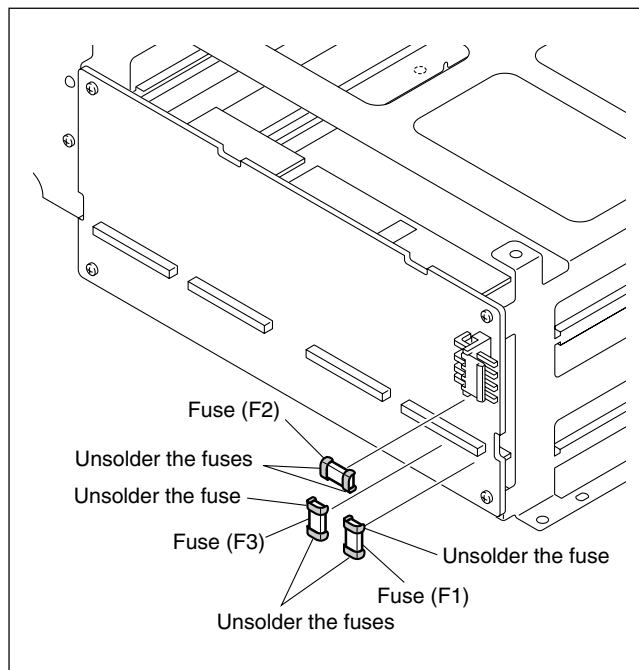
2. Remove the cabinet. (Refer to Section 2-3.)
3. Disconnect the harnesses from the connectors (CN8, CN14) on the OVP-8 board.
4. Remove the three screws (B2.6 × 5).
5. Remove the five screws (B3) to detach the OVP-8 board.



6. Disconnect the harness from the connector CN9 on the MB-1080 board.
7. Remove the four screws (B3) to detach the board chassis.



8. Unsolder the fuses (F1, F2, F3) on the MB-1080 board.



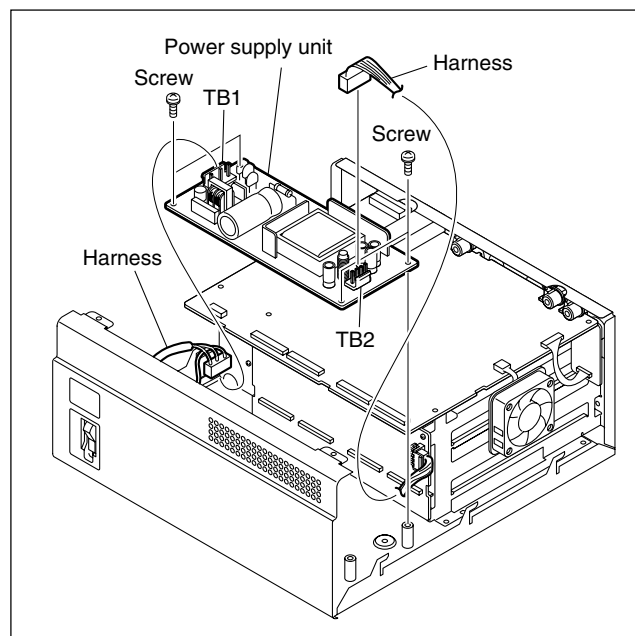
Installation

Install the removed parts by reversing steps 1 to 8 above.

2-11. Replacing Power Supply Unit

Removal

1. Remove the cabinet. (Refer to Section 2-3.)
2. Disconnect the harnesses from the connectors (TB1, TB2) on the power supply unit.
3. Remove the four screws to remove the power supply unit.



Installation

Install the removed parts by reversing steps 1 to 3 above.

2-12. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked $\triangle$ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

In need of repair, get components shown in the list and repair using them.

2-13. Unleaded Solder

Boards requiring use of unleaded solder are printed with a lead free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

LF : LEAD FREE MARK

Notes

- Be sure to use the unleaded solder for the printed circuit board printed with the lead free mark.
- The unleaded solder melts at a temperature about 40 ° higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

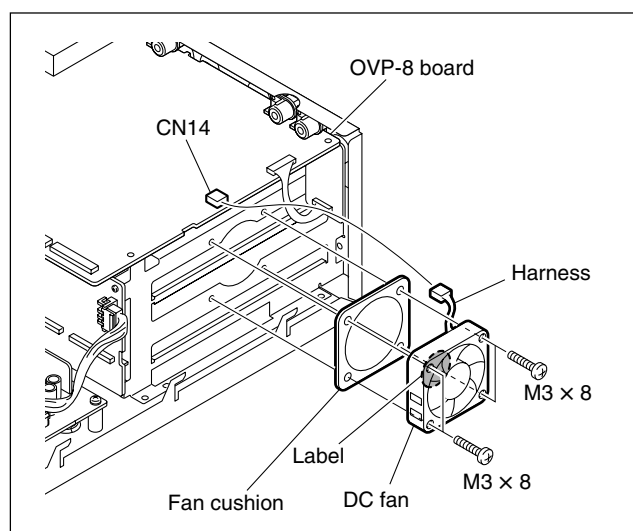
2-14. Replacing DC Fan

If the fan stops, POWER indicator on the front panel flashes in orange.

Turns OFF this unit, and replace the fan.

Removal

1. Remove the cabinet. (Refer to Section 2-3.)
2. Disconnect the harness from the connector CN14 on the OVP-8 board.
3. Remove the four screws (M3 × 8) to detach the DC fan and the fan cushion.



Installation

Install the removed parts by reversing steps 1 to 3 above.

Note

Install the DC fan in the correct orientation as shown in the figure.

Section 3

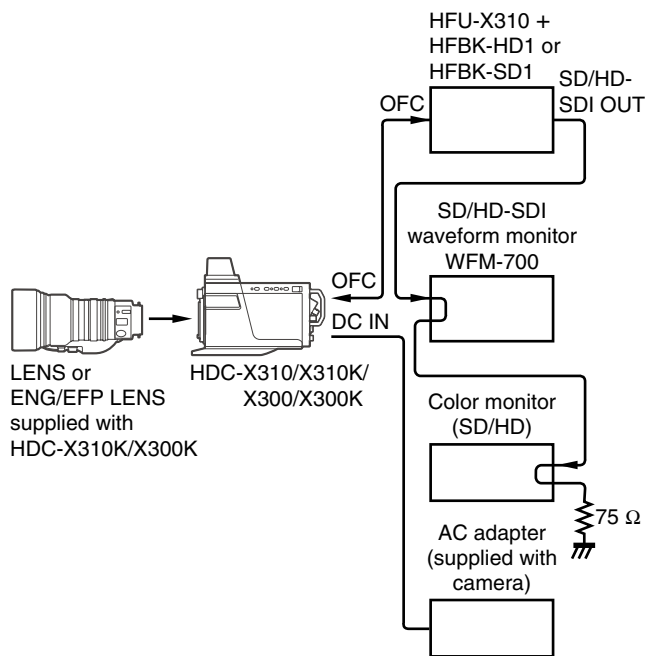
Electrical Alignment

3-1. Electrical Alignment Overview

Notes

- Before extending boards, be sure to turn OFF the power switch and then remove boards.
- Turn ON the power before starting adjustments for 10-minute warming.

3-1-1. Connection Diagram



3-1-2. Tools/Equipment

Refer to Section 2-5 “Tools and Equipment”.

3-2. VCXO Frequency Adjustment (OVP-8 Board)

Be sure to refer to “Electrical Alignment Overview” above beforehand.

Notes

- Perform VCXO frequency adjustment only when the OVP-8 board is replaced.
- Start this adjustment 10 minutes after power on.

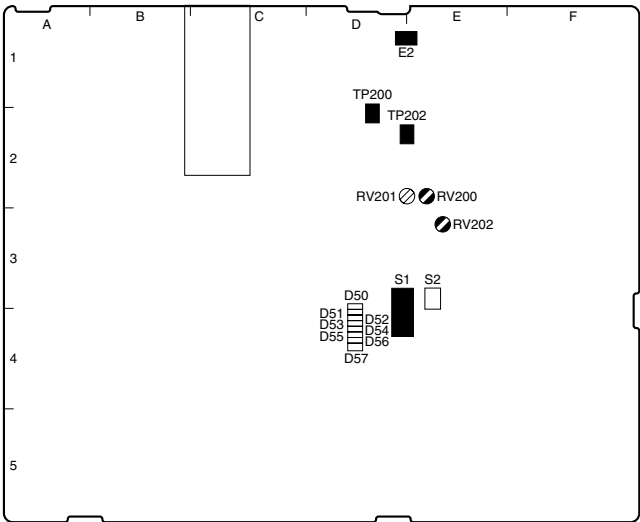
Tools/equipment

- Frequency counter

Adjustment variable resistors

No.	Ref symbol	VR name	Test point	Specification
1	RV200 (E3)	Center frequency setting (74 MHz - 1.000)	TP200 GND: E2	74.25 MHz ± 100 Hz
2	RV202 (E3)	Center frequency setting (74 MHz - 1.001)	TP200 GND: E2	74.175824 MHz ± 100 Hz
3		No adjustment (check only) (27 MHz)	TP202 GND: E2	27 MHz ± 100 Hz

* () in the “Ref symbol” column shows RV location on the board.



OVP-8 BOARD (A SIDE)

Adjustment procedure

Check that no signal is present on the GENLOCK terminal when the HFU-X310 is not connected to HDC-X310/ X310K/X300/X300K, and then perform VCXO frequency adjustment following the description above.

Item 1 Center frequency setting (74.25 MHz)

1. Set the DIP switches S1-3 to “ON”, and S1-8 to “OFF”.
2. Adjust RV200 so that the center frequency satisfies the specification at TP200.
3. Check that 27 MHz (item 3) satisfies the specification at TP202.

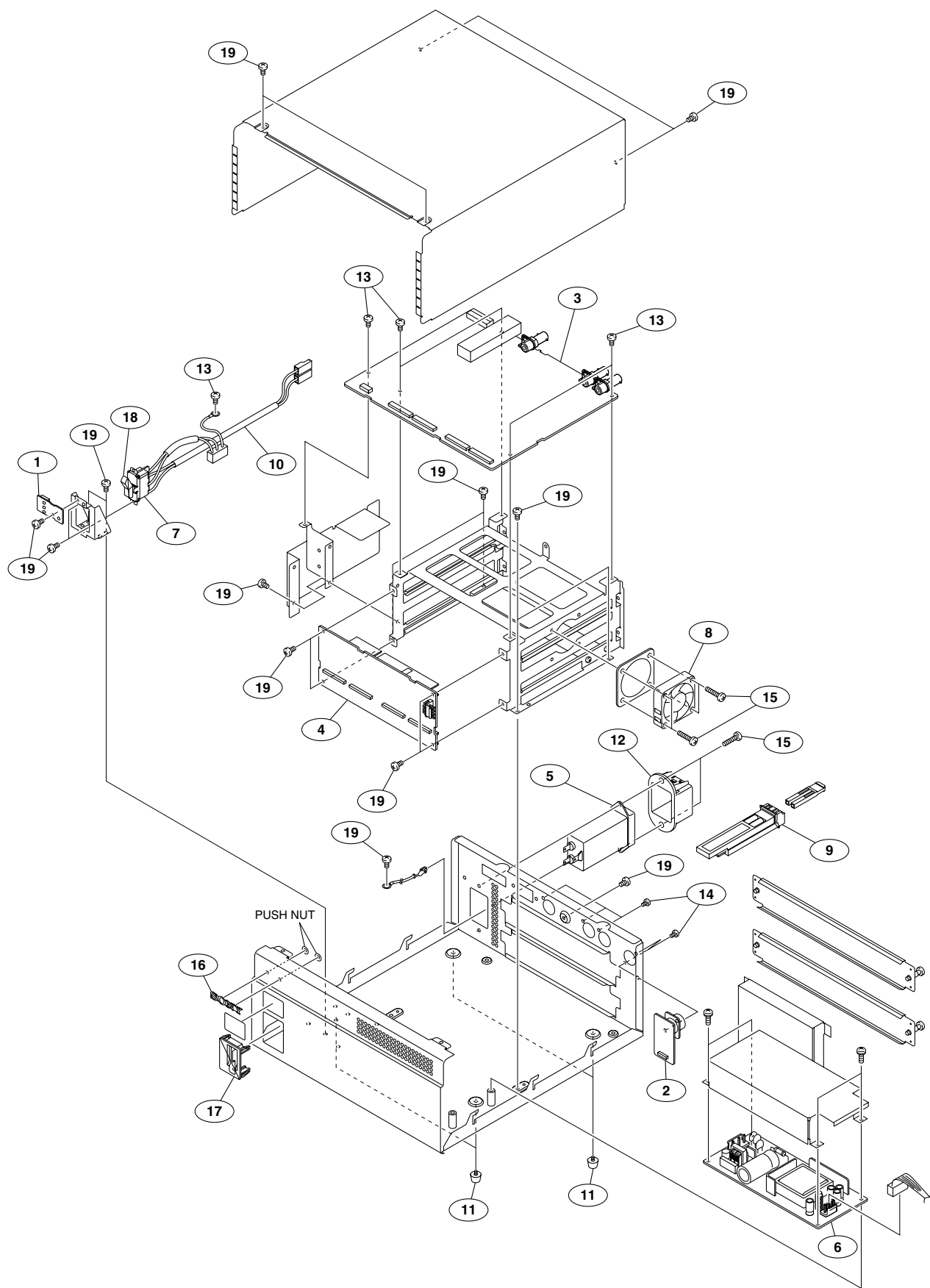
Item 2 Center frequency setting (74.175824 MHz)

1. Set the DIP switch S1-3 and S1-8 to “ON”.
2. Adjust RV202 so that the center frequency satisfies the specification at TP200.
3. Check that 27 MHz (item 3) satisfies the specification at TP202.
4. Set the DIP switch S1 to “all OFF” when VCXO frequency adjustment is entirely completed.
5. Check that pictures are normal under the connection shown in the figure in 3-1-1.

Section 4

Spare Parts

4-1. Exploded Views



No.	Part No.	SP Description
1	A-1113-484-A	s MOUNTED CIRCUIT BOARD, LED-438
2	A-1113-485-A	s MOUNTED CIRCUIT BOARD, CN-2722
3	A-1113-486-A	s MOUNTED CIRCUIT BOARD, OVP-8
4	A-1113-487-A	s MOUNTED CIRCUIT BOARD, MB-1080
5	△ 1-251-148-11	s INLET, AC (3P)
6	△ 1-468-857-11	s POWER, SWITCHING
7	△ 1-762-953-11	s SWITCH, POWER
8	1-787-379-11	s FAN, DC (40SQUARE)
9	△ 1-797-238-11	s MODULE, OPTICAL (SFP)
10	△ 1-963-782-12	s HARNESS, SUB (POWER SW)
11	2-092-326-99	o FOOT, RUBBER (RBR)
12	2-990-241-02	s HOLDER (A), PLUG
13	3-178-214-01	s SCREW (M3X6), +B
14	3-364-941-01	s SCREW (+B) (2.6X5), NYLOK
15	3-364-990-01	s SCREW (M3X8)
16	3-718-322-02	s EMBLEM, SONY
17	3-681-054-01	o POWER SW GUARD
18	3-688-814-01	s CAP, SWITCH
19	3-725-295-21	s SCREW, (+) (B3)
	7-624-200-01	s NUT, PUSH 1.5

4-2. Electrical Parts List

----- CN-2722 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-1113-485-A	s MOUNTED CIRCUIT BOARD, CN-2722
CN1	1-766-696-11	o CONNECTOR, ROUND TYPE 8P
CN2	1-764-080-21	o PIN, CONNECTOR (PC BOARD) 8P
FB1	1-414-864-11	s INDUCTOR, MICRO (CHIP TYPE)
FB2	1-414-864-11	s INDUCTOR, MICRO (CHIP TYPE)
FL1	1-239-897-12	s FILTER, EMI (SMD)
FL2	1-239-897-12	s FILTER, EMI (SMD)
FL3	1-239-897-12	s FILTER, EMI (SMD)
FL4	1-239-897-12	s FILTER, EMI (SMD)
FL5	1-239-899-21	s FILTER, CHIP EMI
FL6	1-239-899-21	s FILTER, CHIP EMI

----- LED-438 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-1113-484-A	s MOUNTED CIRCUIT BOARD, LED-438
CN1	1-764-080-21	o PIN, CONNECTOR (PC BOARD) 8P
D1	8-719-064-06	s LED SML-020MVT-T87
D2	8-719-064-06	s LED SML-020MVT-T87
D3	8-719-064-06	s LED SML-020MVT-T87
FL1	1-239-899-21	s FILTER, CHIP EMI
FL2	1-239-897-12	s FILTER, EMI (SMD)
FL3	1-239-897-12	s FILTER, EMI (SMD)
FL4	1-239-897-12	s FILTER, EMI (SMD)
FL5	1-239-897-12	s FILTER, EMI (SMD)
FL6	1-239-897-12	s FILTER, EMI (SMD)
FL7	1-239-897-12	s FILTER, EMI (SMD)
R1	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608
R2	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608
R3	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608
R4	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608
R5	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608
R6	1-216-815-11	s RESISTOR,CHIP 330 1/10W 1608

----- MB-1080 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-1113-487-A	s MOUNTED CIRCUIT BOARD, MB-1080
C1	1-162-964-11	s CAPACITOR,CERAMIC 1000PF/50V B
CN5	1-778-651-11	o CONNECTOR, FFC (ZIF) 40P
CN6	1-778-651-11	o CONNECTOR, FFC (ZIF) 40P
CN7	1-778-651-11	o CONNECTOR, FFC (ZIF) 40P
CN8	1-778-651-11	o CONNECTOR, FFC (ZIF) 40P
CN9	1-691-959-11	o PIN,CONNECTOR (PC BOARD) 4P
F1	△ 1-533-998-11	s FUSE,CHIP 1A/125V (6125)
F2	△ 1-533-998-11	s FUSE,CHIP 1A/125V (6125)
F3	△ 1-533-998-11	s FUSE,CHIP 1A/125V (6125)
FB1	1-414-864-11	s INDUCTOR, MICRO (CHIP TYPE)
FB2	1-414-864-11	s INDUCTOR, MICRO (CHIP TYPE)

OVP-8 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-1113-486-A	s	MOUNTED CIRCUIT BOARD, OVP-8
2pcs	7-621-770-87	s	SCREW +B2.6X5
1pc	4-669-854-01	s	CAGE, TOP
1pc	7-621-770-87	s	SCREW +B2.6X5
C1	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C2	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C3	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C4	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C6	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C7	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C8	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C9	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C11	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C12	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C13	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C14	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C15	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C16	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C17	1-100-421-21	s	CAP, ELECT 220MF (6.3X5.9)
C18	1-100-421-21	s	CAP, ELECT 220MF (6.3X5.9)
C19	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C20	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C21	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C22	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C23	1-100-421-21	s	CAP, ELECT 220MF (6.3X5.9)
C24	1-100-421-21	s	CAP, ELECT 220MF (6.3X5.9)
C25	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C26	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C27	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C28	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C31	1-100-421-21	s	CAP, ELECT 220MF (6.3X5.9)
C32	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C50	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C51	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C52	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C53	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C54	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C55	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C56	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C100	1-100-506-91	s	CAPACITOR, CERAMIC 1MF B 1005
C101	1-100-503-11	s	CAPACITOR,CERAMIC 4.7MF B 2012
C102	1-100-503-11	s	CAPACITOR,CERAMIC 4.7MF B 2012
C103	1-100-503-11	s	CAPACITOR,CERAMIC 4.7MF B 2012
C104	1-100-503-11	s	CAPACITOR,CERAMIC 4.7MF B 2012
C105	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C106	1-165-887-91	s	CAP, CERAMIC 0.22MF (1005)
C107	1-165-887-91	s	CAP, CERAMIC 0.22MF (1005)
C111	1-165-887-91	s	CAP, CERAMIC 0.22MF (1005)
C115	1-165-887-91	s	CAP, CERAMIC 0.22MF (1005)
C126	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C127	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C128	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C129	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C130	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C131	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C132	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C133	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C134	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C135	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V

(OVP-8 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C136	1-165-872-21	s	CAPACITOR,SOLID ELECT 47MF
C138	1-128-589-11	s	CAPACITOR ELECT 47MF/6.3V(105C
C139	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C140	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C150	1-127-692-91	s	CAP, CHIP CERAMIC 10MF B 3216
C151	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C152	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C153	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C154	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C155	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C156	1-127-692-91	s	CAP, CHIP CERAMIC 10MF B 3216
C157	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C158	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C159	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C160	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C161	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C162	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C163	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C164	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C200	1-165-884-91	s	CAPACITOR, CERAMIC 2.2MF(1608)
C201	1-165-884-91	s	CAPACITOR, CERAMIC 2.2MF(1608)
C204	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C205	1-165-989-11	s	CAPACITOR, CERAMIC 10MF (2012)
C206	1-165-989-11	s	CAPACITOR, CERAMIC 10MF (2012)
C207	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C208	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C209	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C210	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C211	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C212	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C213	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C214	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C215	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C216	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C217	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C218	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C219	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C220	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C221	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C222	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C223	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C224	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C226	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C227	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C228	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C229	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C230	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C232	1-165-989-11	s	CAPACITOR, CERAMIC 10MF (2012)
C233	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C235	1-124-779-00	s	CAPACITOR,ELECT 10MF/16V
C236	1-124-779-00	s	CAPACITOR,ELECT 10MF/16V
C237	1-124-779-00	s	CAPACITOR,ELECT 10MF/16V
C238	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C239	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C240	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C241	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C242	1-165-989-11	s	CAPACITOR, CERAMIC 10MF (2012)
C243	1-165-989-11	s	CAPACITOR, CERAMIC 10MF (2012)
C244	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V

(OVP-8 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C245	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C246	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C247	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C248	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C249	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C250	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C251	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C252	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C253	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C254	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C255	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C256	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C257	1-126-390-11	s	CAPACITOR ELECT 22MF/6.3V(105)
C258	1-126-390-11	s	CAPACITOR ELECT 22MF/6.3V(105)
C259	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C260	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C261	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C262	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C263	1-126-390-11	s	CAPACITOR ELECT 22MF/6.3V(105)
C264	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C265	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C266	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C267	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C268	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C269	1-126-390-11	s	CAPACITOR ELECT 22MF/6.3V(105)
C274	1-126-390-11	s	CAPACITOR ELECT 22MF/6.3V(105)
C275	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C276	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C279	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C280	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C282	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C300	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C301	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C303	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C304	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C305	1-128-451-11	s	CAPACITOR ELECT 22MF/16V(105C)
C609	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C610	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C611	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C612	1-100-159-91	s	CAP, CERAMIC 22MF B (SMD) 3216
C613	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C614	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C615	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C616	1-164-858-11	s	CAPACITOR,CERAMIC 22PF/50V
C618	1-164-850-11	s	CAPACITOR,CHIP CERAMIC 10PF/50
C621	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C622	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C634	1-127-692-91	s	CAP, CHIP CERAMIC 10MF B 3216
C635	1-107-826-11	s	CAPACITOR,CHIP CERAMIC 0.1MF
C636	1-107-826-11	s	CAPACITOR,CHIP CERAMIC 0.1MF
C637	1-107-826-11	s	CAPACITOR,CHIP CERAMIC 0.1MF
C638	1-107-826-11	s	CAPACITOR,CHIP CERAMIC 0.1MF
C639	1-107-826-11	s	CAPACITOR,CHIP CERAMIC 0.1MF
C640	1-127-820-11	s	CAPACITOR, SQUARE CHIP 4.7MF
C641	1-115-339-11	s	CAPACITOR,CERAMIC 0.1MF/50V
C642	1-104-607-11	s	CAPACITOR ELECT 47MF/16V(105C)
C700	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C701	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C702	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)

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Ref. No. or Q'ty	Part No.	SP	Description
C703	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C704	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C705	1-164-882-11	s	CAPACITOR,CERAMIC 220PF/16V CH
C706	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C707	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C708	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C709	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C710	1-164-940-11	s	CAPACITOR,CHIP CERAMIC 3300/16
C711	1-164-938-11	s	CAPACITOR,CERAMIC 1500PF/50VB
C712	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C713	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C714	1-164-938-11	s	CAPACITOR,CERAMIC 1500PF/50VB
C715	1-164-935-11	s	CAPACITOR,CHIP CERAMIC 470PF
C716	1-164-935-11	s	CAPACITOR,CHIP CERAMIC 470PF
C717	1-164-937-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C718	1-164-935-11	s	CAPACITOR,CHIP CERAMIC 470PF
C719	1-164-936-11	s	CAPACITOR,CHIP CERAMIC 680PF
C720	1-164-882-11	s	CAPACITOR,CERAMIC 220PF/16V CH
C721	1-164-936-11	s	CAPACITOR,CHIP CERAMIC 680PF
C722	1-164-936-11	s	CAPACITOR,CHIP CERAMIC 680PF
C723	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C725	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C726	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C727	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C728	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C729	1-127-692-91	s	CAP, CHIP CERAMIC 10MF B 3216
C730	1-127-692-91	s	CAP, CHIP CERAMIC 10MF B 3216
C731	1-135-342-11	s	CAPACITOR,SOLID ELECT 56MF
C732	1-135-342-11	s	CAPACITOR,SOLID ELECT 56MF
C733	1-135-342-11	s	CAPACITOR,SOLID ELECT 56MF
C734	1-135-342-11	s	CAPACITOR,SOLID ELECT 56MF
C735	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C736	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C737	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C738	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C739	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C740	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C741	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C742	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C743	1-165-811-11	s	CAPACITOR CHIP CERAMIC 22MF B
C744	1-165-811-11	s	CAPACITOR CHIP CERAMIC 22MF B
C745	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C746	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C747	1-100-276-21	s	CAP, ELECT 22MF (5.0X6.5)
C748	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C749	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C750	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C751	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C752	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C753	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C754	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C755	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C756	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C757	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C758	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C759	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C760	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C761	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C762	1-165-872-21	s	CAPACITOR,SOLID ELECT 47MF

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Ref. No. or Q'ty	Part No.	SP	Description
C763	1-126-396-11	s	CAPACITOR,ELECT 47MF/16V(CHIP)
C764	1-135-960-91	s	CAP, CHIP CERAMIC 10MF B(3225)
C765	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C766	1-126-391-11	s	CAPACITOR ELECT 47MF/6.3V(105)
C767	1-100-276-21	s	CAP, ELECT 22MF (5.0X6.5)
C768	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C769	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C770	1-165-872-21	s	CAPACITOR,SOLID ELECT 47MF
C771	1-164-858-11	s	CAPACITOR,CERAMIC 22PF/50V
C772	1-164-858-11	s	CAPACITOR,CERAMIC 22PF/50V
C773	1-126-396-11	s	CAPACITOR,ELECT 47MF/16V(CHIP)
C774	1-126-396-11	s	CAPACITOR,ELECT 47MF/16V(CHIP)
C775	1-164-943-11	s	CAPACITOR,CHIP CERAMIC 0.01MF
C776	1-107-418-11	s	CAPACITOR,CHIP ELECT 10MF 35V
C777	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
C778	1-125-777-11	s	CAPACITOR CERAMIC 0.1MF/10V
CN1	1-817-176-11	s	CONNECTOR, SFP FIBER CHANNEL
CN7	1-764-093-21	o	PIN, CONNECTOR (PC BOARD) 8P
CN8	1-764-093-21	o	PIN, CONNECTOR (PC BOARD) 8P
CN9	1-793-324-11	o	CONNECTOR, COAXIAL (BNC TYPE)
CN10	1-793-324-11	o	CONNECTOR, COAXIAL (BNC TYPE)
CN11	1-819-220-11	s	RECEPTACLE, CONNECTOR 6P
CN12	1-764-080-21	o	PIN, CONNECTOR (PC BOARD) 8P
CN14	1-764-088-11	o	PIN, CONNECTOR (PC BOARD) 3P
CN15	1-793-324-11	o	CONNECTOR, COAXIAL (BNC TYPE)
D50	8-719-064-52	s	DIODE CL-191YG-CD-T
D51	8-719-064-52	s	DIODE CL-191YG-CD-T
D52	8-719-064-52	s	DIODE CL-191YG-CD-T
D53	8-719-064-52	s	DIODE CL-191YG-CD-T
D54	8-719-064-52	s	DIODE CL-191YG-CD-T
D55	8-719-064-52	s	DIODE CL-191YG-CD-T
D56	8-719-064-52	s	DIODE CL-191YG-CD-T
D57	8-719-064-52	s	DIODE CL-191YG-CD-T
D100	8-719-064-52	s	DIODE CL-191YG-CD-T
D602	8-719-941-23	s	DIODE DA204U
D604	8-719-941-23	s	DIODE DA204U
D605	8-719-941-23	s	DIODE DA204U
D606	8-719-941-23	s	DIODE DA204U
D607	8-719-941-23	s	DIODE DA204U
D700	8-719-080-69	s	DIODE M1FS4-4063
D701	8-719-080-69	s	DIODE M1FS4-4063
D702	8-719-065-59	s	DIODE MBR0530T1
E1	1-535-877-22	s	CHIP,CHECKER (TEST POINT)
E2	1-535-877-22	s	CHIP,CHECKER (TEST POINT)
E3	1-535-877-22	s	CHIP,CHECKER (TEST POINT)
E4	1-535-877-22	s	CHIP,CHECKER (TEST POINT)
F1	△ 1-533-998-11	s	FUSE,CHIP 1A/125V (6125)
FB100	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB101	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB102	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB103	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB104	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB105	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB106	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB107	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB114	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB115	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)

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Ref. No. or Q'ty	Part No.	SP	Description
FB116	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB117	1-414-760-21	s	INDUCTOR, MICRO (CHIP TYPE)
FB600	1-469-094-21	s	FERRITE, EMI (SMD)
FB601	1-469-094-21	s	FERRITE, EMI (SMD)
FB602	1-469-094-21	s	FERRITE, EMI (SMD)
FB603	1-469-094-21	s	FERRITE, EMI (SMD)
FB700	1-469-094-21	s	FERRITE, EMI (SMD)
FL600	1-239-897-12	s	FILTER, EMI (SMD)
FL601	1-239-897-12	s	FILTER, EMI (SMD)
FL602	1-239-897-12	s	FILTER, EMI (SMD)
FL603	1-239-897-12	s	FILTER, EMI (SMD)
FL604	1-239-897-12	s	FILTER, EMI (SMD)
IC1	6-700-667-01	s	IC TLK2501IRCP
IC11	8-759-549-15	s	IC SN74LV245APWR
IC12	8-759-549-15	s	IC SN74LV245APWR
IC13	8-759-549-15	s	IC SN74LV245APWR
IC100	6-702-620-01	s	IC GS1524-CKDE3
IC151	8-759-549-15	s	IC SN74LV245APWR
IC200	6-704-406-01	s	IC LM1881MX/NOPB
IC201	8-759-561-46	s	IC AD8014ART-REEL7
IC202	8-759-592-47	s	IC TC7SZ08FU (TE85R)
IC203	6-706-478-01	s	IC TC7SET08FU (T5RSOJF)
IC204	6-706-478-01	s	IC TC7SET08FU (T5RSOJF)
IC205	8-759-561-46	s	IC AD8014ART-REEL7
IC206	6-701-453-01	s	IC SN75207BNSR
IC207	8-759-599-93	s	IC NC7SZ08P5
IC208	8-759-669-75	s	IC TLC2932IPWR
IC209	8-759-669-75	s	IC TLC2932IPWR
IC210	8-759-669-75	s	IC TLC2932IPWR
IC211	6-706-478-01	s	IC TC7SET08FU (T5RSOJF)
IC212	6-706-478-01	s	IC TC7SET08FU (T5RSOJF)
IC213	6-703-879-01	s	IC NJU7043RB1 (TE2)
IC214	8-759-663-35	s	IC 74VHC4053MTCX
IC215	6-703-879-01	s	IC NJU7043RB1 (TE2)
IC216	8-759-669-41	s	IC SN74LVC125APWR-12
IC217	6-703-879-01	s	IC NJU7043RB1 (TE2)
IC218	8-759-549-15	s	IC SN74LV245APWR
IC225	6-704-099-01	f	IC TC7WZ08FK (TE85R)
IC226	6-704-099-01	f	IC TC7WZ08FK (TE85R)
IC227	6-704-099-01	f	IC TC7WZ08FK (TE85R)
IC228	6-704-099-01	f	IC TC7WZ08FK (TE85R)
IC229	8-759-683-80	s	IC SN65LVDS1DBVR
IC230	6-704-099-01	f	IC TC7WZ08FK (TE85R)
IC232	6-706-484-01	s	IC TC7SH04FU (T5RSOYJF)
IC233	6-704-406-01	s	IC LM1881MX/NOPB
IC234	8-759-592-47	s	IC TC7SZ08FU (TE85R)
IC300	8-759-598-44	s	IC TC7WH08FK (TE85R)
IC301	8-759-598-44	s	IC TC7WH08FK (TE85R)
IC302	8-759-669-69	s	IC TLC7733IPWR-12
IC306	8-759-599-93	s	IC NC7SZ08P5
IC601	6-706-484-01	s	IC TC7SH04FU (T5RSOYJF)
IC603	6-701-905-01	s	IC AM26C31CDBR
IC604	8-759-598-44	s	IC TC7WH08FK (TE85R)
IC606	6-705-409-01	s	IC SN74AHC1G66HDCK3
IC607	6-705-409-01	s	IC SN74AHC1G66HDCK3
IC608	8-759-561-46	s	IC AD8014ART-REEL7
IC621	8-759-694-15	s	IC SP3222ECY-L/TR
IC700	8-759-060-94	s	IC MB3785APFV-G-BND-ER

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Ref. No. or Q'ty	Part No.	SP Description
IC701	8-759-642-22	s IC UPC29M05T-E2
IC702	8-759-446-74	s IC TA79L05F(Te12L)
IC703	6-700-655-01	s IC LT1963ES8#TR
IC704	6-700-655-01	s IC LT1963ES8#TR
IC705	6-700-655-01	s IC LT1963ES8#TR
IC706	6-700-655-01	s IC LT1963ES8#TR
IC707	6-703-912-01	s IC LT1930ES5#TR
IC708	8-759-669-69	s IC TLC7733IPWR-12
L1	1-412-979-21	s INDUCTOR (SMALL TYPE)
L2	1-412-979-21	s INDUCTOR (SMALL TYPE)
L3	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L4	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L5	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L100	1-414-461-31	s INDUCTOR, CHIP (K) 6.8NH
L101	1-412-056-11	s INDUCTOR 4.7UH (3225)
L102	1-414-398-11	s INDUCTOR (SMD) 10UH
L150	1-412-056-11	s INDUCTOR 4.7UH (3225)
L151	1-412-056-11	s INDUCTOR 4.7UH (3225)
L200	1-414-392-31	s INDUCTOR (SMD) 1.0UH
L201	1-414-392-31	s INDUCTOR (SMD) 1.0UH
L203	1-414-398-11	s INDUCTOR (SMD) 10UH
L204	1-414-398-11	s INDUCTOR (SMD) 10UH
L205	1-414-398-11	s INDUCTOR (SMD) 10UH
L206	1-414-398-11	s INDUCTOR (SMD) 10UH
L207	1-414-398-11	s INDUCTOR (SMD) 10UH
L601	1-469-555-21	s INDUCTOR, CHIP 10UH (LB2016)
L602	1-469-555-21	s INDUCTOR, CHIP 10UH (LB2016)
L700	1-416-344-11	s COIL, CHOKe 10UH
L701	1-416-346-11	s COIL, CHOKe 33UH
L702	1-416-345-11	s COIL, CHOKe 22UH
L703	1-416-345-11	s COIL, CHOKe 22UH
L704	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L705	1-416-511-11	s COIL, CHOKe 47.0UH
L706	1-416-511-11	s COIL, CHOKe 47.0UH
L707	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L708	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L709	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L710	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L711	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L712	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L713	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L714	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L715	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L716	1-416-344-11	s COIL, CHOKe 10UH
L717	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L718	1-414-394-11	s INDUCTOR (SMD) 2.2UH
L719	1-414-398-11	s INDUCTOR (SMD) 10UH
L720	1-414-398-11	s INDUCTOR (SMD) 10UH
PH600	8-749-014-35	s IC HCPL-0630-500
Q201	8-729-928-19	s TRANSISTOR 2SA1774R
Q203	8-729-928-19	s TRANSISTOR 2SA1774R
Q204	8-729-928-19	s TRANSISTOR 2SA1774R
Q205	8-729-928-19	s TRANSISTOR 2SA1774R
Q206	8-729-928-19	s TRANSISTOR 2SA1774R
Q207	8-729-928-81	s TRANSISTOR DTC144EE
Q208	8-729-928-19	s TRANSISTOR 2SA1774R
Q209	8-729-928-19	s TRANSISTOR 2SA1774R
Q604	8-729-928-81	s TRANSISTOR DTC144EE

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Ref. No. or Q'ty	Part No.	SP Description
Q700	8-729-823-82	s TRANSISTOR FP101
Q701	8-729-823-82	s TRANSISTOR FP101
Q702	8-729-823-82	s TRANSISTOR FP101
Q703	8-729-106-60	s TRANSISTOR 2SB1115A
Q704	8-729-037-61	s TRANSISTOR UN9113J-(TX) .SO
Q705	8-729-928-81	s TRANSISTOR DTC144EE
Q706	8-729-047-32	s TRANSISTOR SI4425DY-T1
R2	1-208-652-11	s RESISTOR CHIP 51 1/16W (1005)
R3	1-208-652-11	s RESISTOR CHIP 51 1/16W (1005)
R4	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R5	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R7	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R8	1-218-939-11	s RESISTOR, CHIP 68 1/16W (1005)
R9	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R10	1-220-174-11	s RESISTOR, CHIP 200 1/16W(1005)
R11	1-208-885-11	s RESISTOR, CHIP 820 1/16W(1005)
R12	1-208-652-11	s RESISTOR CHIP 51 1/16W (1005)
R13	1-208-652-11	s RESISTOR CHIP 51 1/16W (1005)
R14	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R50	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R53	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R54	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R57	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R59	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R61	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R62	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R63	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R64	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R68	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R69	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R70	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R100	1-208-860-11	s RESISTOR CHIP 75 1/16W (1005)
R101	1-208-860-11	s RESISTOR CHIP 75 1/16W (1005)
R102	1-220-880-11	s RESISTOR,CHIP 27 (1005)
R103	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R104	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R105	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R106	1-208-687-11	s RESISTOR CHIP 1.5K 1/16W (1005)
R107	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R108	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R115	1-208-860-11	s RESISTOR CHIP 75 1/16W (1005)
R116	1-208-671-11	s RESISTOR CHIP 330 1/16W (1005)
R117	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R118	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R127	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R128	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R129	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R130	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R131	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R132	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R133	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R134	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R135	1-208-671-11	s RESISTOR CHIP 330 1/16W (1005)
R136	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R137	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R139	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R141	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R144	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)

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Ref. No. or Q'ty	Part No.	SP Description
R145	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R146	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R147	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R148	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R149	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R150	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R151	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R204	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R205	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R206	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R207	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R208	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R209	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R210	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R211	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R212	1-218-989-11	s RESISTOR,CHIP 1M 1/16W (1005)
R213	1-218-989-11	s RESISTOR,CHIP 1M 1/16W (1005)
R214	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R215	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R216	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R217	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R218	1-218-939-11	s RESISTOR, CHIP 68 1/16W (1005)
R219	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R220	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R221	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R222	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R223	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R224	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R225	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R226	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R227	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R228	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R229	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R230	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R231	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R232	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R233	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R234	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R235	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R236	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R237	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R238	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R239	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R240	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R241	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R242	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R243	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R244	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R245	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R246	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R247	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R248	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R249	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R250	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R251	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R252	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R253	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R254	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R255	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)

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Ref. No. or Q'ty	Part No.	SP Description
R256	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R257	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R258	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R259	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R260	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R261	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R262	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R263	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R264	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R265	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R266	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R267	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R268	1-208-703-11	s RESISTOR,CHIP 6.8K 1/16W(1005)
R269	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R270	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R271	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R274	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R275	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R277	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R279	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R281	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R300	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R306	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R310	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R338	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R339	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R340	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R377	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R604	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R605	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R607	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R608	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R609	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R610	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R611	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R612	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R615	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R616	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R617	1-208-943-11	s RESISTOR CHIP 220K
R618	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R619	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R621	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R622	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R625	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R626	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R627	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R629	1-208-860-11	s RESISTOR CHIP 75 1/16W (1005)
R638	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R639	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R640	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R641	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R642	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R643	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R644	1-208-635-11	s RESISTOR CHIP 10 1/16W (1005)
R645	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R646	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R647	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R648	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R650	1-208-911-11	s RESISTOR, CHIP 10K (1005)

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Ref. No. or Q'ty	Part No.	SP Description
R651	1-218-941-11	s RESISTOR,CHIP 100 1/16W (1005)
R701	1-208-909-11	s RESISTOR,CHIP 8.2K 1/16W(1005)
R703	1-208-929-11	s RES, CHIP 56K (1005)
R704	1-208-929-11	s RES, CHIP 56K (1005)
R705	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R706	1-208-715-11	s RESISTOR,CHIP 22K 1/16W (1005)
R707	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R708	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R710	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R711	1-208-939-11	s RESISTOR, CHIP 150K (1005)
R712	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R713	1-208-709-11	s RESISTOR CHIP 12K 1/16W (1005)
R714	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R715	1-208-905-11	s RESISTOR, CHIP 5.6K (1005)
R716	1-208-909-11	s RESISTOR,CHIP 8.2K 1/16W(1005)
R717	1-208-721-11	s RESISTOR CHIP 39K 1/16W (1005)
R718	1-208-922-11	s RESISTOR,CHIP CHIP 30K 1/16W
R719	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R720	1-208-909-11	s RESISTOR,CHIP 8.2K 1/16W(1005)
R721	1-208-905-11	s RESISTOR, CHIP 5.6K (1005)
R722	1-208-715-11	s RESISTOR,CHIP 22K 1/16W (1005)
R723	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R724	1-208-909-11	s RESISTOR,CHIP 8.2K 1/16W(1005)
R725	1-208-721-11	s RESISTOR CHIP 39K 1/16W (1005)
R726	1-208-711-11	s RESISTOR CHIP 15K 1/16W (1005)
R727	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R728	1-208-909-11	s RESISTOR,CHIP 8.2K 1/16W(1005)
R729	1-208-713-11	s RESISTOR CHIP 18K 1/16W (1005)
R730	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R731	1-208-675-11	s RESISTOR CHIP 470 1/16W (1005)
R732	1-208-885-11	s RESISTOR, CHIP 820 1/16W(1005)
R733	1-208-675-11	s RESISTOR CHIP 470 1/16W (1005)
R734	1-208-675-11	s RESISTOR CHIP 470 1/16W (1005)
R735	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R736	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R737	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R738	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R739	1-218-990-11	s RESISTOR,CHIP 0 1/16W (1005)
R740	1-208-697-11	s RESISTOR CHIP 3.9K 1/16W(1005)
R741	1-208-927-11	s RESISTOR, CHIP 47K 1/16W(1005)
R742	1-208-663-11	s RESISTOR CHIP 150 1/16W (1005)
R743	1-208-663-11	s RESISTOR CHIP 150 1/16W (1005)
R744	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R745	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R746	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R747	1-208-923-11	s RESISTOR, CHIP 33K (1005)
R748	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R749	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R750	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R751	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R752	1-208-931-11	s RESISTOR, CHIP 68K (1005)
R753	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R754	1-208-691-11	s RESISTOR CHIP 2.2K 1/16W(1005)
R755	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R756	1-208-923-11	s RESISTOR, CHIP 33K (1005)
R757	1-208-931-11	s RESISTOR, CHIP 68K (1005)
R758	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R759	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
R760	1-208-939-11	s RESISTOR, CHIP 150K (1005)

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Ref. No. or Q'ty	Part No.	SP Description
R761	1-208-911-11	s RESISTOR, CHIP 10K (1005)
R762	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R763	1-208-935-11	s RESISTOR, CHIP 100K (1005)
R764	1-208-715-11	s RESISTOR,CHIP 22K 1/16W (1005)
R765	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R766	1-208-695-11	s RESISTOR CHIP 3.3K 1/16W(1005)
R767	1-208-683-11	s RESISTOR CHIP 1K 1/16W (1005)
R768	1-208-679-11	s RESISTOR CHIP 680 1/16W (1005)
R769	1-208-699-11	s RESISTOR,CHIP 4.7K 1/16W(1005)
RB6	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB7	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB8	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB9	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB10	1-234-378-11	s RES, NETWORK 10KX4 (1005)
RB50	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB51	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB52	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB53	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB54	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB55	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB56	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB57	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB58	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB59	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB60	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB61	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB62	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB63	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB64	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB65	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB66	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB67	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB68	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB69	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB70	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB71	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB72	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB73	1-234-373-21	s RES, NETWORK 220X4 (1005)
RB74	1-234-373-21	s RES, NETWORK 220X4 (1005)
RB75	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB76	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB100	1-234-375-21	s RES, NETWORK 1KX4 (1005)
RB150	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB151	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB152	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB153	1-234-369-21	s RES, NETWORK 10X4 (1005)
RB154	1-234-372-11	s RES, NETWORK 100X4 (1005)
RB155	1-234-372-11	s RES, NETWORK 100X4 (1005)
RB156	1-234-378-11	s RES, NETWORK 10KX4 (1005)
RB157	1-234-378-11	s RES, NETWORK 10KX4 (1005)
RB304	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB602	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB603	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB604	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB605	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RB610	1-234-381-21	s RES, NETWORK 100KX4 (1005)
RV200	1-225-791-21	s RES, ADJ, CERMET 5K
RV201	1-225-791-21	s RES, ADJ, CERMET 5K

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Ref. No. or Q'ty	Part No.	SP Description
RV202	1-225-791-21	s RES, ADJ, CERMET 5K
S1	1-692-271-31	s SWITCH, SLIDE
S2	1-771-796-11	s SWITCH, SLIDE
T700	△ 1-443-359-11	s TRANSFORMER, CONVERTER
TP1	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP10	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP11	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP12	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP13	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP200	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP201	1-535-877-22	s CHIP,CHECKER (TEST POINT)
TP202	1-535-877-22	s CHIP,CHECKER (TEST POINT)
X200	1-795-670-12	s OSCILLATOR, CRYSTAL
X201	1-795-671-12	s OSCILLATOR, CRYSTAL
X202	1-813-559-11	s OSCILLATOR, CRYSTAL (VCXO)
X203	1-813-558-11	s OSCILLATOR, CRYSTAL (VCXO)
X204	1-795-831-12	s OSCILLATOR, CRYSTAL

4-3. Supplied Accessories

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-819-529-11	s PLUG,CONNECTOR (CONVERSION)
1pc	3-869-794-01	s OPERATION MANUAL
1pc	3-869-953-01	s CD-ROM(HFU-X310)
2pcs	7-682-545-04	s SCREW +B3X4
1pc	7-682-559-04	s SCREW +B4X5 (EP-FE/CU,NI,CR)
1pc	3-872-266-02	s COVER, OPTICAL

4-4. Optional Fixtures

Part No.	SP Description
A-1128-527-A	o EXTENSION BOARD, EX-987
J-7120-140-A	o PLD DATA DOWNLOAD CABLE

Section 5

Semiconductor Pin Assignments

The following describes the semiconductor types used in this unit.

For semiconductors marked with page numbers in the index, refer to the corresponding pages in this section.

However, in some cases incompatible types are also listed, therefore, when a part is to be replaced, also refer to the Spare Parts section.

In addition, for semiconductors with ID Nos., refer to the separate CD-ROM titled “Semiconductor Pin Assignments” (Sony Part No. 9-968-546-xx) that allows searching for parts by semiconductor type or ID No.

The semiconductors in the manual or on the CD-ROM are listed by equivalent types. Thus the external view or the index mark indication may differ from the actual type.

Pin assignments and block diagrams are based on the IC manufacturer’s data book.

本機に使用されている半導体型名の一覧を下記に示します。索引中、ページが記載されている半導体は、本章の該当ページを参照してください。ただし、互換性のない型名を併記している場合がありますので、部品を交換するときは、Spare Partsの章を参照してください。

また、ID番号が記載されている半導体は、別途発行の“Semiconductor Pin Assignments” CD-ROM版 (ソニー部品番号：9-968-546-xx)を参照してください。

半導体型名またはID番号から検索ができます。

マニュアルまたはCD-ROMに掲載されている半導体は、それぞれの機能を等価的に表わしたものです。

外観やインデックスマークの表示方法が実物と異なる場合があります。

ピン配置およびブロック図はICメーカーのデータブックに従いました。

DIODE Page or ID No.

DA204U DC001-01
DA204UT106 DC001-01

M1FS4-4063 DC008-02
MBR0530T1 DC008-02

LED Page or ID No.

CL-191YG-CD-T LC004-01

TRANSISTOR Page or ID No.

2SA1774R TC001-01
2SB1115A TC002-01

DTC144EE TC001-03
DTC144EE-TL TC001-03

FP101 TC014-01

SI4425DY-T1 TC012-04

UN9113J-(TX).SO TC001-04

IC Page or ID No.

74VHC4053MTCX MC74HC4053F

AD8014ART-REEL7 AD8055ART-REEL7
AM26C31CDBR DS26C31CM

LM1881MX/NOPB LM1881N

NC7SZ08P5 TC7S08F
NC7SZ08P5 TC7S08F
NJU7043RB1(TE2) RC4558

SN65LVDS1DBVR SN65LVDS1DBVR
SN74AHC1G66HDCK3 SC14S66F
SN74LV245APWR TC74HC245P
SN74LVC125APWR-12 MC74HC125N
SN75207BNSR SN75207BN

TA79L05F(TE12L) NJM79L09UA
TC7SZ08FU(TE85R) TC7S08F
TC7WH08FK(TE85R) TC7W08F
TLC2932IPWR TLC2932IPW
TLC2934IPWR TLC2934IPWR
TLC7733IPWR-12 TLC7733IPWR

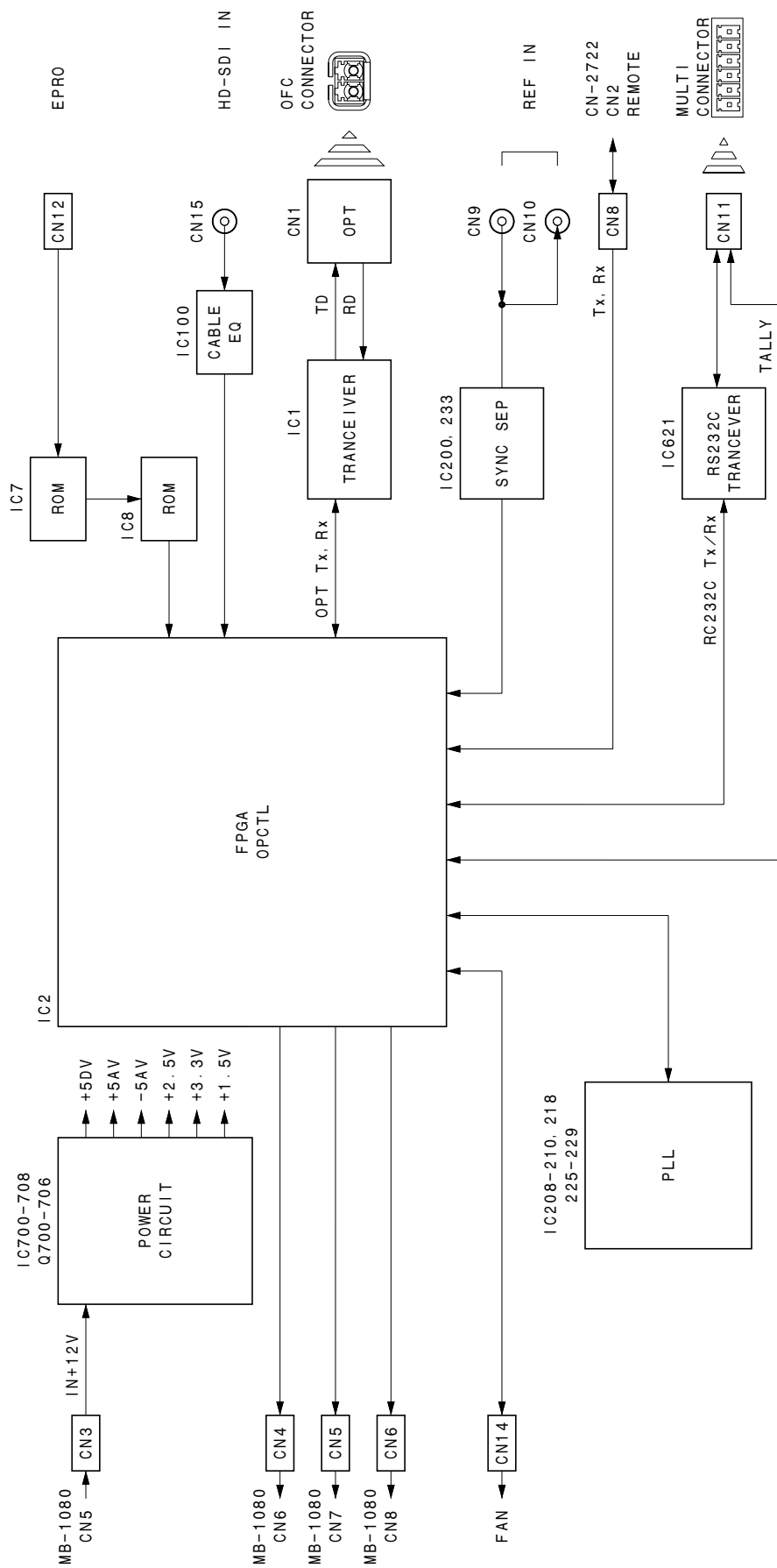
UPC29M05T-E2 TA78M09F

OTHERS PAGE OR ID NO.

HCPL-0630-500 MA009-01

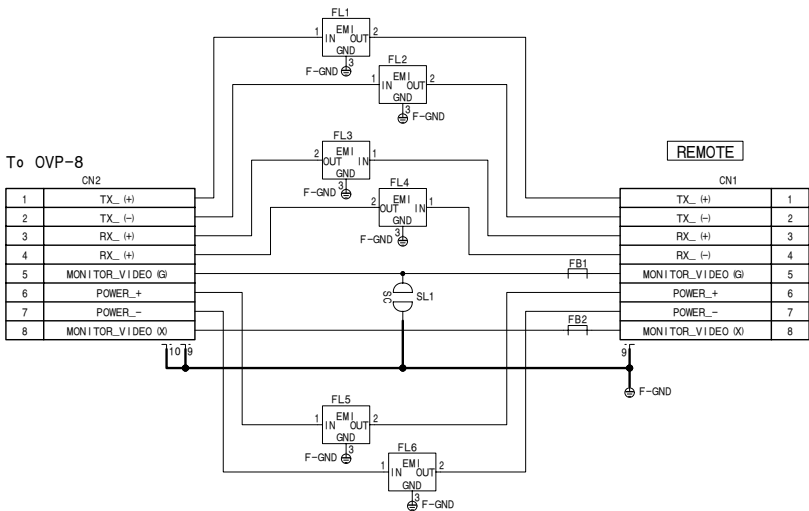
Section 6

Block Diagram

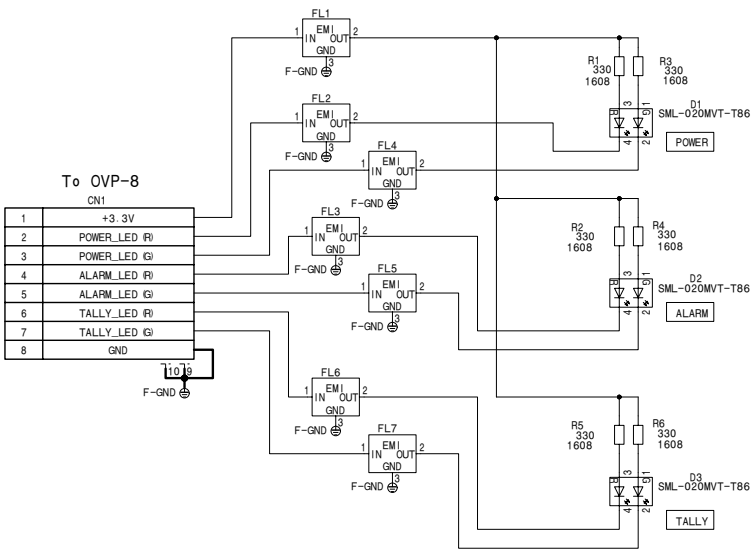


OVP-8

Section 7
Schematic Diagrams

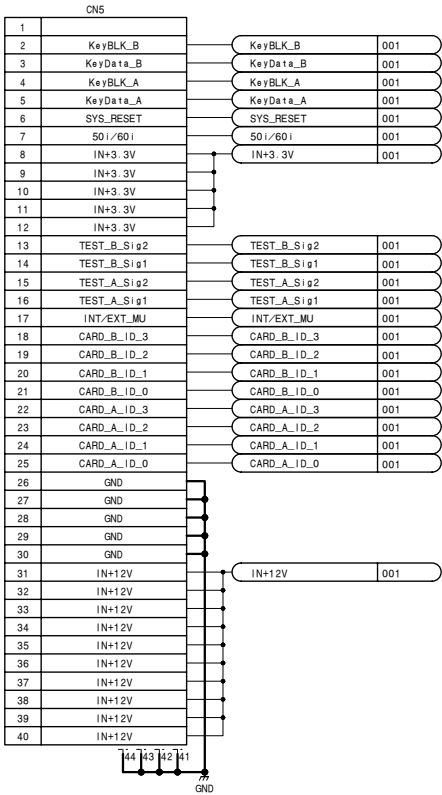


CN-2722
BOARD NO. 1-866-802-11
SAGAMI_CN-2722_110_1



LED-438
BOARD NO. 1-866-801-11
SAGAMI_LED-438_110_1

1



2



3

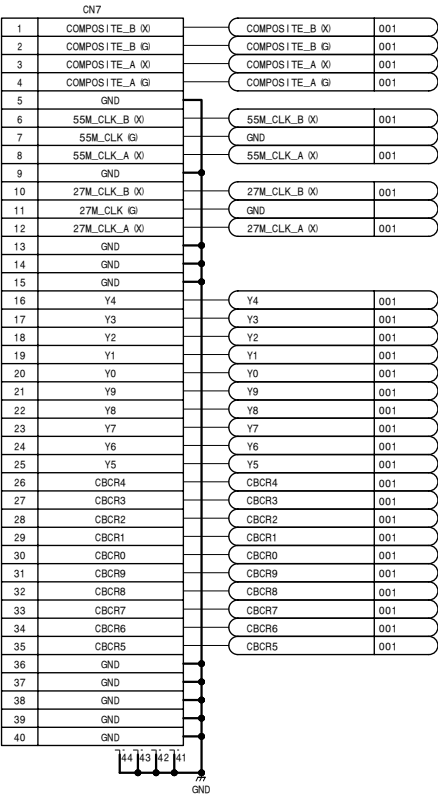
1-794-781-11

	Z	A	B	CN1	D	E	F
1	GND	IN+12V_A	IN+12V_A	IN+12V_A	IN+12V_A	IN+12V_A	GND
2	GND	GND	GND	GND	GND	GND	GND
3	GND	CARD_A_ID_0	CARD_A_ID_1	CARD_A_ID_2	CARD_A_ID_3	INT_EXT_MU	GND
4	GND	TEST_A_Sig1	TEST_A_Sig2	IN+3_3V	IN+3_3V	IN+3_3V	GND
5	GND	501/601	SYS_RESET	KeyData_A	KeyBLK_A	GND	GND
6	GND						GND
7	GND				1000/1001	CONF_DONE_A	GND
8	GND	XCE1_A	XCE2_A	CS0	CS1	CSCK	GND
9	GND	GND	GND	GND	GND	GND	GND
10	GND	FPGA_VCC	FPGA_TRST	FPGA_TDI	FPGA_TDO	FPGA_TMS	GND
11	GND	nCONF_IG		FPGA_TCK	FACTORY_RESET	WRSW	GND
12							
13							
14							
15	GND	SCL	SDA	TX	RX	OPE/ADJ	GND
16	GND	GND	GND	GND	GND	GND	GND
17	GND	REF_HD_FLD	REF_SD_FLD	SYNC3	COMPOSITE_A_IG	FLD	GND
18	GND	HD	VD	COMPOSITE_A_IG	FVALID		GND
19	GND	CBCR5	CBCR6	CBCR7	CBCR8	CBCR9	GND
20	GND	CBCR0	CBCR1	CBCR2	CBCR3	CBCR4	GND
21	GND	Y5	Y6	Y7	Y8	Y9	GND
22	GND	Y0		Y2	Y3	Y4	GND
23	GND		GND		GND		GND
24	GND	GND		GND	GND	GND	GND
25	GND	27M_CLK_A_00	GND	55M_CLK_A_00	GND	GND	GND

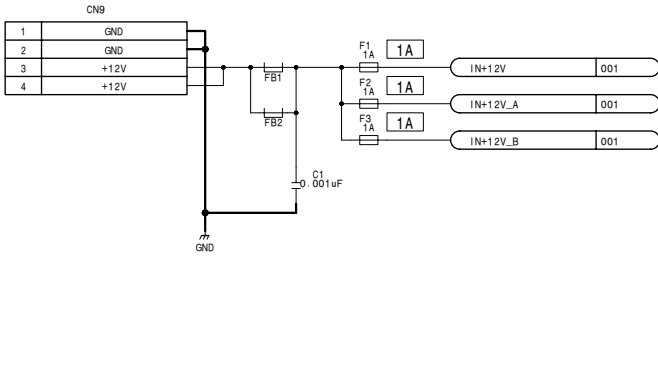
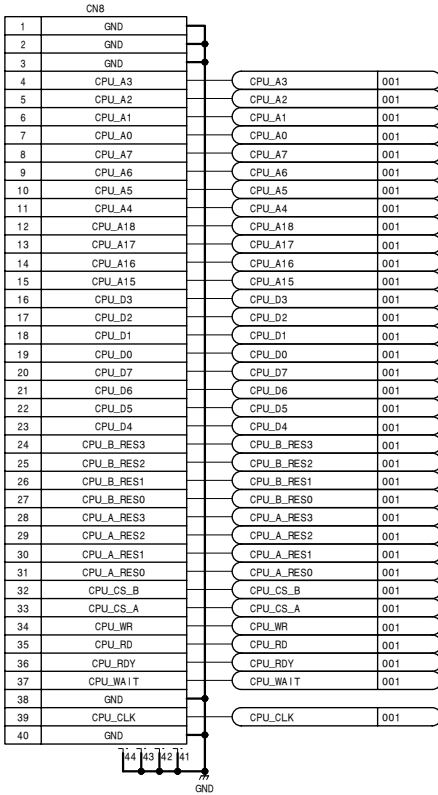
5

1-818-867-11

	z	a	b	CN2	d	e	f
1	GND	GND		GND	GND	TS1_CLK	GND
2	GND	GND	GND	GND	GND	GND	GND
3	GND	TS1_CHK	TS1_RDY	TS1_ACK	TS1_SYNC	TS1_EN	GND
4	GND	CPU_CLK	CPU_WAIT	CPU_RDY	TS10		GND
5	GND	CPU_RD	CPU_WR		CPU_CS_A	TS11	GND
6	GND	CPU_A_RES0	CPU_A_RES1	CPU_A_RES2	CPU_A_RES3	TS12	GND
7	GND	CPU_D4	CPU_D5	CPU_D6	CPU_D7	TS13	GND
8	GND	CPU_D0	CPU_D1	CPU_D2	CPU_D3	TS14	GND
9	GND	CPU_A15	CPU_A16	CPU_A17	CPU_A18	TS15	GND
10	GND	CPU_A4	CPU_A5	CPU_A6	CPU_A7	TS16	GND
11	GND	CPU_A0	CPU_A1	CPU_A2	CPU_A3	TS17	GND



7-2

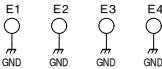
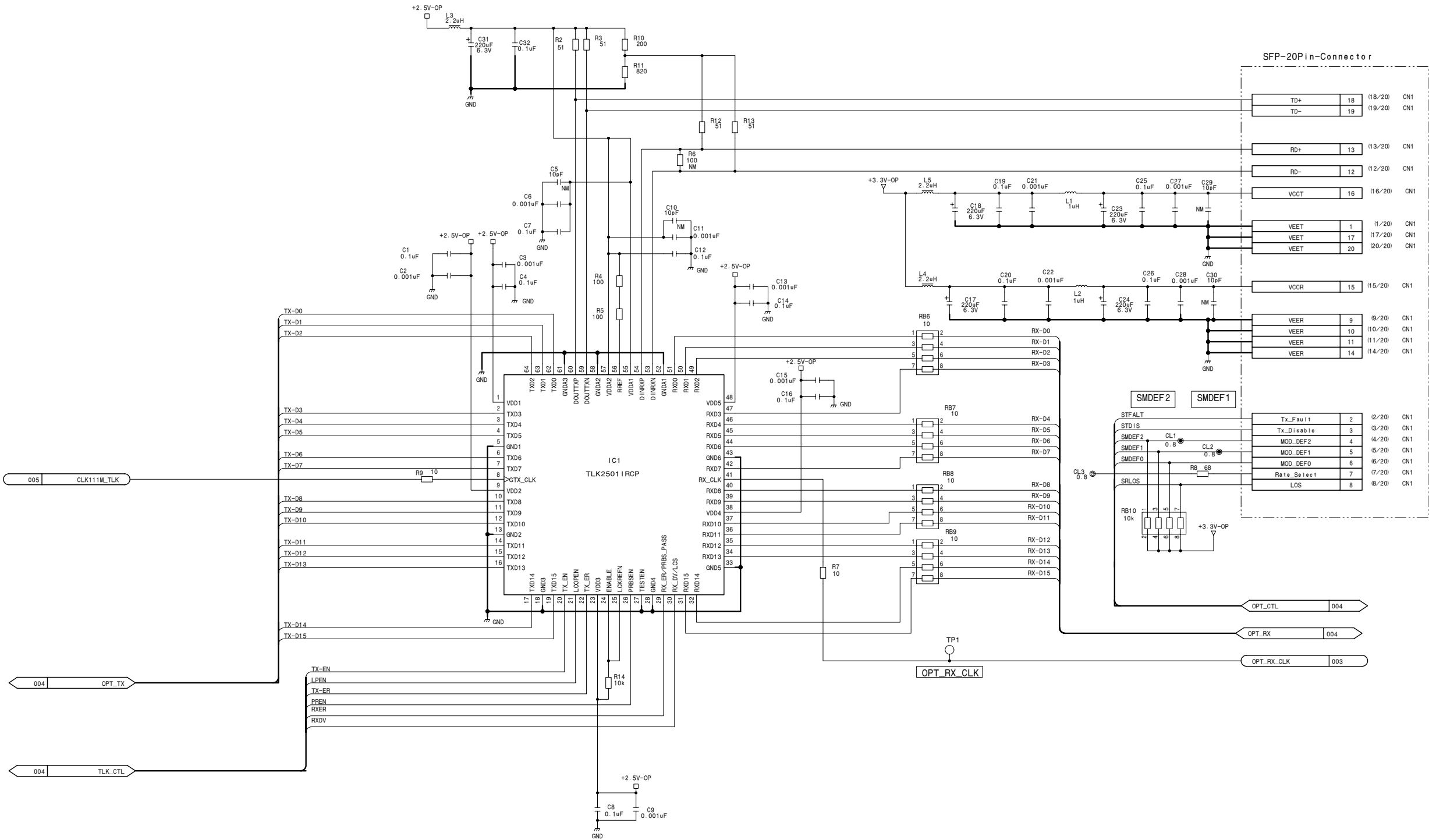


1-794-781-11

	Z	A	B	CN3	D	E	F
1	GND	IN+12V_B	IN+12V_B	IN+12V_B	IN+12V_B	IN+12V_B	GND
2	GND	GND	GND	GND	GND	GND	GND
3	GND	CARD_B_ID_0	CARD_B_ID_1	CARD_B_ID_2	CARD_B_ID_3	INT_EXT_MU	GND
4	GND	TEST_B_Sig1	TEST_B_Sig2	IN+3_3V	IN+3_3V	IN+3_3V	GND
5	GND	501/601	SYS_RESET	KeyData_B	KeyBLK_B	GND	GND
6	GND						GND
7	GND				1000/1001	CONF_DONE_B	GND
8	GND	XCE1_B	XCE2_B	CS0	CS1	CSCK	GND
9	GND	GND	GND	GND	GND	GND	GND
10	GND	FPGA_VCC	FPGA_TRST	FPGA_TDI	FPGA_TDO	FPGA_TMS	GND
11	GND	nCONF_IG		FPGA_TCK	FACTORY_RESET	WRSW	GND
12							
13							
14							
15	GND	SCL	SDA	TX	RX	OPE/ADJ	GND
16	GND	GND	GND	GND	GND	GND	GND
17	GND	REF_HD_FLD	REF_SD_FLD	SYNC3	COMPOSITE_B_IG	FVALID	GND
18	GND	HD	VD	COMPOSITE_B_IG	FVALID		GND
19	GND	CBCR5	CBCR6	CBCR7	CBCR8	CBCR9	GND
20	GND	CBCR0	CBCR1	CBCR2	CBCR3	CBCR4	GND
21	GND	Y5	Y6	Y7	Y8	Y9	GND
22	GND	Y0		Y2	Y3	Y4	GND
23	GND		GND		GND		GND
24	GND	GND		GND	GND	GND	GND
25	GND	27M_CLK_B_00	GND	55M_CLK_B_00	GND	GND	GND

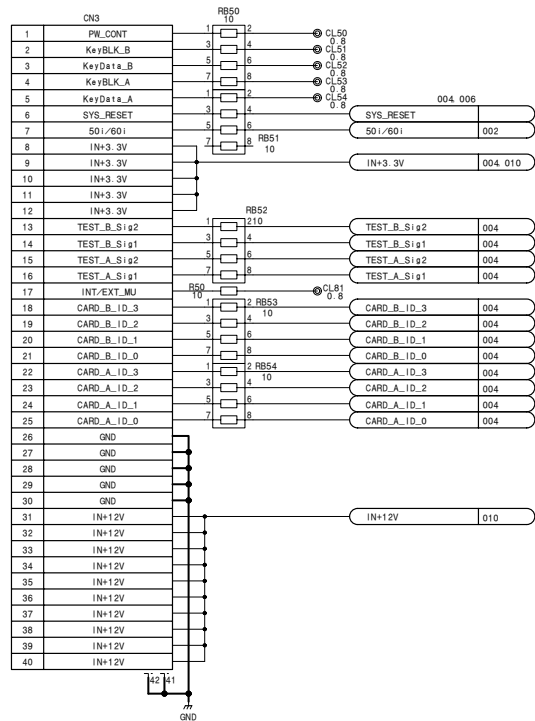
1-818-867-11

	z	a	b	CN4	d	e	f
1	GND	GND		GND	GND	TS1_CLK	GND
2	GND	GND	GND	GND	GND	GND	GND
3	GND	TS1_CHK	TS1_RDY	TS1_ACK	TS1_SYNC	TS1_EN	GND
4	GND	CPU_CLK	CPU_WAIT	CPU_RDY	TS10		GND
5	GND	CPU_RD	CPU_WR		CPU_CS_B	TS11	GND
6	GND	CPU_B_RES0	CPU_B_RES1	CPU_B_RES2	CPU_B_RES3	TS12	GND
7	GND	CPU_D4	CPU_D5	CPU_D6	CPU_D7	TS13	GND
8	GND	CPU_D0	CPU_D1	CPU_D2	CPU_D3	TS14	GND
9	GND	CPU_A15	CPU_A16	CPU_A17	CPU_A18	TS15	GND
10	GND	CPU_A4	CPU_A5	CPU_A6	CPU_A7	TS16	GND
11	GND	CPU_A0	CPU_A1	CPU_A2	CPU_A3	TS17	GND

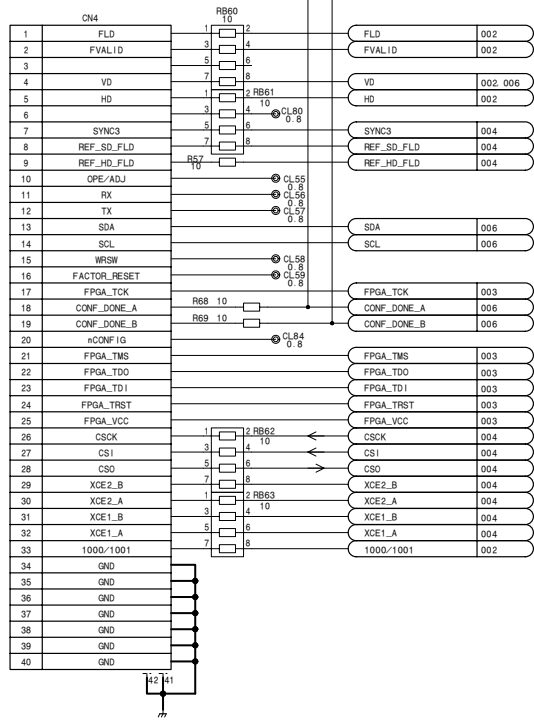


OVP-8 (1/10)
BOARD NO. 1-866-803-11
SAGAMI_OVP-8_120_1

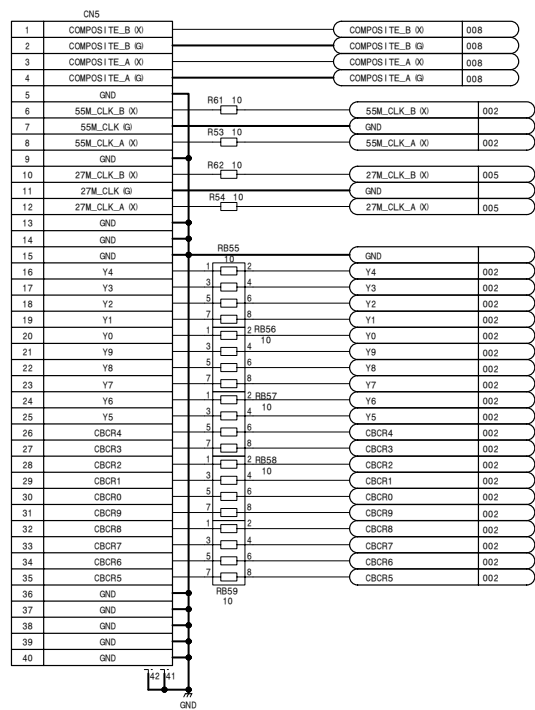
1



2

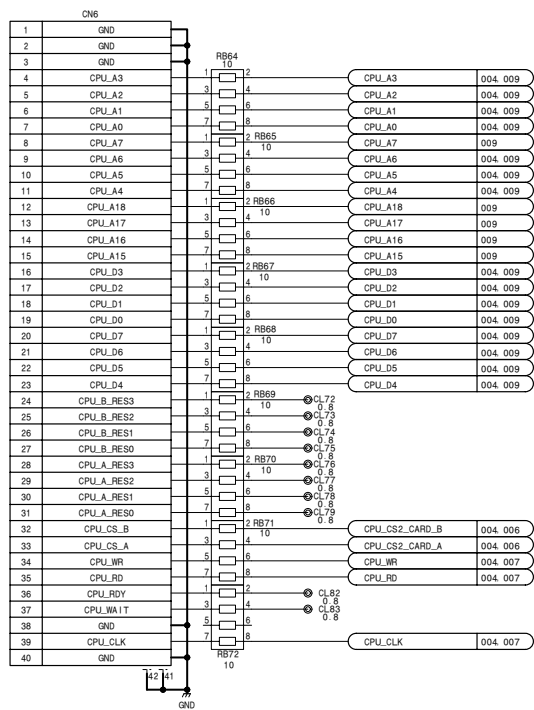


3



4

5

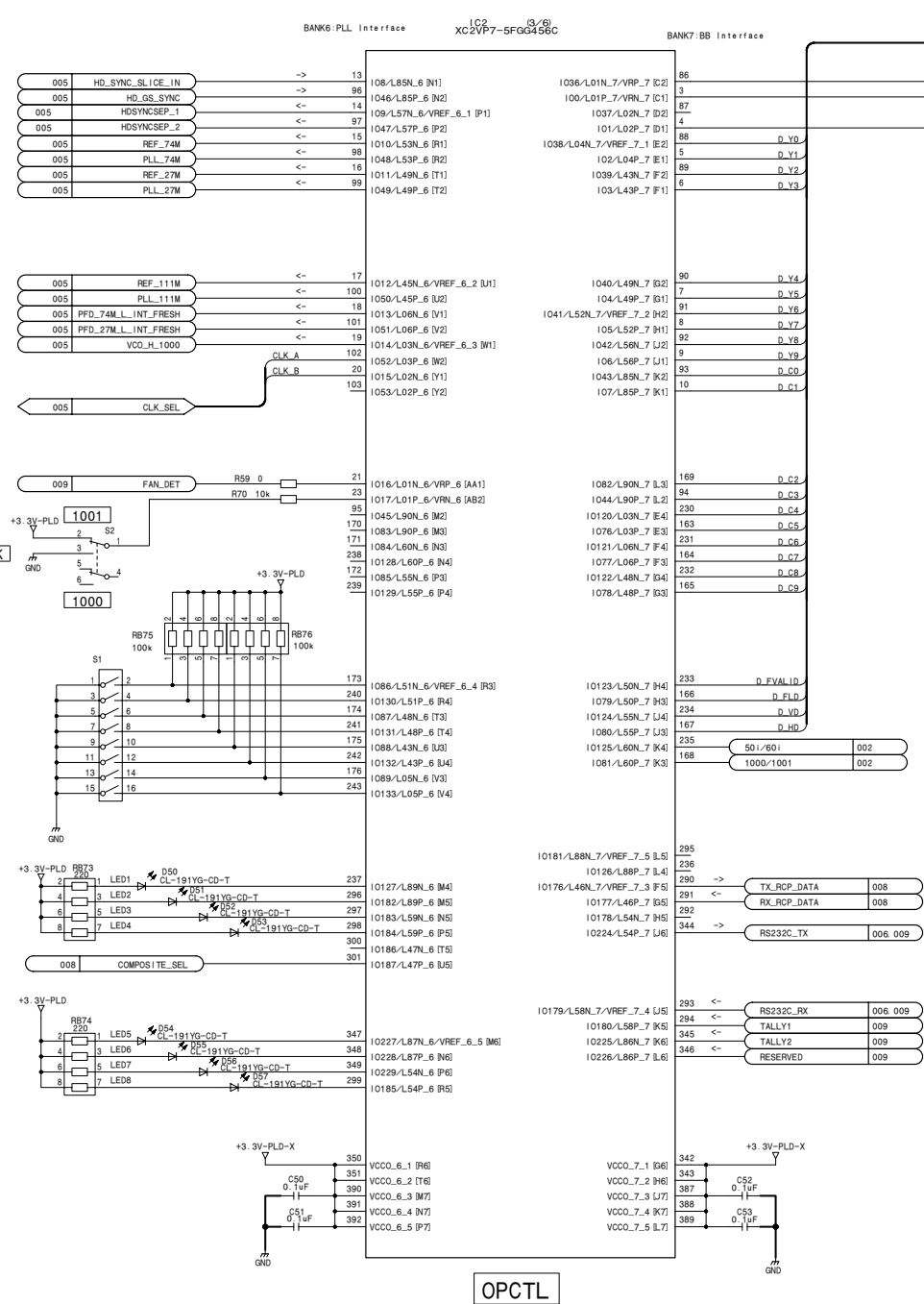


7-4

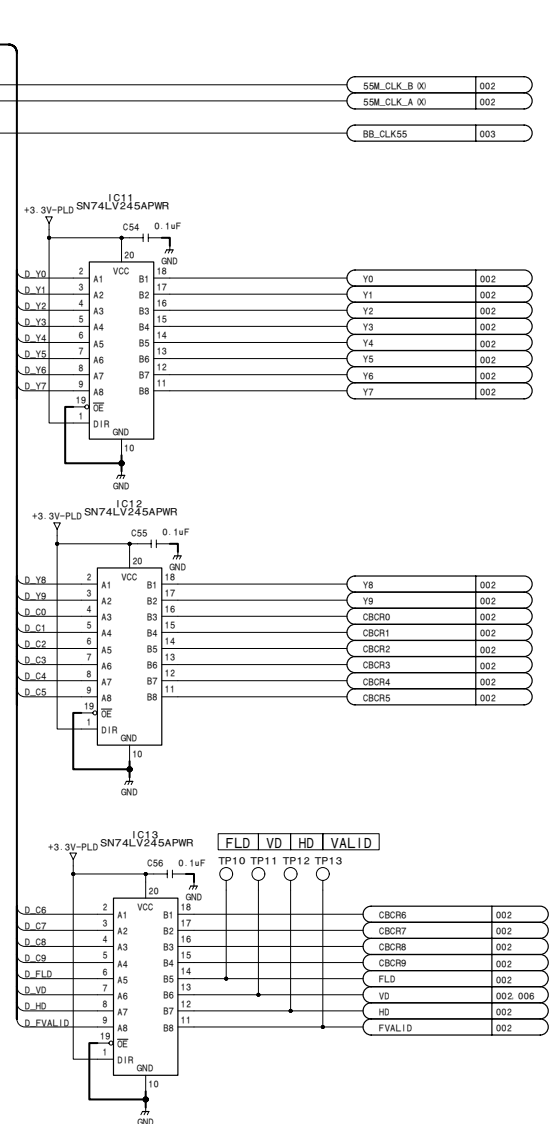
7-4

D

E



OPCTL



A

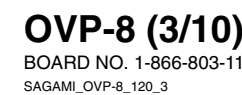
B

C

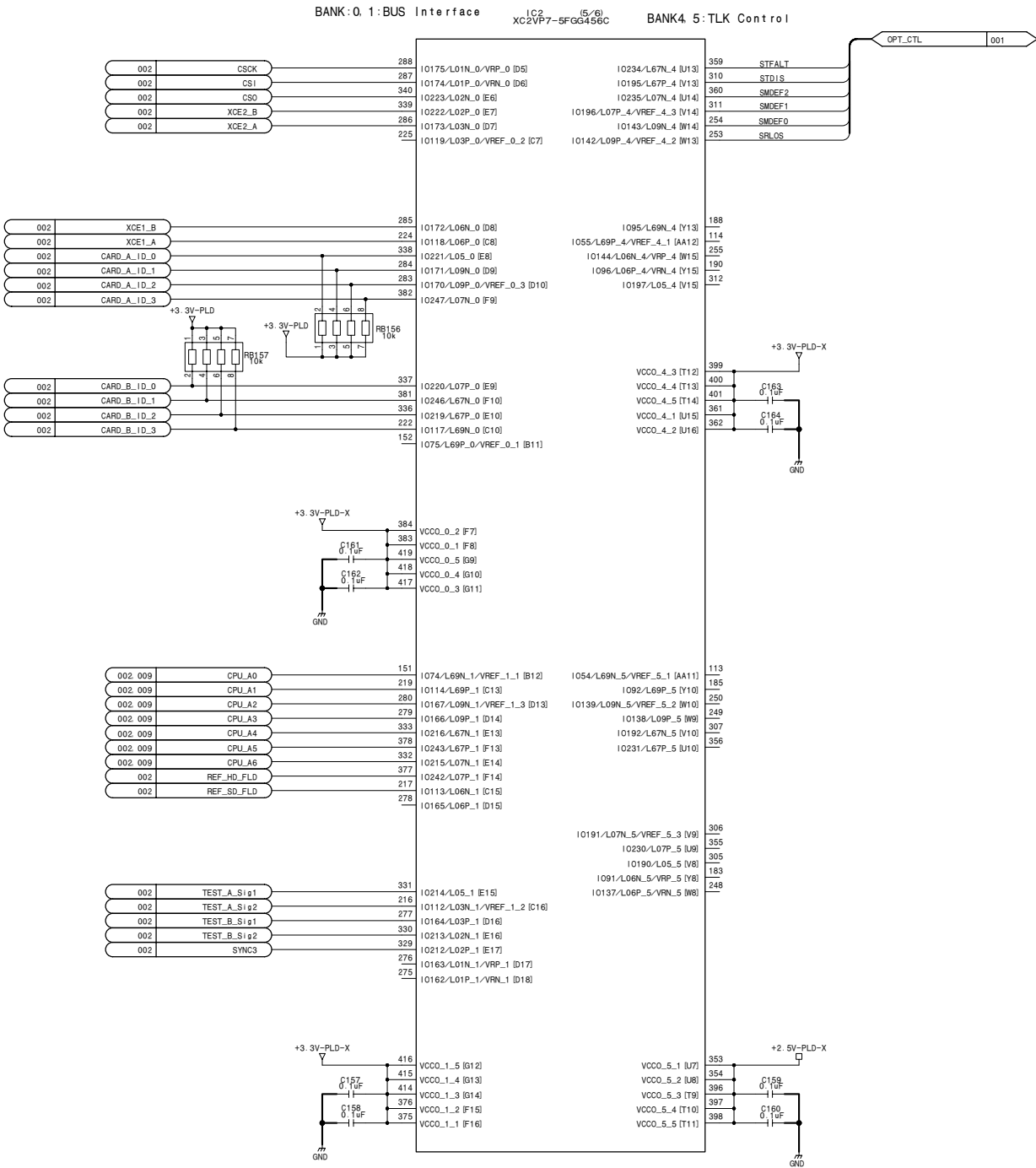
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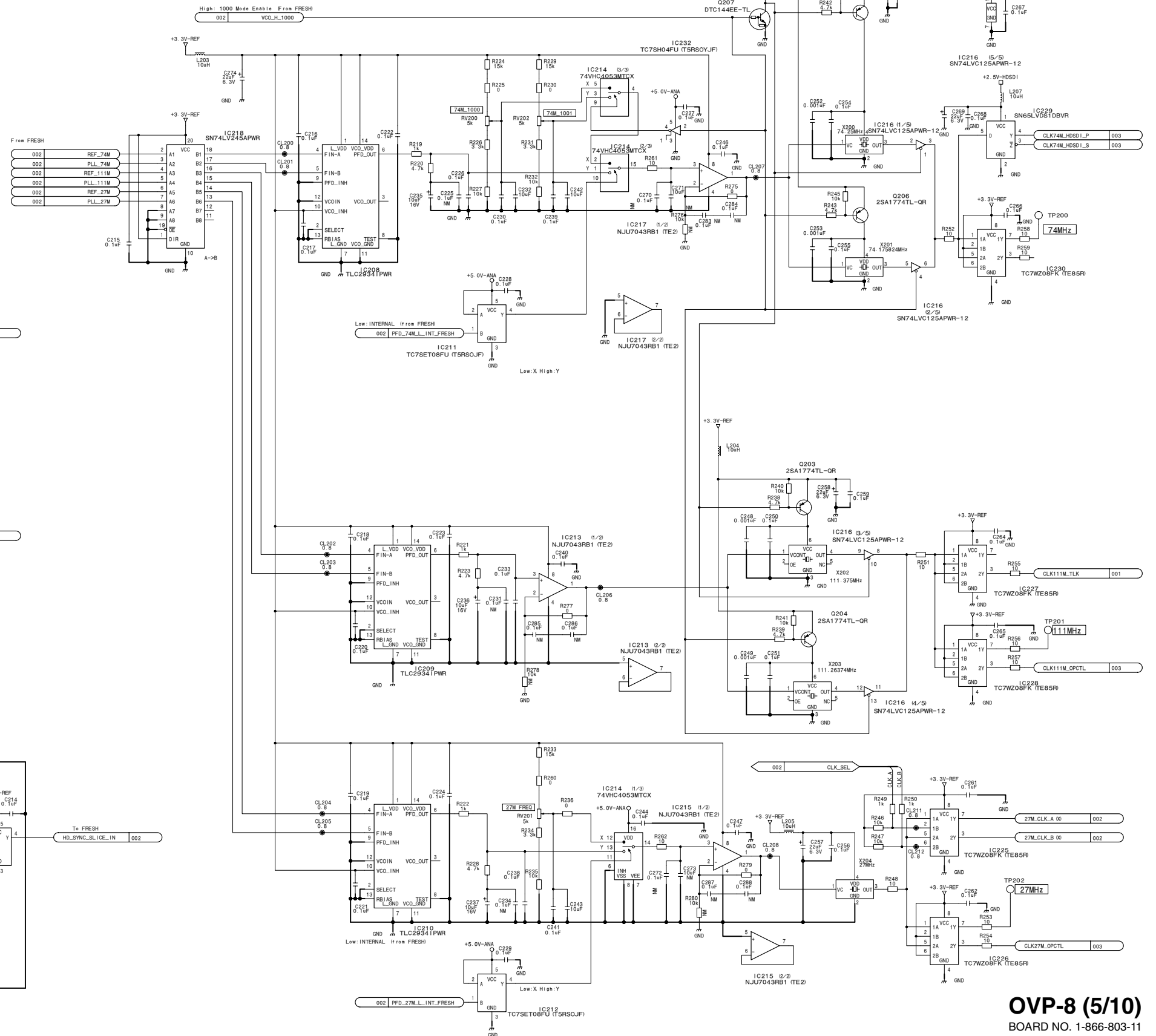
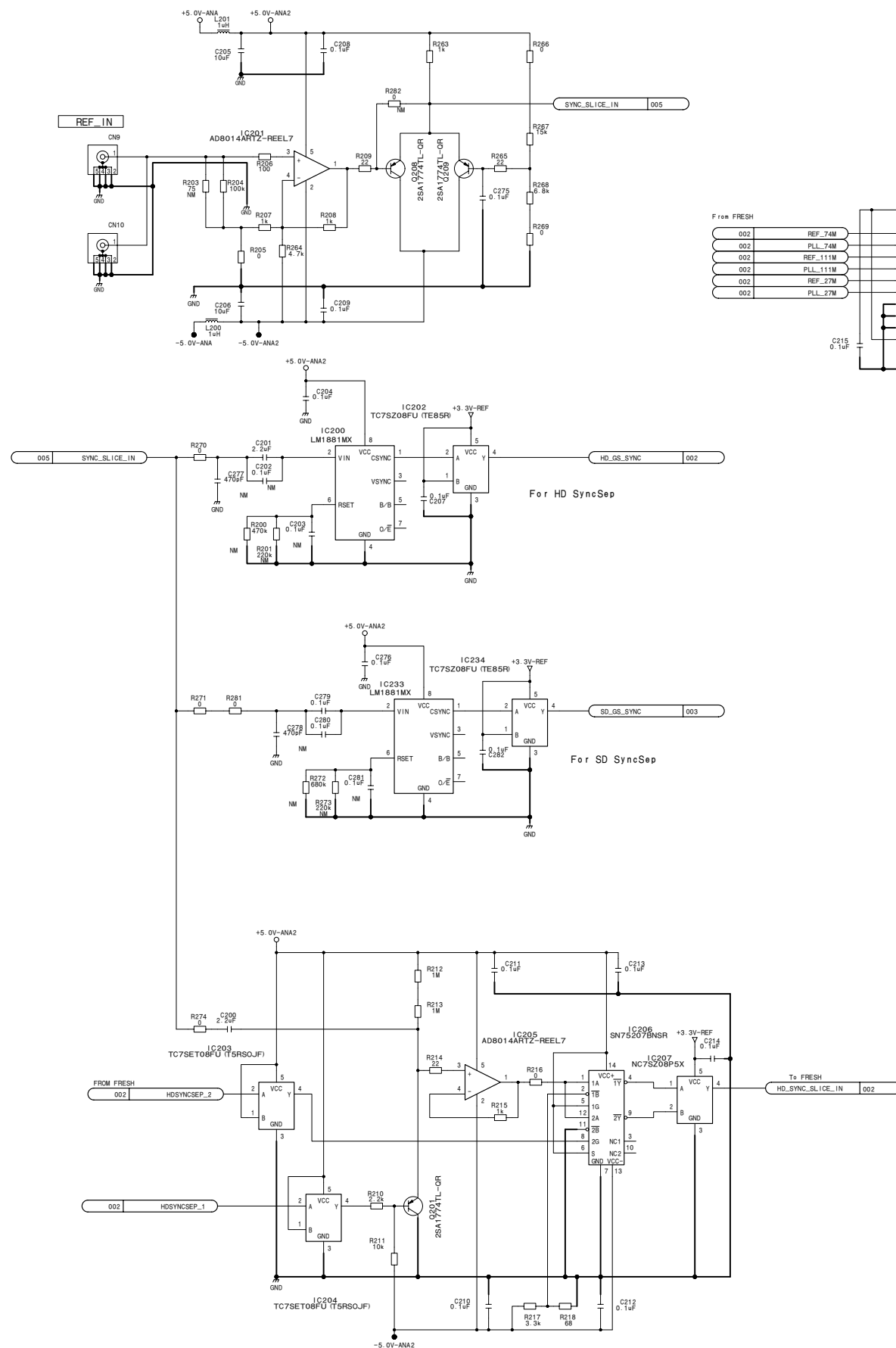
G

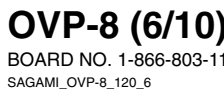
H

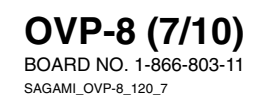


5









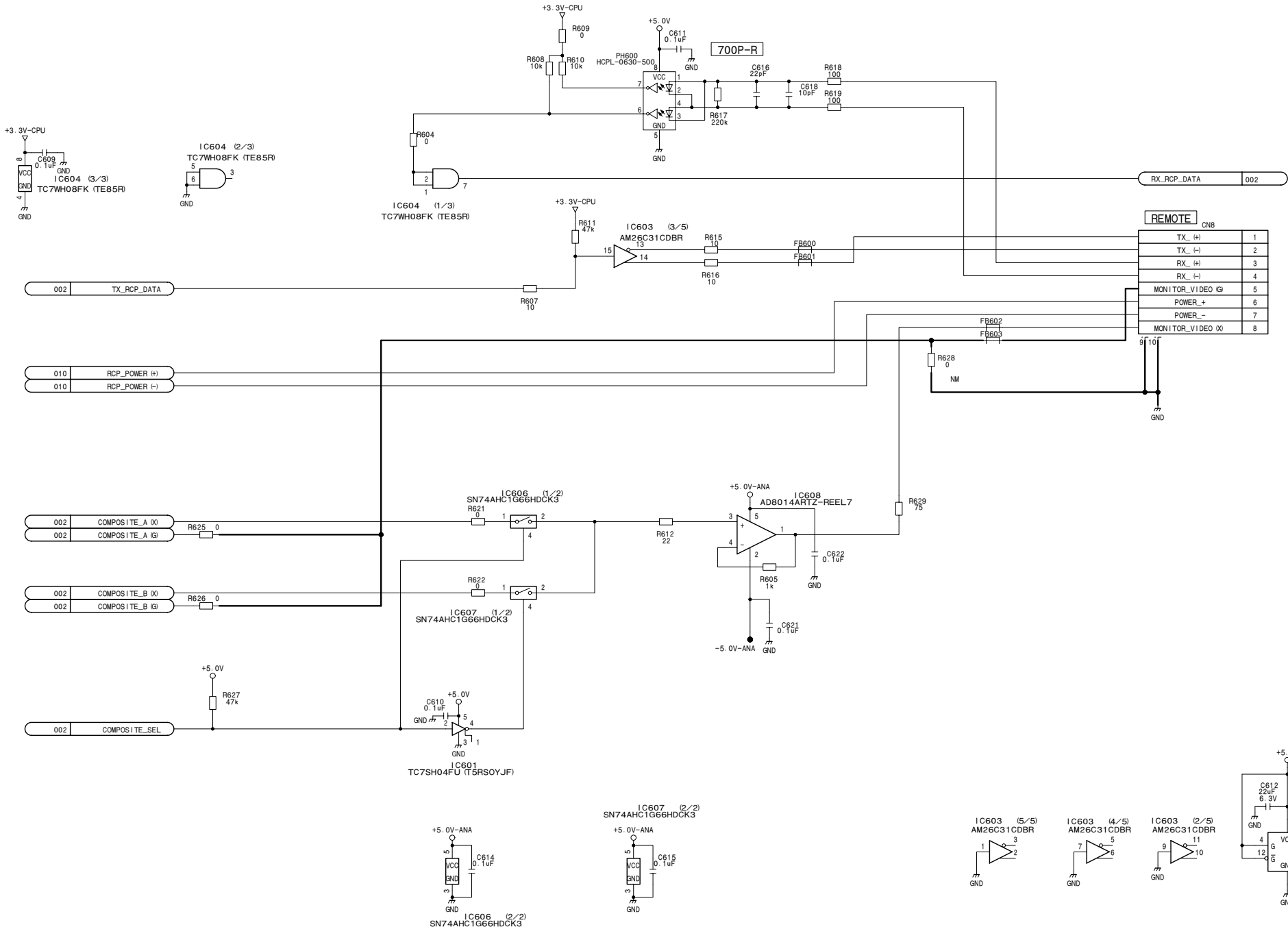
1

2

3

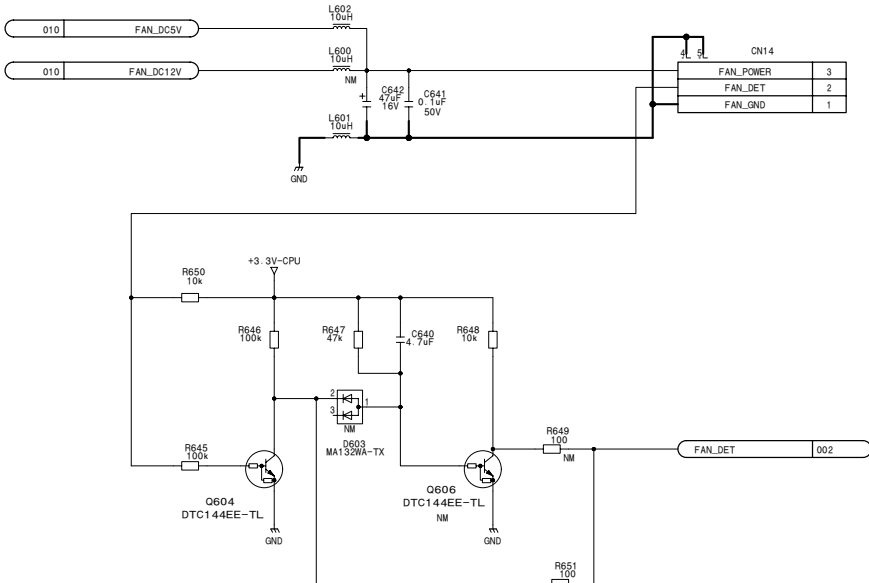
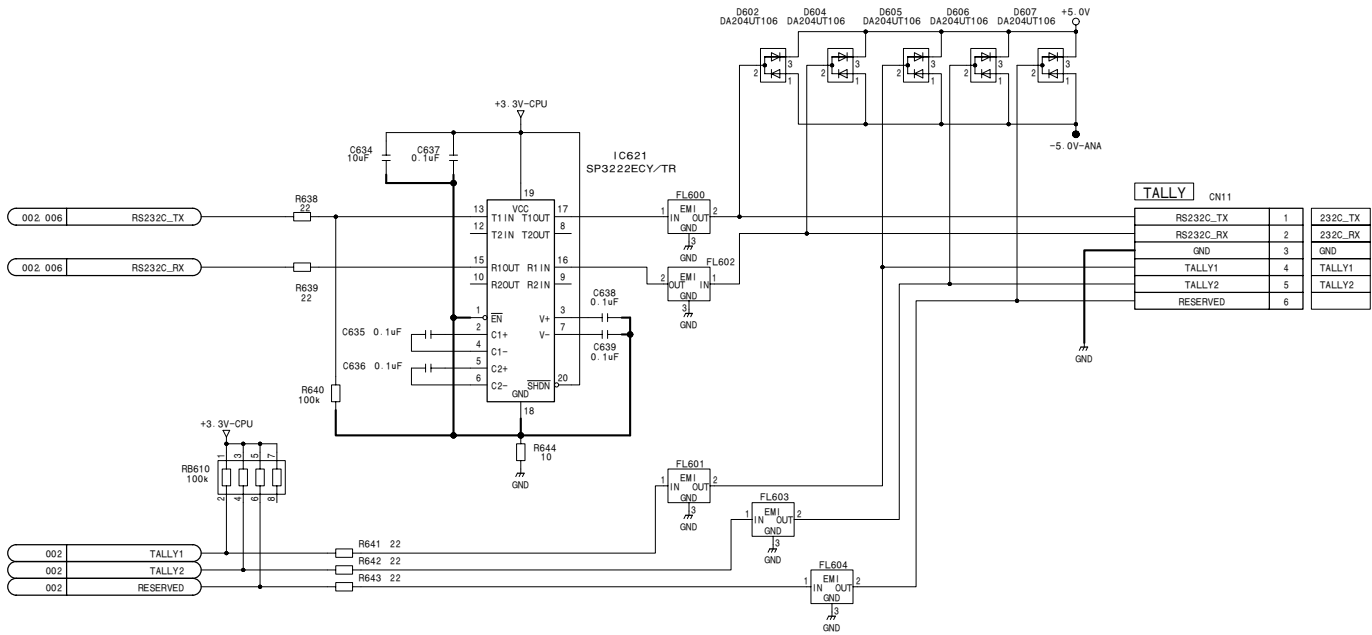
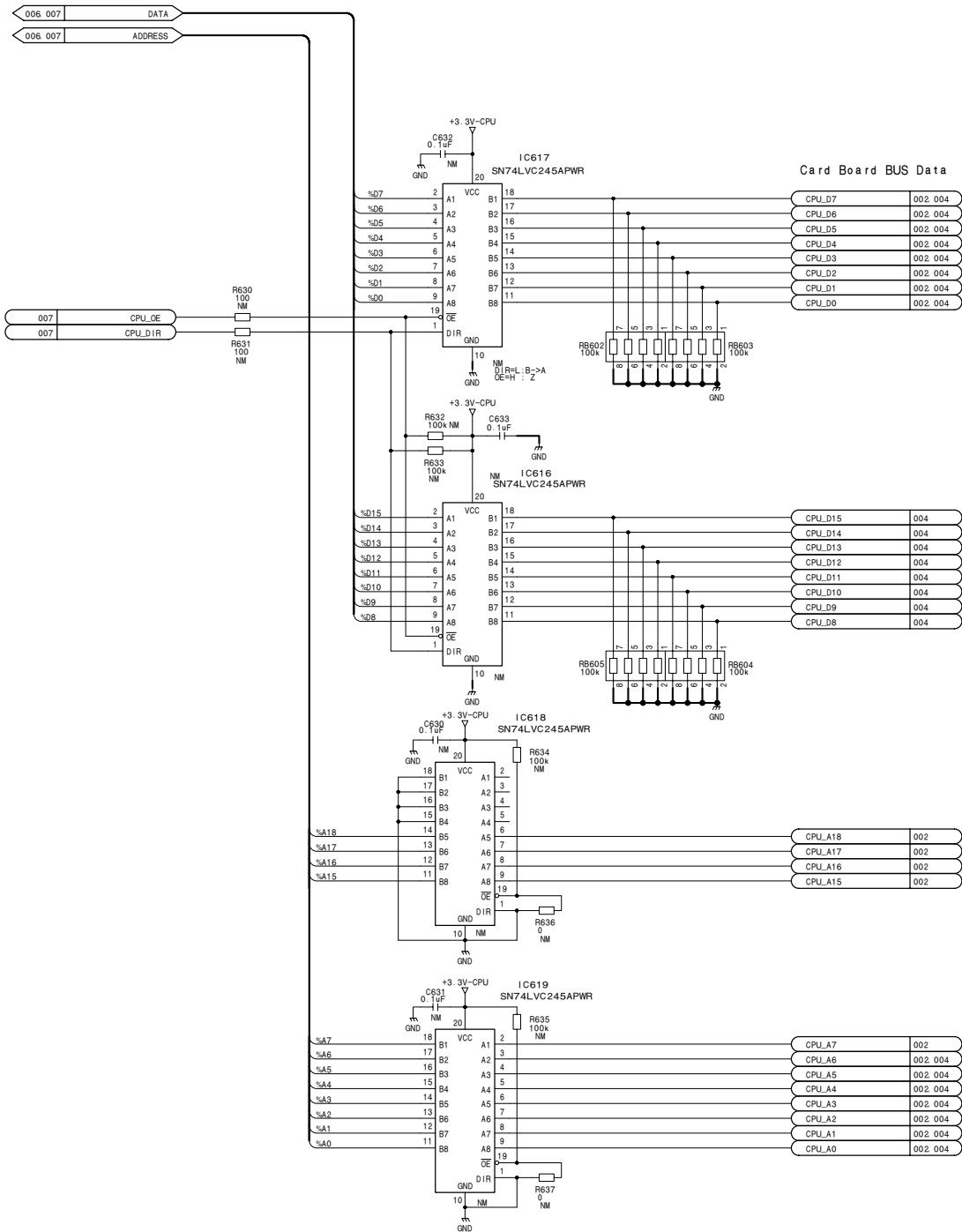
4

5



OVP-8 (8/10)

BOARD NO. 1-866-803-11
SAGAMI_OVP-8_120_8



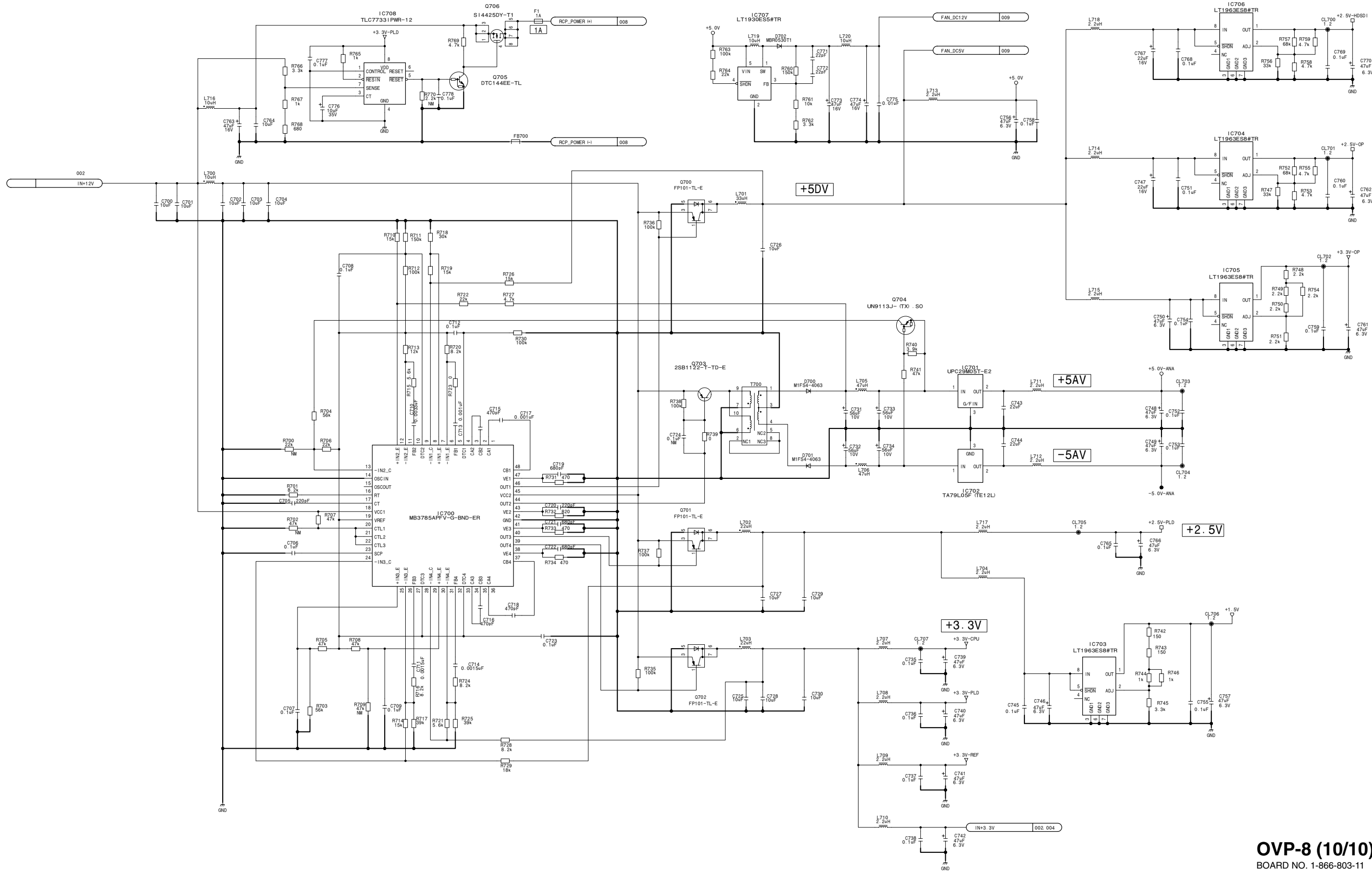
1

2

3

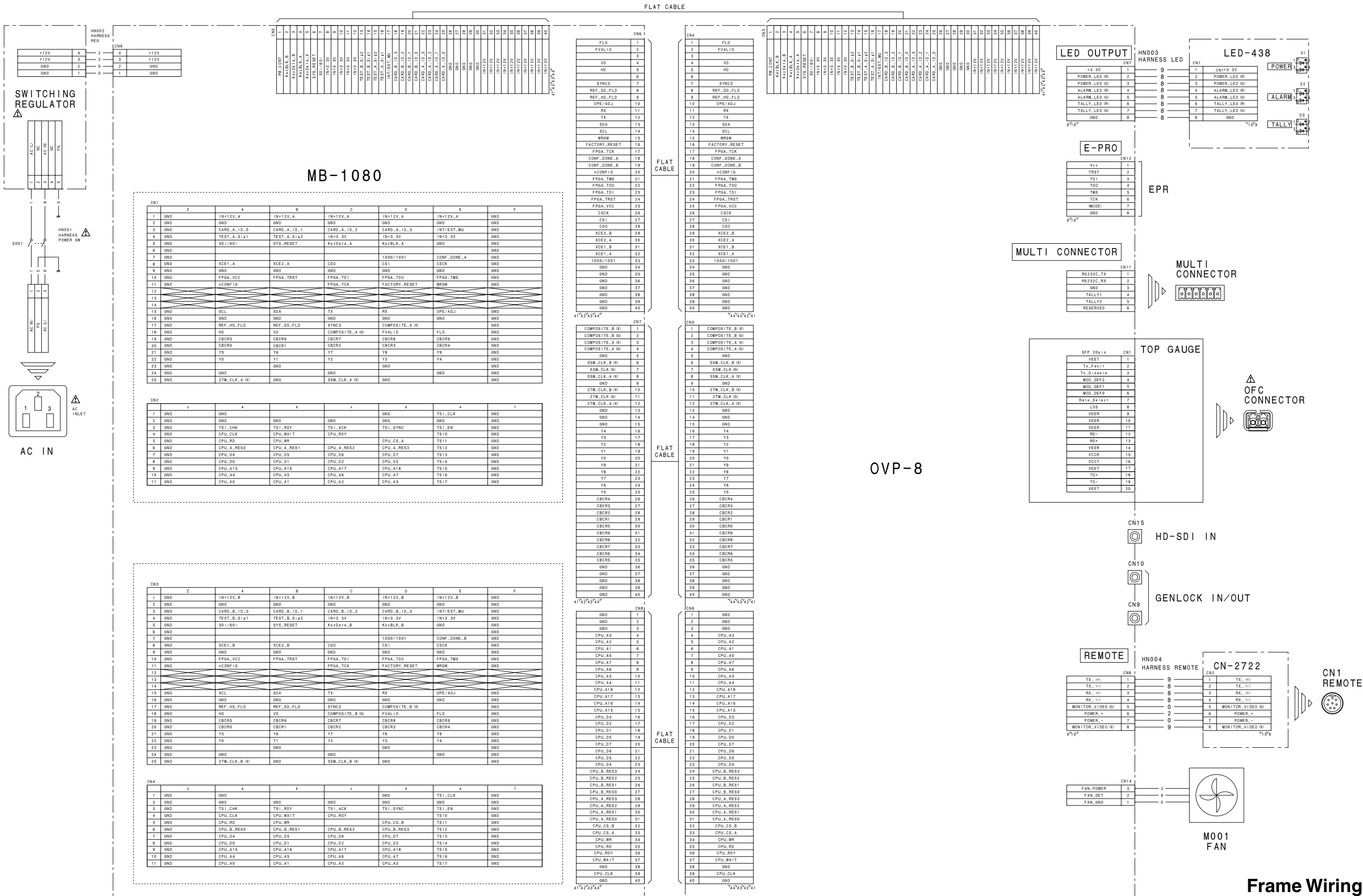
4

5



Frame Wiring

Frame Wiring



Frame Wiring

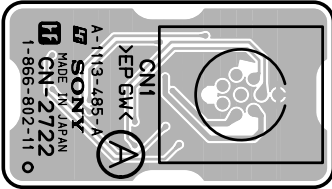
Section 8
Board Layouts

CN-2722 (1-866-802-11)

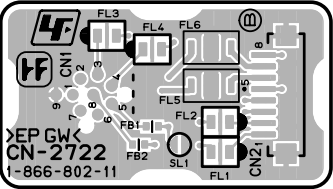
CN1	A1
CN2	*A1
FB1	*A1
FB2	*A1
FL1	*A1
FL2	*A1
FL3	*A1
FL4	*A1
FL5	*A1
FL6	*A1

SL1 *A1

*:B SIDE



CN-2722 -A SIDE-
SUFFIX: -11



CN-2722 -B SIDE-
SUFFIX: -11

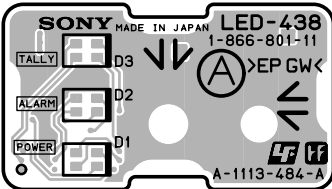
LED-438 (1-866-801-11)

CN1	*A1
D1	A1
D2	A1
D3	A1

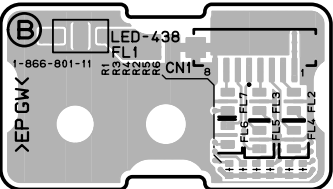
FL1	*A1
FL2	*A1
FL3	*A1
FL4	*A1
FL5	*A1
FL6	*A1
FL7	*A1

R1	*A1
R2	*A1
R3	*A1
R4	*A1
R5	*A1
R6	*A1

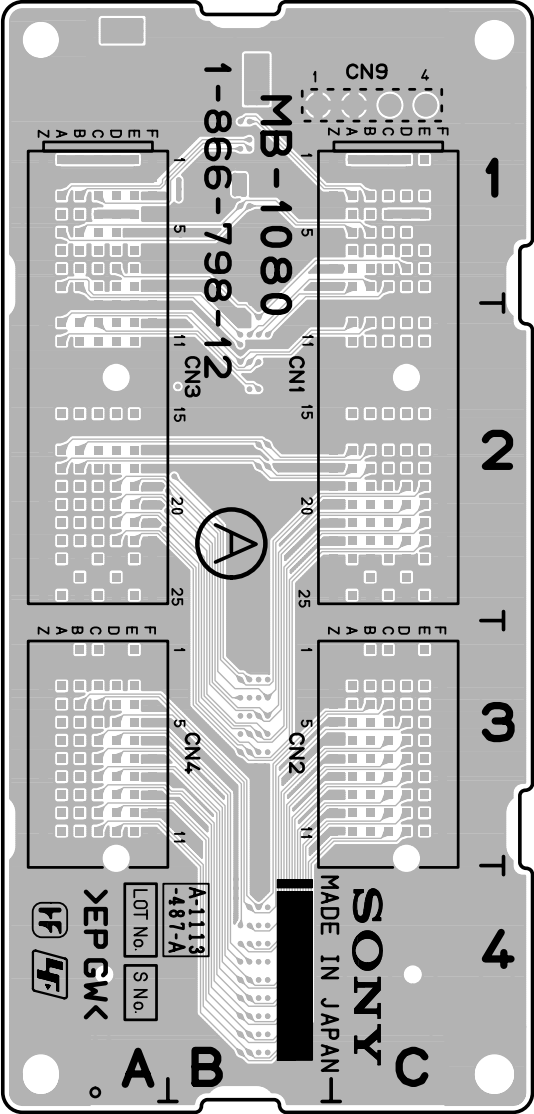
*:B SIDE



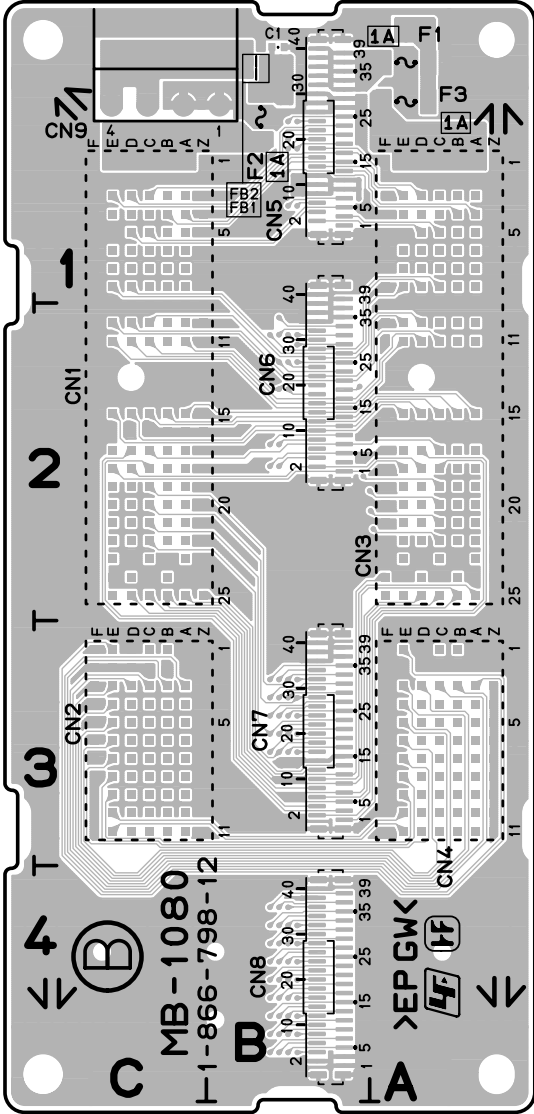
LED-438 -A SIDE-
SUFFIX: -11



LED-438 -B SIDE-
SUFFIX: -11



MB-1080 -A SIDE-
SUFFIX: -12



MB-1080 -B SIDE-
SUFFIX: -12

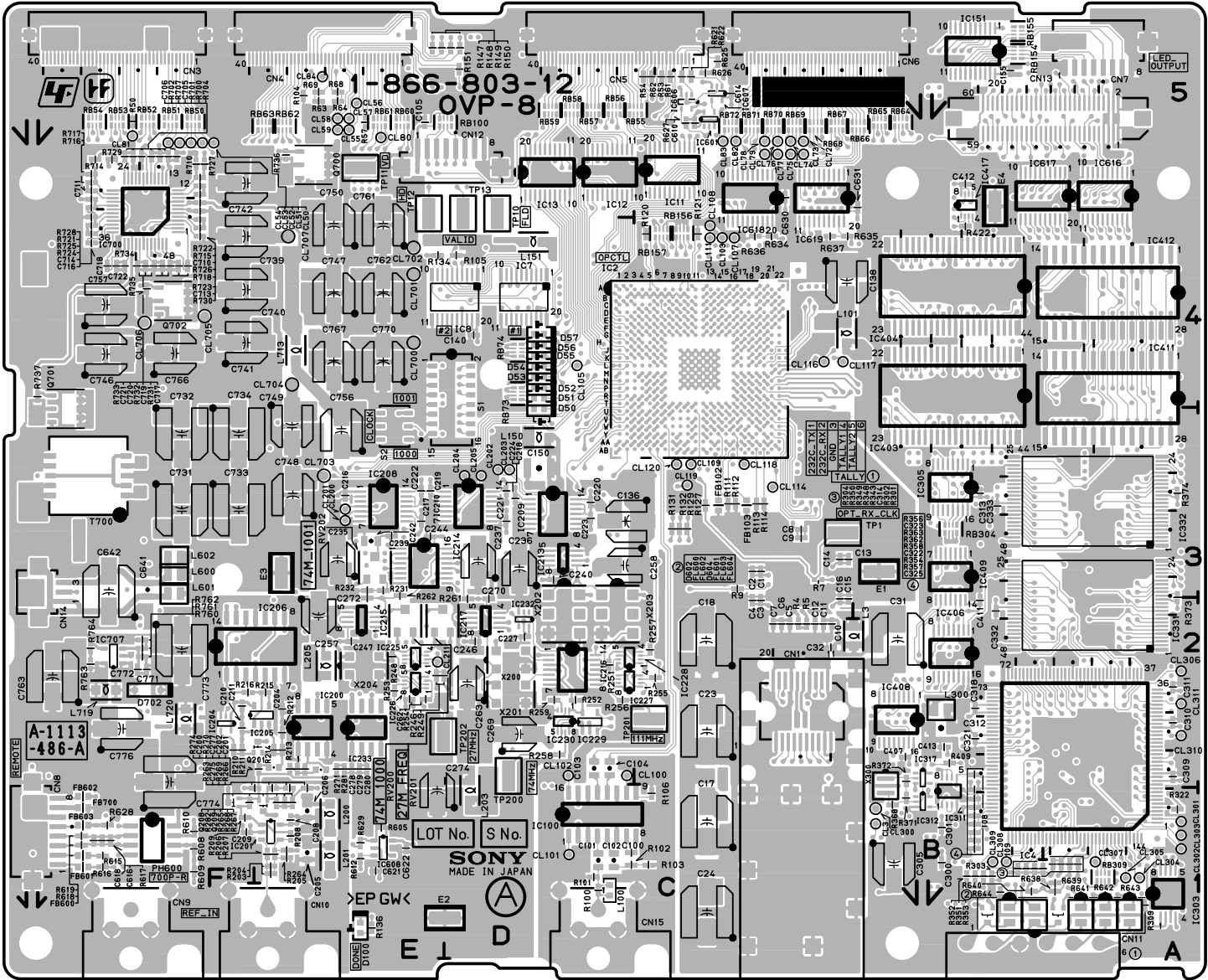
MB-1080 (1-866-798-12)

C1	*B1	F1	*A1
CN1	C2	F2	*B1
CN2	C3	F3	*A1
CN3	A2	FB1	*B1
CN4	A3	FB2	*B1
CN5	*B1		
CN6	*B2		
CN7	*B3		
CN8	*B4		
CN9	*C1		

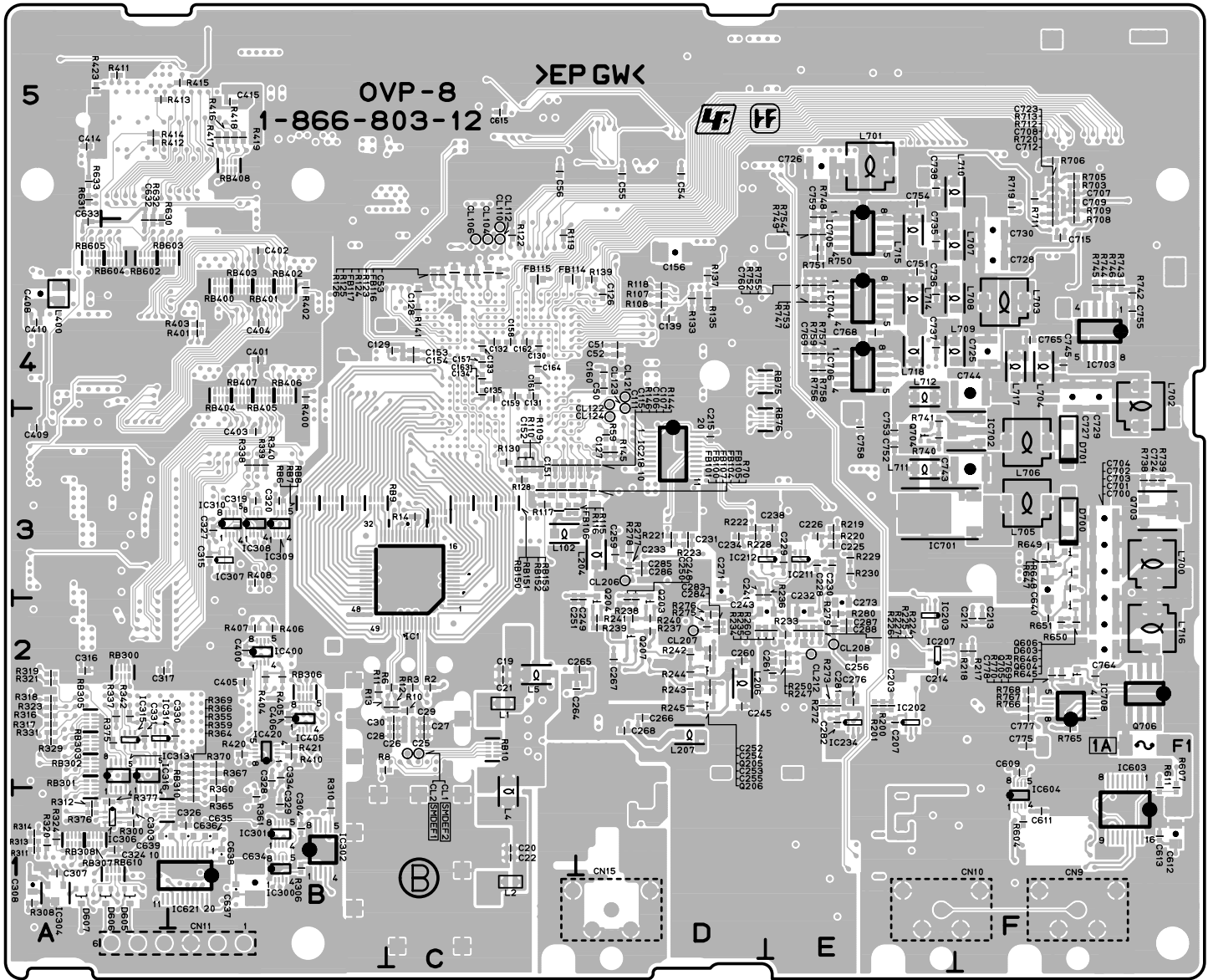
*:B SIDE

OVP-8 (1-866-803-12)

C1	C3	C214	*E2	C319	*B3	C736	*E4	CL124	*D3	FL600	B1
C2	C3	C215	*D3	C320	*B3	C737	*E4	CL200	E3	FL601	A1
C3	C2	C216	E3	C321	B2	C738	*E5	CL201	E3	FL602	B1
C4	C2	C217	E3	C322	B1	C739	F4	CL202	D3	FL603	A1
C5	C2	C218	D3	C323	B1	C740	F4	CL203	D3	FL604	A1
C6	C2	C219	E3	C324	*A1	C741	F4	CL204	D3		
C7	C2	C220	D3	C325	B1	C742	F5	CL205	D3	IC1	*C3
C8	C3	C221	D3	C326	*B1	C743	*F3	CL206	*D3	IC2	C4
C9	C3	C222	E3	C327	*B3	C744	*F4	CL207	*D2	IC4	A2
C10	C2	C223	D3	C328	*B2	C745	*F4	CL208	*E2	IC7	D4
C11	C2	C224	D3	C329	*B1	C746	F4	CL211	E2	IC8	D4
C12	C2	C225	*E3	C330	*B2	C747	E4	CL212	*E2	IC11	C5
C13	C3	C226	*E3	C331	*A2	C748	E3	CL300	B1	IC12	D5
C14	C3	C227	D2	C332	B2	C749	E3	CL301	A1	IC13	D5
C15	C2	C228	*E3	C333	B3	C750	E4	CL302	A1	IC100	D1
C16	C2	C229	*E3	C334	*B2	C751	*E4	CL303	A1	IC151	B5
C17	C1	C230	*E3	C400	*B2	C752	*E3	CL304	A1	IC200	E2
C18	C2	C231	*D3	C401	*B4	C753	*E3	CL305	A1	IC201	E1
C19	*C2	C232	*E2	C402	*B4	C754	*E5	CL306	A2	IC202	*E2
C20	*C1	C233	*E3	C403	*B3	C755	*F4	CL307	A1	IC203	*E2
C21	*C2	C234	*D3	C404	*B4	C756	E3	CL308	B1	IC204	F2
C22	*C1	C235	E3	C405	*B2	C757	F4	CL309	B1	IC205	E2
C23	C2	C236	D3	C406	*B2	C758	*E3	CL310	A2	IC206	E2
C24	C1	C237	D3	C407	B2	C759	*E5	CL311	A2	IC207	*E2
C25	*C2	C238	*E3	C408	*A4	C760	*E4	CL700	E4	IC208	E3
C26	*C2	C239	E3	C409	*A3	C761	E4	CL701	E4	IC209	D3
C27	*C2	C240	D3	C410	*A4	C762	E4	CL702	E4	IC210	D3
C28	*C2	C241	*D3	C411	B2	C763	F2	CL703	E3	IC211	*E3
C29	*C2	C242	E3	C412	B5	C764	*F2	CL704	E4	IC212	*E3
C30	*C2	C243	*E2	C413	B2	C765	*F4	CL705	F4	IC213	D3
C31	B2	C244	E3	C414	*A5	C766	F4	CL706	F4	IC214	E3
C32	C2	C245	*D2	C415	*B5	C767	E4	CL707	E4	IC215	E2
C50	*D4	C246	D2	C609	*F2	C768	*E4			IC216	D2
C51	*D4	C247	E2	C610	C5	C769	*E4	CN1	C2	IC217	D2
C52	*D4	C248	*D2	C611	*F1	C770	E4	CN3	F5	IC218	*D3
C53	*C4	C249	*D2	C612	*F1	C771	F2	CN4	E5	IC225	E2
C54	*D5	C250	*D2	C613	*F1	C772	F2	CN5	D5	IC226	E2
C55	*D5	C251	*C2	C614	C5	C773	F2	CN6	C5	IC227	D2
C56	*C5	C252	*D2	C615	*C5	C774	F2	CN7	A5	IC228	D2
C100	D1	C253	*D2	C616	F1	C775	*F2	CN8	F1	IC229	D2
C101	D1	C254	*D2	C618	F1	C776	F2	CN9	F1	IC230	D2
C102	D1	C255	*D2	C621	E1	C777	*F2	CN10	E1	IC232	D2
C103	D2	C256	*E2	C622	E1	C778	*F2	CN11	B1	IC233	E2
C104	D2	C257	E2	C630	C5			CN12	D5	IC234	*E2
C105	B5	C258	D3	C631	B5	CL1	*C2	CN13	A5	IC300	*B1
C106	*D3	C259	*D3	C632	*A4	CL2	*C2	CN14	F3	IC301	*B1
C107	*D3	C260	*D2	C633	*A4	CL3	B1	CN15	D1	IC302	*B1
C111	*C3	C261	*E2	C634	*B1	CL50	F5			IC303	A1
C115	*C3	C262	E2	C635	*B1	CL51	F5	D50	D3	IC304	*A1
C126	*D4	C263	D2	C636	*B1	CL52	F5	D51	D4	IC305	B3
C127	*D3	C264	*D2	C637	*B1	CL53	F5	D52	D4	IC306	*A1
C128	*C4	C265	*D2	C638	*B1	CL54	F5	D53	D4	IC307	*B3
C129	*C4	C266	*D2	C639	*A1	CL55	E5	D54	D4	IC308	*B3
C130	*C4	C267	*D2	C640	*F3	CL56	E5	D55	D4	IC309	*B3
C131	*C4	C268	*D2	C641	F3	CL57	E5	D56	D4	IC310	*B3
C132	*C4	C269	D2	C642	F3	CL58	E5	D57	D4	IC311	B1
C133	*C4	C270	D2	C700	*F2	CL59	E5	D100	E1	IC312	B1
C134	*C4	C271	*D3	C701	*F3	CL72	C5	D602	B1	IC313	*A2
C135	*C4	C272	E2	C702	*F3	CL73	C5	D603	*F3	IC314	*A2
C136	D3	C273	*E2	C703	*F3	CL74	C5	D604	A1	IC315	*A2
C138	C4	C274	E1	C704	*F3	CL75	C5	D605	*A1	IC316	*A2
C139	*D4	C275	E1	C705	F5	CL76	C5	D606	*A1	IC317	B2
C140	D4	C276	*E2	C706	F5	CL77	C5	D607	*A1	IC331	A2
C150	D3	C277	E2	C707	*F5	CL78	C5	D700	*F3	IC332	A3
C151	*C3	C278	E2	C708	*F5	CL79	C5	D701	*F3	IC400	*B2
C152	*C3	C279	E2	C709	*F5	CL80	E5	D702	F2	IC403	B4
C153	*C4	C280	E2	C710	F5	CL81	F5			IC404	B4
C154	*C4	C281	*E2	C711	F5	CL82	C5	E1	B3	IC405	*B2
C155	B5	C282	*E2	C712	*F4	CL83	C5	E2	D1	IC406	B2
C156	*D4	C283	*D2	C713	F4	CL84	E5	E3	E3	IC408	B2
C157	*C4	C284	*D2	C714	F4	CL100	D2	E4	B5	IC409	B3
C158	*C4	C285	*D3	C715	*F4	CL101	D1			IC411	A4
C159	*C4	C286	*D3	C716	F4	CL102	D2	F1	*F2	IC412	A4
C160	*D4	C287	*E2	C717	F4	CL103	C4			IC417	B5
C161	*C4	C288	*E2	C718	F4	CL104	*C4	FB100	*C3	IC420	*B2
C162	*C4	C300	B1	C719	F4	CL105	D4	FB101	*C3	IC601	C5
C163	*C4	C301	B1	C720	F4	CL106	*C4	FB102	C3	IC603	*F1
C164	*C4	C303	*A1	C721	F4	CL107	C4	FB103	C3	IC604	*F1
C200	E2	C304	*B1	C722	F4	CL108	C4	FB104	*C3	IC606	C5
C201	E2	C305	B1	C723	*F5	CL109	C3	FB105	*D3	IC607	C5
C202	E2	C307	*A1	C724	*F3	CL110	*C4	FB106	*C3	IC608	E1
C203	*E2	C308	*A1	C725	*F4	CL111	C4	FB107	*C3	IC616	A5
C204	E2	C309	A2	C726	*E5	CL112	*C4	FB114	*C4	IC617	B5
C205	E1	C310	A2	C727	*F4	CL114	C3	FB115	*C4	IC618	C5
C206	E1	C311	A2	C728	*F4	CL116	C4	FB116	*C4	IC619	C5
C207	*E2	C312	B2	C729	*F4	CL117	C4	FB117	*C4	IC621	*B1
C208	E1	C313	B3	C730	*F4	CL118	C3	FB600	F1	IC700	F5
C209	F1	C314	A1	C731	F3	CL119	C3	FB601	F1	IC701	*E3
C210	F2	C315	*B3	C732	F3	CL120	C3	FB602	F1	IC702	*F3
C211	F2	C316	*A2	C733	F3	CL121	*D4	FB603	F1	IC703	*F4
C212	*F2	C317	*A2	C734	F3	CL122	*D4	FB700	F1	IC704	*E4
C213	*F2	C318	B2	C735	*E4	CL123	*D4			IC705	*E4



OVP-8 -A SIDE-
SUFFIX: -12



OVP-8 -B SIDE-
SUFFIX: -12

IC706	*E4	R70	*D3	R244	*D2	R371	B1	R719	*F5	RB156	C4
IC707	F2	R100	D1	R245	*D2	R372	B2	R720	*F5	RB157	C4
IC708	*F2	R101	D1	R246	E2	R373	A3	R721	F5	RB300	*A2
		R102	D1	R247	*E2	R374	A3	R722	F5	RB301	*A2
L1	*C2	R103	C1	R248	E2	R375	*A2	R723	F4	RB302	*A2
L2	*C1	R104	E5	R249	D2	R376	*A1	R724	F4	RB303	*A2
L3	B2	R105	D4	R250	*E2	R377	*A1	R725	F5	RB304	B3
L4	*C1	R106	C1	R251	D2	R400	*B4	R726	F5	RB305	*A2
L5	*C2	R107	*D4	R252	D2	R401	*B4	R727	F5	RB306	*B2
L100	D1	R108	*D4	R253	E2	R402	*B4	R728	F5	RB307	*A1
L101	C4	R109	*C3	R254	E2	R403	*B4	R729	F5	RB308	*A1
L102	*C3	R110	*C3	R255	C2	R404	*B2	R730	F4	RB309	A1
L150	D3	R111	C3	R256	D2	R405	*B2	R731	F4	RB310	*A1
L151	D4	R112	C3	R257	C2	R406	*B2	R732	F4	RB400	*B4
L200	E1	R113	C3	R258	D2	R407	*B2	R733	F4	RB401	*B4
L201	E1	R114	C3	R259	D2	R408	*B3	R734	F4	RB402	*B4
L203	D1	R115	*C3	R260	*E2	R409	B2	R735	F4	RB403	*B4
L204	*D3	R116	*C3	R261	D2	R410	*B2	R736	E5	RB404	*B4
L205	E2	R117	*C3	R262	E3	R411	*A5	R737	F4	RB405	*B4
L206	*D2	R118	*D4	R263	E1	R412	*A5	R738	*F3	RB406	*B4
L207	*D2	R119	*C4	R264	E1	R413	*A5	R739	*F3	RB407	*B4
L300	B2	R120	C4	R265	E1	R414	*A5	R740	*E3	RB408	*B5
L400	*A4	R121	C4	R266	E1	R415	*B5	R741	*E3	RB602	*A4
L600	F3	R122	*C4	R267	E1	R416	*B5	R742	*F4	RB603	*A4
L601	F3	R123	*C4	R268	E1	R417	*B5	R743	*F4	RB604	*A4
L602	F3	R124	*C4	R269	E1	R418	*B5	R744	*F4	RB605	*A4
L700	*F3	R125	*C4	R270	E2	R419	*B5	R745	*F4	RB610	*A1
L701	*E5	R126	*C4	R271	E2	R420	*B2	R746	*F4		
L702	*F4	R127	C3	R272	*E2	R421	*B2	R747	*E4	RV200	E2
L703	*F4	R128	*C3	R273	*E2	R422	B4	R748	*E5	RV201	E2
L704	*F4	R129	C3	R274	E2	R423	*A5	R749	*E4	RV202	E3
L705	*F3	R130	*C3	R275	*D2	R604	*F1	R750	*E4		
L706	*F3	R131	C3	R276	*D2	R605	E1	R751	*E4	S1	D4
L707	*F4	R132	C3	R277	*D3	R607	*F2	R752	*E4	S2	E3
L708	*E4	R133	*D4	R278	*D3	R608	F1	R753	*E4		
L709	*E4	R134	E4	R279	*E2	R609	F1	R754	*E4	T700	F3
L710	*E5	R135	*D4	R280	*E2	R610	F1	R755	*E4		
L711	*E3	R136	E1	R281	E2	R611	*F2	R756	*E4	TP1	C3
L712	*E4	R137	*D4	R282	F1	R612	E1	R757	*E4	TP10	D5
L713	E4	R139	*D4	R300	*A1	R615	F1	R758	*E4	TP11	E5
L714	*E4	R141	*C4	R301	A1	R616	F1	R759	*E4	TP12	E5
L715	*E4	R144	*D3	R302	A1	R617	F1	R760	F2	TP13	D5
L716	*F2	R145	*D3	R303	B1	R618	F1	R761	F2	TP200	D2
L717	*F4	R146	*C3	R304	B1	R619	F1	R762	F2	TP201	C2
L718	*E4	R147	E5	R306	*B1	R621	C5	R763	F2	TP202	E2
L719	F2	R148	E5	R308	*A1	R622	C5	R764	F2		
L720	F2	R149	D5	R309	A1	R625	C5	R765	*F2	X200	D2
		R150	D5	R310	*B1	R626	C5	R766	*F2	X201	D2
		R151	D5	R311	*A1	R627	C5	R767	*F2	X202	D2
PH600	F1	R200	*E2	R312	*A1	R628	F1	R768	*F2	X203	D2
		R201	*E2	R313	*A1	R629	E1	R769	*F2	X204	E2
Q201	E2	R203	E1	R314	*A1	R630	*A4	R770	*F2	X300	B2
Q203	*D2	R204	E1	R316	*A2	R631	*A5				
Q204	*D2	R205	E1	R317	*A2	R632	*A4	RB6	*B3	*:B SIDE	
Q205	*D2	R206	E1	R318	*A2	R633	*A5	RB7	*B3		
Q206	*D2	R207	E1	R319	*A2	R634	C4	RB8	*B3		
Q207	*D2	R208	E1	R320	*A1	R635	C4	RB9	*C3		
Q208	F1	R209	F1	R321	*A2	R636	C4	RB10	*C2		
Q209	E1	R210	F2	R322	A1	R637	C4	RB50	F5		
Q604	*F2	R211	F2	R323	*A2	R638	A1	RB51	F5		
Q606	*F3	R212	E2	R324	*A1	R639	A1	RB52	F5		
Q700	E5	R213	E2	R329	*A2	R640	B1	RB53	F5		
Q701	F3	R214	E2	R331	*A2	R641	A1	RB54	F5		
Q702	F4	R215	E2	R337	*A2	R642	A1	RB55	C5		
Q703	*F3	R216	F2	R338	*B3	R643	A1	RB56	D5		
Q704	*E3	R217	*F2	R339	*B3	R644	B1	RB57	D5		
Q705	*F2	R218	*F2	R340	*B3	R645	*F2	RB58	D5		
Q706	*F2	R219	*E3	R342	*A2	R646	*F3	RB59	D5		
		R220	*E3	R343	A1	R647	*F3	RB60	D5		
R2	*C2	R221	*D3	R348	A1	R648	*F3	RB61	E5		
R3	*C2	R222	*D3	R349	B1	R649	*F3	RB62	E5		
R4	C2	R223	*D3	R350	B1	R650	*F2	RB63	E5		
R5	C2	R224	*E2	R351	B1	R651	*F2	RB64	B5		
R6	*C2	R225	*E2	R352	B1	R700	F5	RB65	B5		
R7	C3	R226	*E2	R353	B1	R701	F5	RB66	B5		
R8	*C2	R227	*E2	R354	B1	R702	F5	RB67	C5		
R9	C3	R228	*D3	R355	*B2	R703	*F5	RB68	C5		
R10	*C2	R229	*E3	R356	B2	R704	F5	RB69	C5		
R11	*C2	R230	*E3	R357	B1	R705	*F5	RB70	C5		
R12	*C2	R231	E3	R358	B1	R706	*F5	RB71	C5		
R13	*C2	R232	E3	R359	*B1	R707	F5	RB72	C5		
R14	*C3	R233	*E2	R360	*B2	R708	*F4	RB73	D4		
R50	F5	R234	*D2	R361	*B1	R709	*F5	RB74	D4		
R53	C5	R235	*E2	R362	B1	R710	F5	RB75	*D4		
R54	C5	R236	*E3	R363	B1	R711	*F5	RB76	*D3		
R57	E5	R237	*D2	R364	*B1	R712	*F5	RB100	D5		
R59	*D3	R238	*D2	R365	*B1	R713	*F5	RB150	*C3		
R61	C5	R239	*D2	R366	*B2	R714	F5	RB151	*C3		
R62	C5	R240	*D2	R367	*B2	R715	F5	RB152	*C3		
R63	E5	R241	*D2	R368	B1	R716	F5	RB153	*C3		
R64	E5	R242	*D2	R369	*B2	R717	F5	RB154	B5		
R68	E5	R243	*D2	R370	*B2	R718	F5	RB155	B5		
R69	E5										

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

