EX Series
Rework Instructions

06/23/2022 rev 0.6

List of SKU Impact

All EX SKUs

Change Q850 to MMBT3904, and reflash the FW to V2.342.
Kernel version : 1.940

Bose P/N	Material Description
834317-1110	CONTROLSPACE EX-1280 PROCESSOR 120V US
834317-2110	CONTROLSPACE EX-1280 PROCESSOR 230V EU
834317-3110	CONTROLSPACE EX-1280 PROCESSOR 100V JP
834317-4110	CONTROLSPACE EX-1280 PROCESSOR 230V UK
834317-5110	CONTROLSPACE EX-1280 PROCESSOR 230V AU
834354-0110	CONTROLSPACE EX-1280 PROCESSOR
771613-0110	CONTROLSPACE EX-1280C PROCESSOR
772234-1110	CONTROLSPACE EX-1280C PROCESSOR 120V US
772234-2110	CONTROLSPACE EX-1280C PROCESSOR 230V EU
772234-3110	CONTROLSPACE EX-1280C PROCESSOR 100V JP
772234-4110	CONTROLSPACE EX-1280C PROCESSOR 230V UK
772234-5110	CONTROLSPACE EX-1280C PROCESSOR 230V AU
834315-1110	CONTROLSPACE EX-440C PROCESSOR 120V US
834315-2110	CONTROLSPACE EX-440C PROCESSOR 230V EU
834315-3110	CONTROLSPACE EX-440C PROCESSOR 100V JP
834315-4110	CONTROLSPACE EX-440C PROCESSOR 230V UK
834315-5110	CONTROLSPACE EX-440C PROCESSOR 230V AU
834351-0110	CONTROLSPACE EX-440C PROCESSOR

Rework Preparation

Tools Preparation:

1.Electric screw drive with crosshead bit * 1pcs
2.Electric screw drive with socket wrench * 1pcs
3.Soldering iron : 80W
4.ESD wrist strip
5.PC/ Ethernet cable /Power cord
6.Hi-pot Test Equipment

Torque force Requirements :
For top cover screw : 5.0 +/-0.5 Kgf.cm
For inside screws : 4.5+/-0.5 Kgf.cm

Soldering Temperature Setting
380 +/- 20 degree C

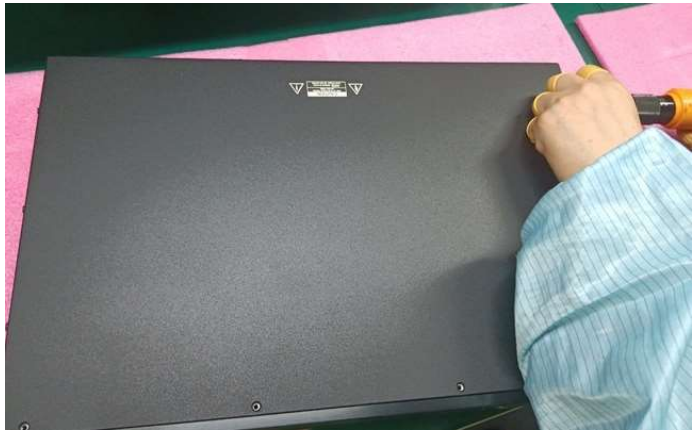
Crosshead bit Spec:
PIL-BASD-6600L+ T5*60*40*1

Socket wrench Spec:
PIL-SK-9230P + 5mm

Step1: Unpack Carton and Take Out Products

Step 1: Unpack carton and take out EX (EX-1280C ref photo) products from PE bag
Using a small knife to cut the sealing tape on carton and sealing strip on PE bag, leave manual and accessory package in carton

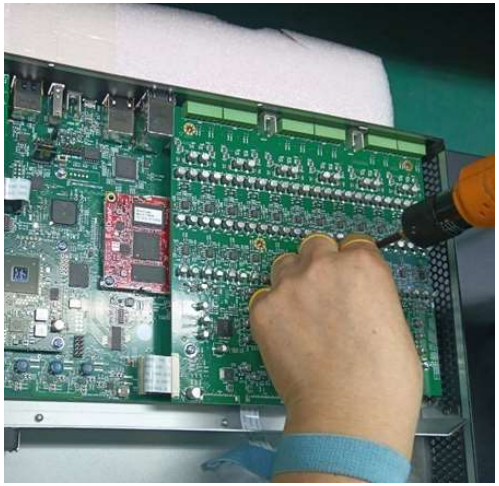
Step 1 cont’d



Step2: Unscrew and Remove The Top Cover

Step 2: Unscrew and remove the top cover : Toque force : 5.0+/-0.5 Kgf.cm
Unscrew the top cover, start from the rear panel, 8pcs of flat-head screw M3*6 and then 4pcs of M3*5.5 sunk screw.
Use different bins to gather the screw parts

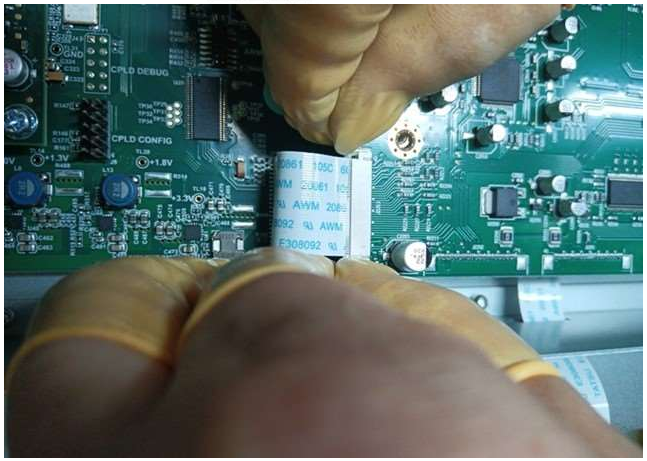
Step3: Take Out Audio Input Board



Step 3: Take out Audio Input board

1. Unscrew the audio input board, 7pcs of white flat-head screw+ washer, gather the screw parts in a bin

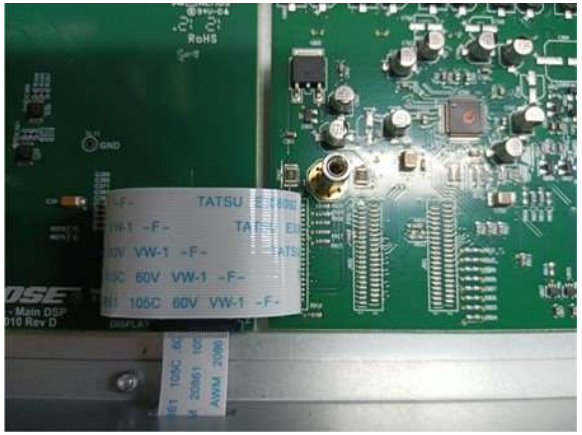
Step3: Take Out Audio Input Board

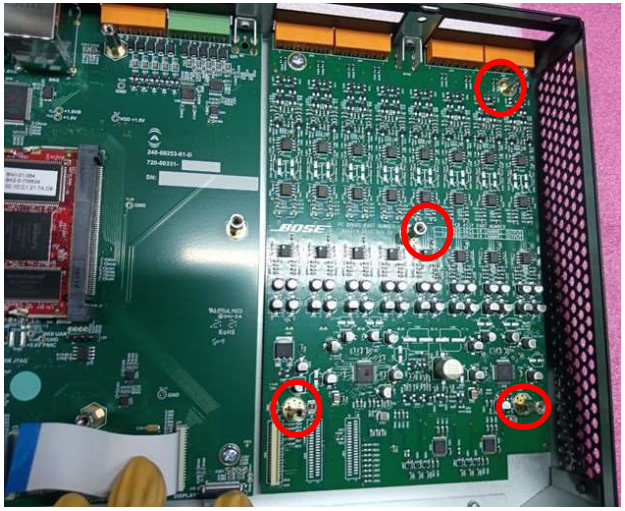


Step 3: Take out Audio Input board

2.Disconnect the FPC cable from J2203 socket on audio input board, loose the latch on both side and then take out the FPC cable.

Step4: Take out The Audio Output Board

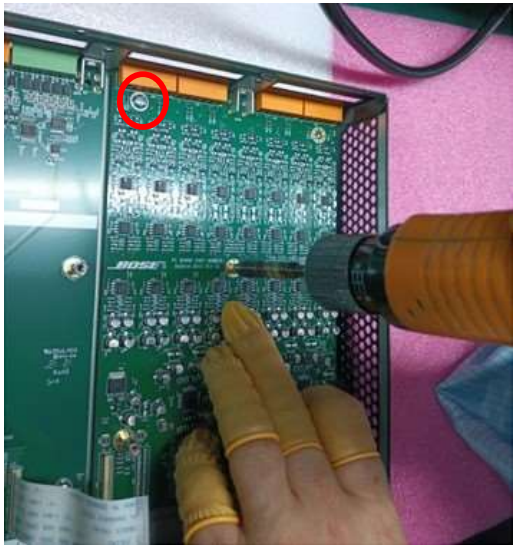


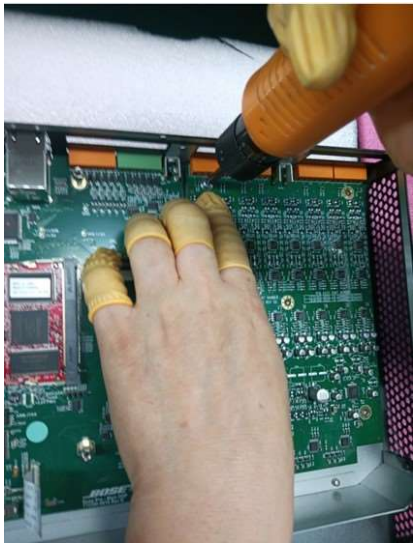


Step 4: Take out Audio output board

1.Disconnect the FPC cable from J902 socket on audio output board.

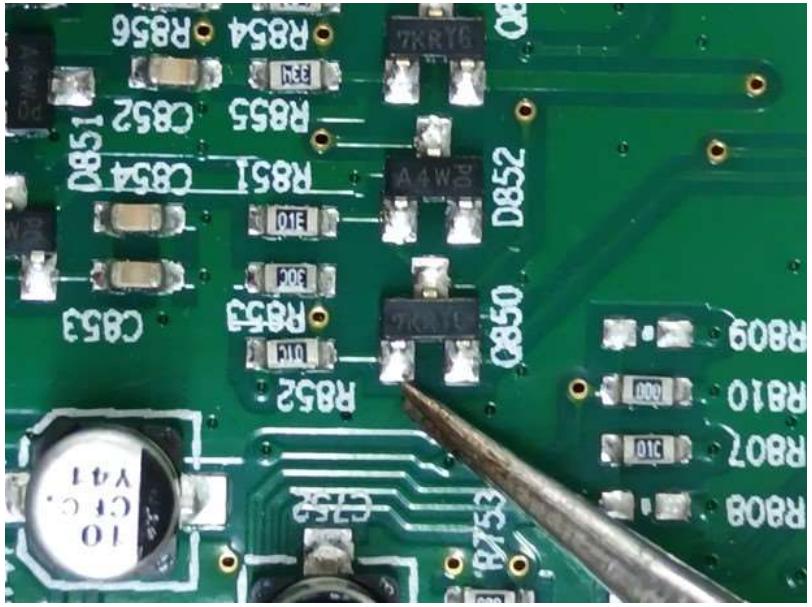
Step4: Take out The Audio Output Board





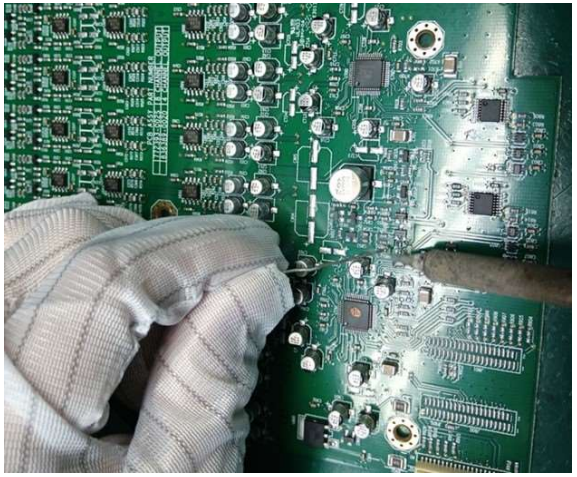
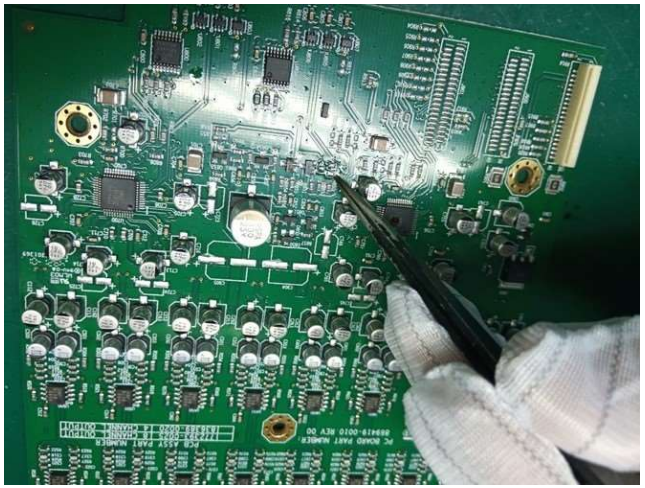
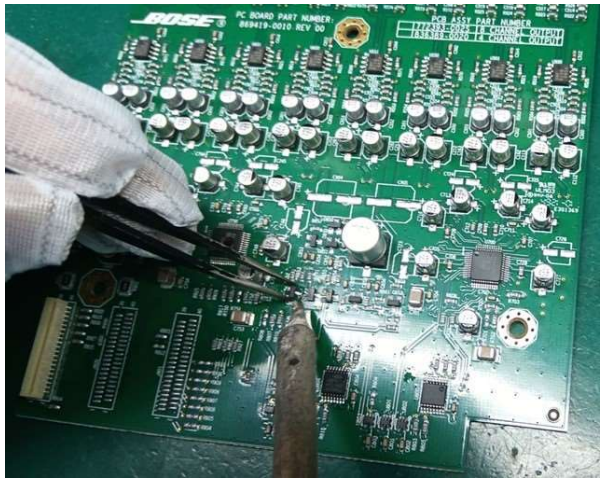
Step 4: Take out Audio output board toque force : 4.5+/-0.5 Kgf.cm
2.Using electric screw drive+ socket wench to unscrew the 4pcs of inner hexagon stud.
Using electric screw + crosshead bit to unscrew 1 white flathead +washer parts on audio output board

Step5: Replace/Swap Q850



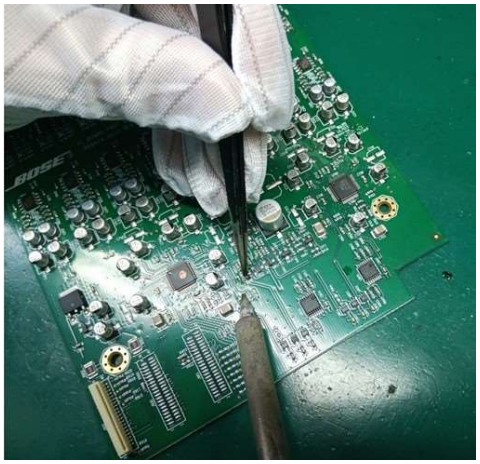
Soldering iron temperature setting : 380 +/-20 degree C
Shape of soldering tip : sharp tip
Soldering Station : Thermostat soldering iron / 80W

Step5: Replace/Swap Q850

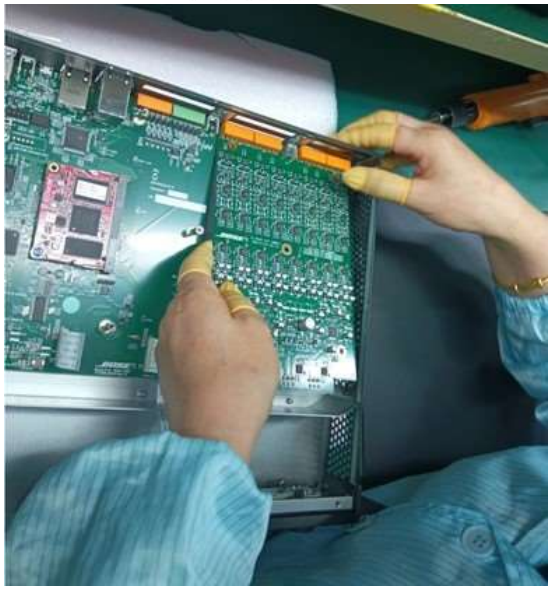




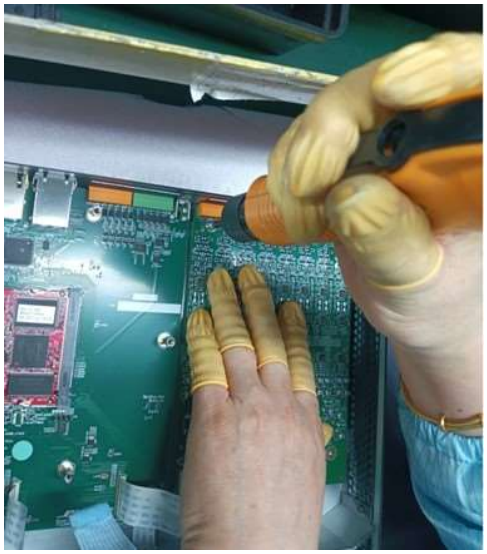
▪Step 5: Replace/swap the transistor Q850 with **Bose p/n 146819** (TRANSISTOR,NPN,40V,0.2A,MMBT3904,SOT23) (DIODES INC -- MMBT3904-13-01-F, MMBT3904Q-7-F ; ONSEMI -- MMBT3904LT1G, MMBT390)
Using soldering iron tip to de-solder the Q850 part and then remove it away from the audio output board,
Using a tweeters to place a new SOT-23 MMBT3904 part on board. Make sure that the part is placed pin to pin and then solder its pins
Cleaning the solder joints with a brusher.

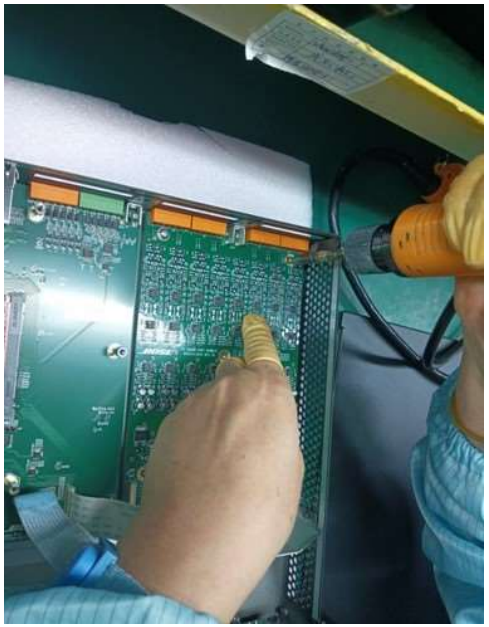
Step5: Replace/Swap Q850

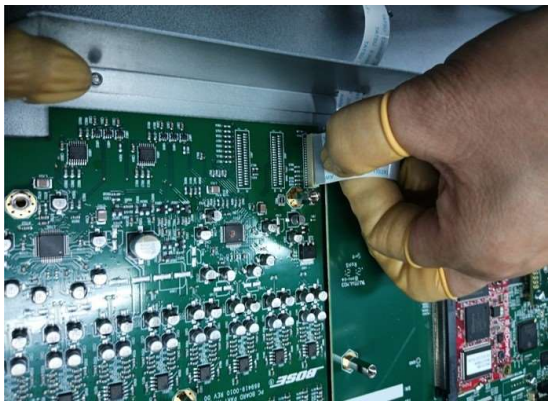


Step6: Install Audio output Board







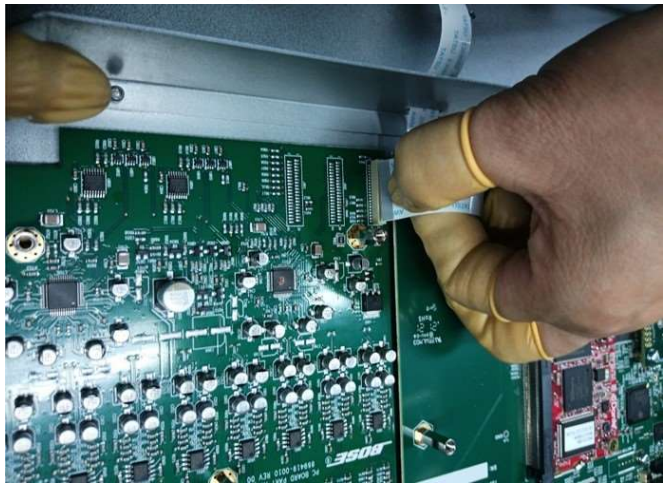


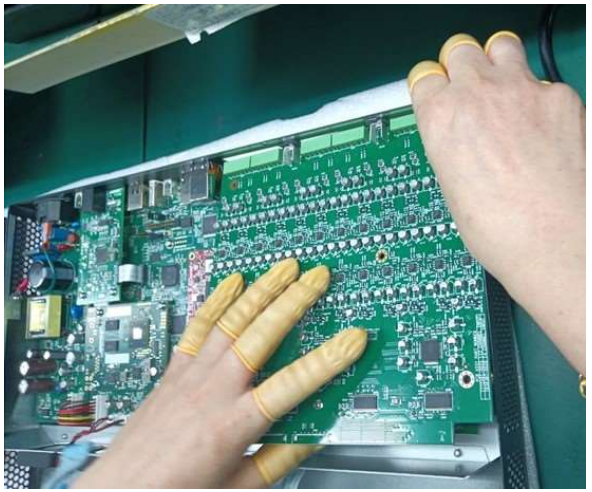
Step 6: Install audio output board to chassis

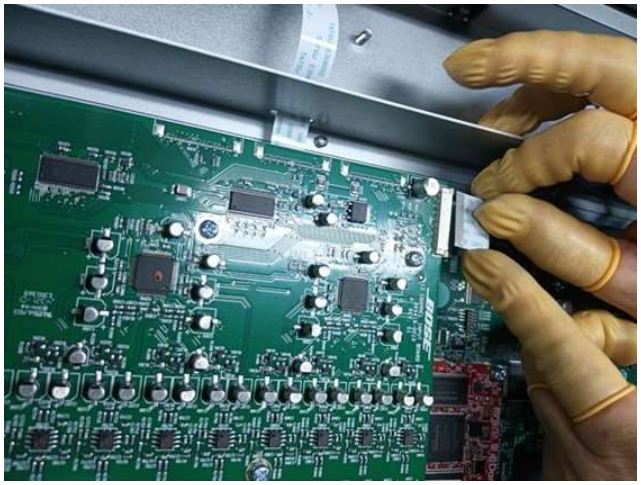
1.Screw the board with 4pcs of hexagon stud parts and 1pcs of white flathead screw + washer

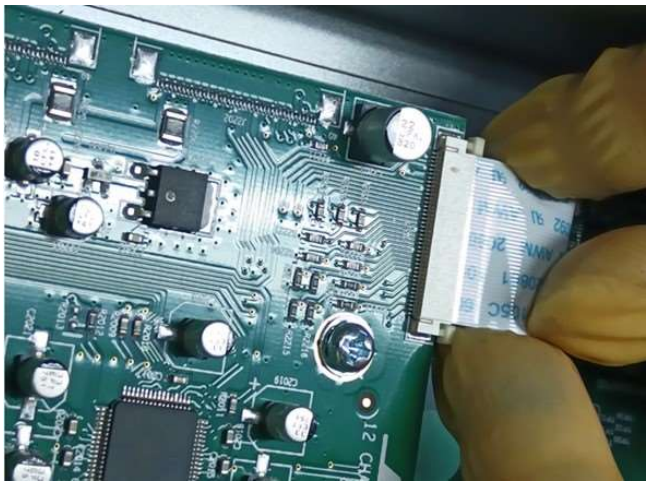
2.Connect the FPC cable to J902 socket, make sure that the FPC cable is installed properly.

Step7: Install Audio input Board









Step 7: Install audio input board to chassis

1.Screw the board with 7pcs of white flathead screw + washer

2.Connect the FPC cable to J2203 socket, make sure that the FPC cable is installed properly before locked it up.

Step 8: Hi-Pot

THIS IS A MANDATORY TEST

Note: If this product requires removal of the top cover for repair, it MUST be Hi-Pot tested before being returned to the customer to ensure that there is no potential shock hazard. This test requires a Hi-Pot tester with a ground bond attachment to perform this test. Test MUST be performed with the unit fully re-assembled with the top cover in place.

Hi-Pot Tester Settings:

Basic Insulation Test:

Connections: AC line cord plugs into the Hi-Pot tester AC adapter box, which shorts across hot and neutral on the line cord. This connects to the high voltage (positive) side of the Hi-pot tester. The return (negative) lead connects to a chassis ground point on the outside of the chassis or, alternatively, to the ground lead on the AC line cord.

Settings: 1.50kVAC (min. limit = 1.0mA, max. trip limit = 7mA); 1-4 sec. dwell time. No flashover/breakdown allowed.

Reinforced Insulation Test:

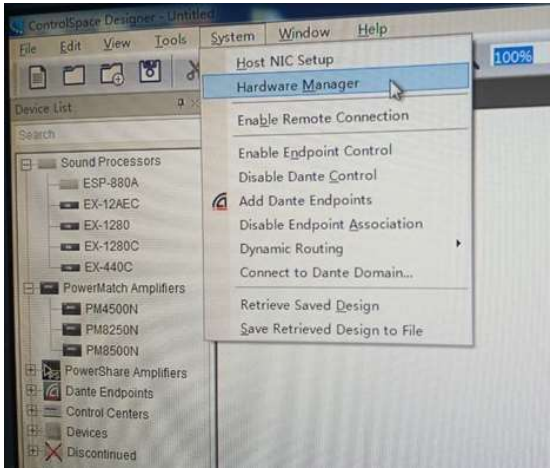
Connections: AC line cord plugs into the Hi-Pot tester AC adapter box, which shorts across hot and neutral on the line cord. This connects to the high voltage (positive) side of the Hi-pot tester. The return (negative) lead connects to the negative output connection on the unit.

Settings: 2.5kVAC (min. limit = 1.0mA, max. trip limit = 7mA); 1-4 sec. dwell time. No flashover/breakdown allowed.

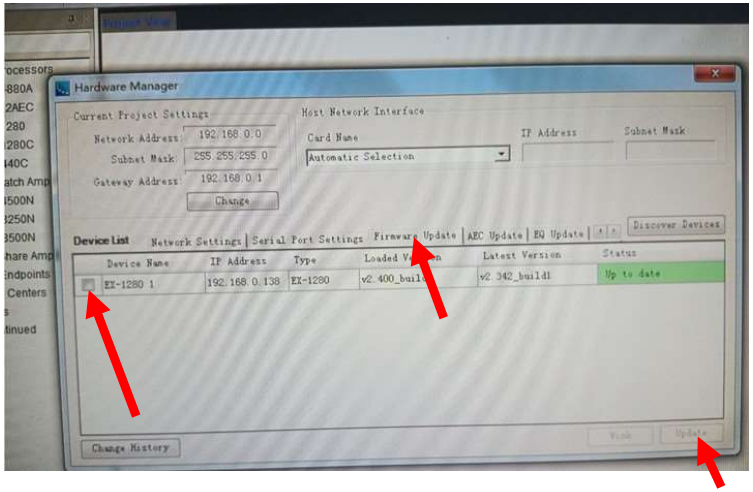
Step 9: Firmware Reflash

Plug in power and Ethernet cable

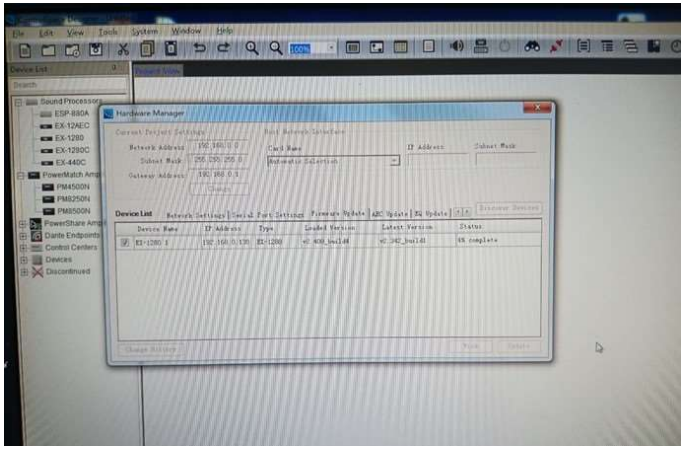
Click CSD 5.9.2



Select the system pull-down menu
And select Hardware manage

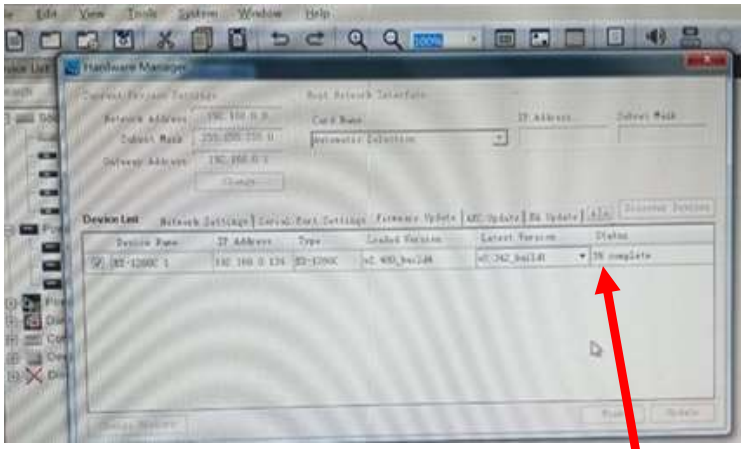


A dialog box pops up, select firmware update button
And then select the model (EX-1280C ref.), the loaded version is showing V2.400. Select the latest version V2.342 and then click the button update to start the FW reflash process

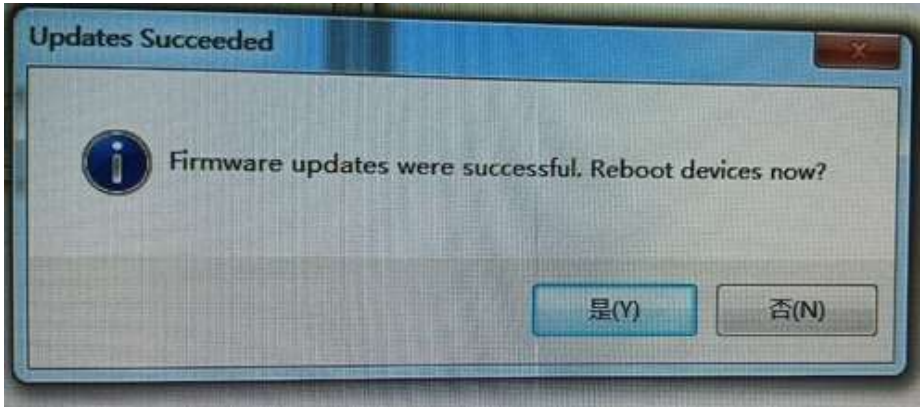


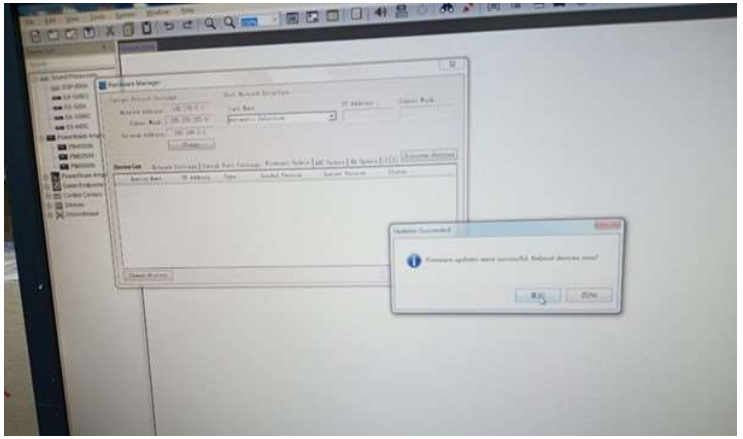
It will take 3-4 minutes to finish the FW reflash process,

Step9: Firmware Reflash



Percentage rate of the FW installation is shown here



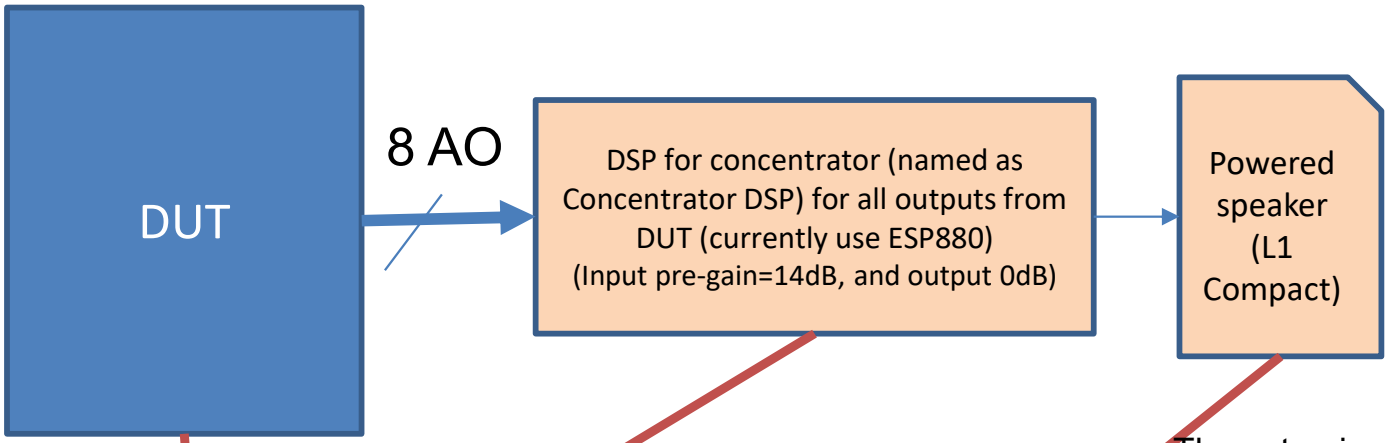


The FW reflash process will take about 4 minutes. After the FW reflash finished, a dialog box pops up as above, select the button Yes(是) and wait the unit to reboot up again, check to see if the loaded version is V2.342.

Step10: Final Function Test

To be determined for any functional test required from DC.

Step11: Audio test

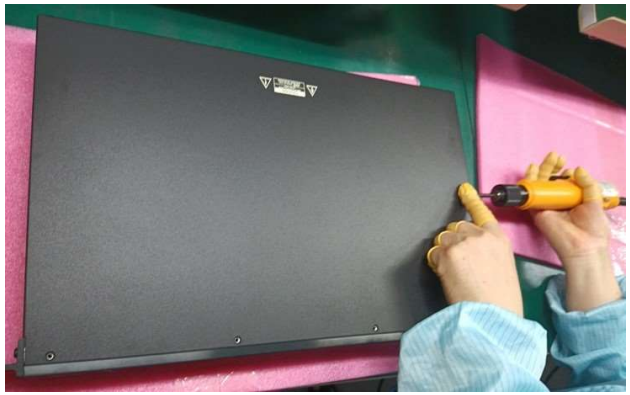


The setup is consisted of concentrator DSP (another Bose DSP product) which concentrated all output of DUT to One output and connected to a powered speaker.

Test steps:

1. The setup is shown above.
2. Connected the DUT analog output to the concentrator DSP
3. Power up the DUT
4. Listen to the output of the Power speaker during boot up phase. It should not have any long beep output.
5. After the DUT boot up completed, it can be turned off, and unplug all.

Step12: Install Top Cover



Step13: Visual Inspection

Visual Inspection :

1. Check to see if the knob switch is OK
2. If there is any cosmetic issues, like scratches / screw head damage /contamination
3. Check to see if any foreign parts left in inside of the unit.

Step14: Repacked in Carton

Step 13: Repacked in carton

Pay attention to the orientation of EPE foam, there is a groove in inside of right and left side of EPE foam, it is used to protect the earlap and knob switch cap.

Make sure that the SN on rear panel is the same as the SN on SKU label

Record the SN in excel list

Add final marking to confirm the rework is complete (Blue or Green Sticker over/on top of the Red Sticker)

Tape the packaging closed, over the previous tape

QUALITY
CUSTOMER SATISFACTION • CONTINUOUS IMPROVEMENT • PARTICIPATION • APPLICATION
BOSE

Thanks