SoundDock®

Digital Music System
with original Firewire charging
2004-2008

This Service Manual applies to original SoundDock systems built before 8/8/08, DOM 8221. For SoundDock systems built after 8/8/08, use the new SoundDock manual with "USB iPod Charging" part number 277378-SM_USB. To determine the SoundDock version, use the date of manufacture (DOM) encoded within the serial number located on the product label

Serial Number example -
040250973420105AE

Characters 8 to 11 identifiy the DOM - 7342
7342 = the 342nd day of 2007

Both products share the same name and most of the same mechanical assemblies. However, the electronics are not interchangeable.

CONTENTS

SAFETY INFORMATION

1. Parts that have special safety characteristics are identified by the ⚠ symbol on schematics or by special notes on the parts list. Use only replacement parts that have critical characteristics recommended by the manufacturer.

2. Make leakage current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the unit to the customer.
Use the following checks to perform these measurements:

A. Leakage Current Hot Check-With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 "Leakage Current for Appliances" and Underwriters Laboratories (UL) UL6500 / UL60065 / IEC 60065 paragraph 9.1.1. With the unit powered on, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the unit (antennas, handle bracket, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the unit power cord plug in the outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE UNIT TO THE CUSTOMER.

B. Insulation Resistance Test Cold Check-(1) Unplug the power supply and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the unit. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and each exposed metallic cabinet part on the unit. When testing 3 wire products, the resistance measured to the product enclosure should be between 2 and infinite MOhms. Also, the resistance measured to exposed input/output connectors should be between 4 and infinite MOhms. When testing 2 wire products, the resistance measured to exposed input/output connectors should be between 4 and infinite MOhms. If it is not within the limits specified, there is the possibility of a shock hazard, and the unit must be repaired and rechecked before it is returned to the customer.

**CAUTION: The Bose® SoundDock® Digital Music System contains
no user-serviceable parts. To prevent warranty infractions,
refer servicing to warranty service stations or factory service.**

SPECIFICATIONS

<u>**Electrical**</u>

Power Supply Input:

    Voltage: 100VAC to 240VAC (universal), 50-60Hz
    Current Consumption: 1 A (rms) max for 115VAC
                                    .5 A (rms) max for 230VAC

Power Supply Output:

    Voltage: 20V +/- 1V
    Current: 2A (max)

SoundDock® Input:

    Voltage: ±18VDC-10%, +15%
    Current Consumption: 1A (max)
    Power Consumption: 36W (max, continuous)

<u>**Acoustic**</u>

Drivers: 2 - 2.25" Full Range Twiddler™ speakers

Nominal Impedance: 3.6 Ohms

Port Tuning: 80 HZ

<u>**Physical Description**</u>

Mechanical Specifications: 6.65"H x 11.91"W x 6.48"D (16.89 cm x 30.26 cm x 16.47 cm)

Weight: 4.56 lb (2.1 kg)

Enclosure: Ultrasonically welded PC/ABS plastic

PRODUCT DESCRIPTION

SoundDock® is a powered acoustic package for current and future versions of Apple's iPod portable MP3 player. It takes the design form of a "picture frame" - a rectangular speaker package that allows the iPod to dock into the middle. SoundDock with docked iPod is an elegant, highly functional, and great-sounding system for use in the living room, kitchen, or bedroom. Bose® developed and manufactured the product with input from Apple. Apple and Bose will advertise and sell the product.

There are 4 adapters shipped with the product.
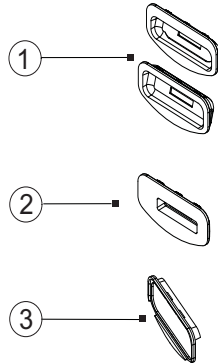
Item Number	Description	Part Number	QTY	Note
1	Kit, Inserts, iPod, 2pcs, WHT	285755-002	1	
	Kit, Inserts, iPod, 2pcs, BLK	285755-012		
2	Insert, iPod, Nano, 1pcs, WHT	292498-001	1	
	Insert, iPod, Nano, 1pcs, BLK	292498-002		
3	*Universal Insert, iPod, Adapter, 1pcs, WHT	042246	1	
	*Universal Insert, iPod, Adapter, 1pcs, BLK	042399		

*The universal insert (Item number 3 above) allows an Apple Dock adapter to work with the SoundDock. Some of the new iPods players will require the following set up:
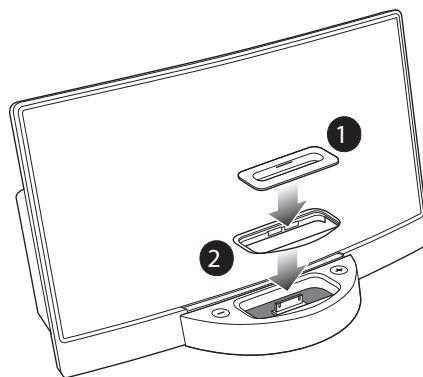
❶
Apple Dock adapter (included with with an iPod)

❷
Universal insert for use with Apple Dock adapters

ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE HANDLING

This unit contains ESDS devices. We recommend the following precautions when repairing, replacing or transporting ESDS devices:

• Perform work at an electrically grounded work station.
• Wear wrist straps that connect to the station or heel straps that connect to conductive floor mats.
• Avoid touching the leads or contacts of ESDS devices or PC boards even if properly grounded. Handle boards by the edges only.
• Transport or store ESDS devices in ESD protective bags, bins, or totes. Do not insert unprotected devices into materials such as plastic, polystyrene foam, clear plastic bags, bubble wrap or plastic trays.

WARRANTY

The Bose® SoundDock® Digital Music System is covered by a limited 1-year transferable warranty.

PART LIST NOTES

1. This part is not normally available from Customer Service. Approval from the Field Service Manager is required before ordering.

2. The individual parts located on the PCBs are listed in the Electrical Part List.

3. ⚠ This part is critical for safety purposes. Failure to use a substitute replacement with the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards.

4. This part is referenced for informational purposes only. It is not stocked as a repair part. Refer to the next higher assembly for a replacement part.

USB UPDATE PROCEDURE

The SoundDock Digital Music System changed the way it charges the iPod in October of 2008. The system now charges via the USB charge pins on the iPod.

This change was based on information received from Apple describing a change to the iPod charge circuit. iPods manufactured before 8/08 have the ability to charge via Firewire and USB, some new iPods introduced in November of 2008 will not support the Firewire charge circuit.

It is possible to upgrade SoundDock systems built before 8/08 from Firewire to USB charging by replacing the Dock and DSP boards with the upgraded versions. Use this procedure to upgrade older systems to USB charging.

Equipment Required

a. DSP board / Cradle Assy -
　　Black - 279103-008
　　White - 279103-010
b. Phillips-head screw driver
c. Bose Logo
　　Black - 277381-002
　　White - 277381-001

1. Original Dock Removal

1.1 Remove the four Phillips-head screws securing the bottom cradle cover.

1.2 Remove cable connected to J300.

2. Grille and Amplifier board Removal

2.1 Remove the grille by pushing upward as shown above.

2.2 Remove the four Phillips-head screws securing the amp board to the acoustic enclosure.

3. Install the DSP/Cradle Upgrade Assembly

3.2 Connect the flex cable to J300 on the new upgrade assembly and install the cradle along with the amplifier board.

3.3 Install Bose logo on the front of the cradle.

3.4 Fully test with iPod to confirm correct operation.

NEW IPOD CHARGING CIRCUIT

The original SoundDock® Digital Music System charges the iPod with the Firewire connection pins on the dock assembly. Pin 11 of the Dock connector is used to charge the iPod Battery and pin 13 is used to detect the iPod is placed on the cradle.
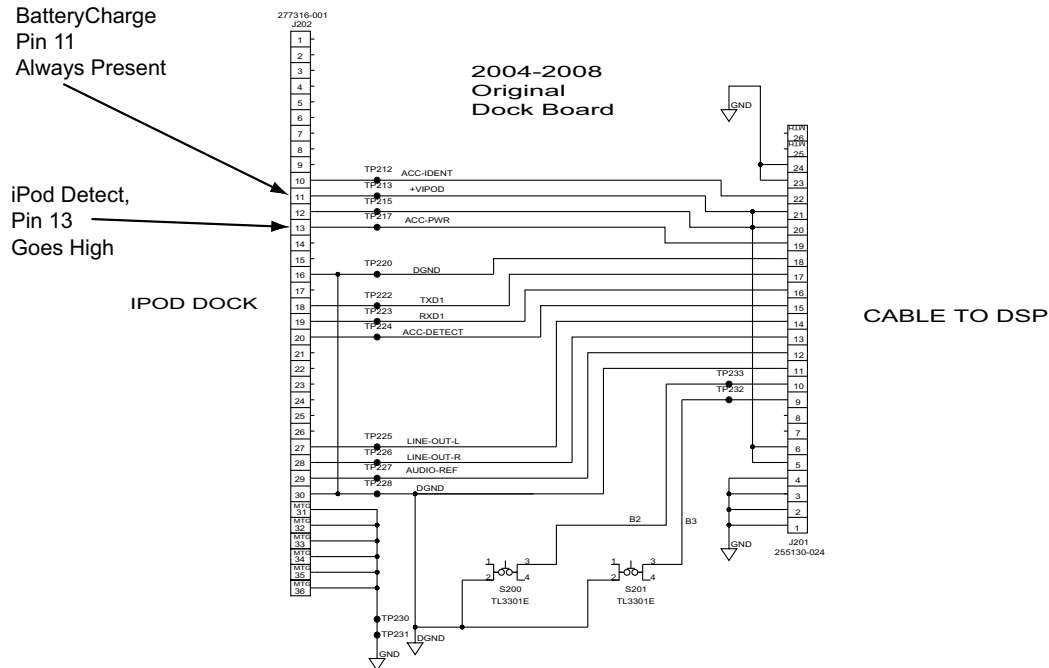
The SoundDock Digital Music System with USB iPod Charging is the new version and charges the iPod via the USB pins. Pin 8 is used to charge the iPod battery and pins 20 and 30 are used to detect the iPod is placed on the cradle.

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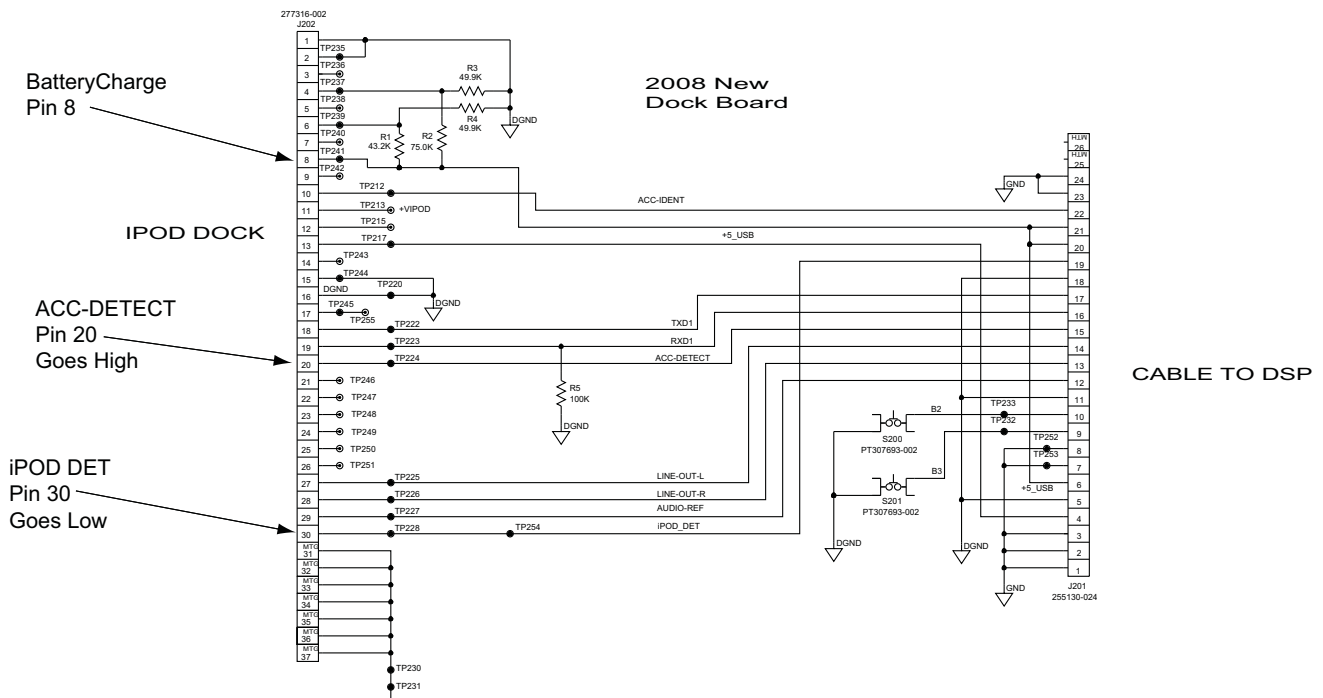
PACKAGING PART LIST

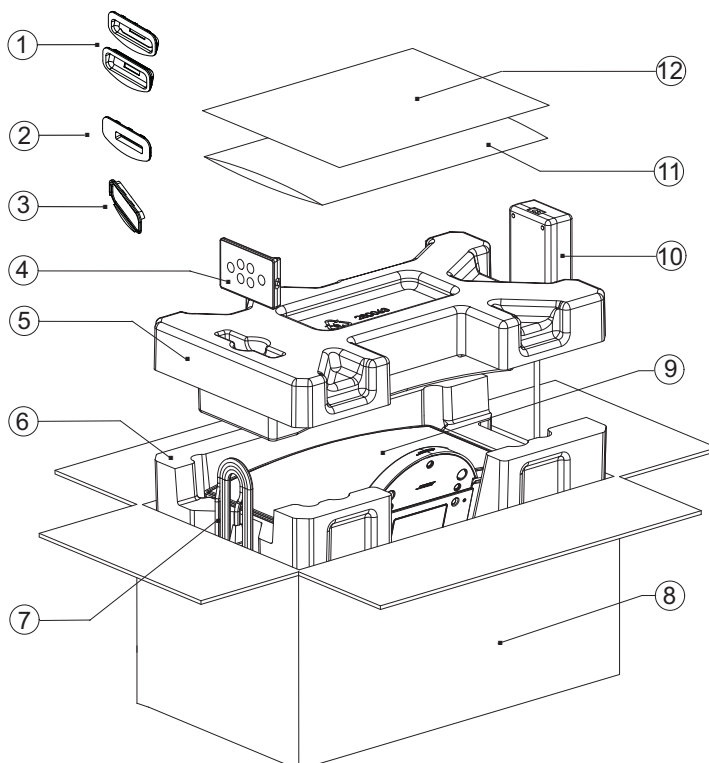| Item Number	Description	Part Number	QTY	Note
1	Kit, Inserts, iPOD, 2pcs, WHT	285755-002	1	
	Kit, Inserts, iPOD, 2pcs, BLK	285755-012		
2	Insert, iPOD, Nano, 1pcs, WHT	044371	1	
	Insert, iPOD, Nano, 1pcs, BLK	044370		
3	Universal Insert, iPOD, Adapter, 1pcs, WHT (see pg. 4)	042246	1	
	Universal Insert, iPOD, Adapter, 1pcs, BLK (see pg. 4)	042399		
4	Remote Control, IR, 6 Function, WHT	277379-001		
	Remote Control, IR, 6 Function, BLK	277379-002		
5	Packing Foam, EPS, CRV	280063		
6	Packing, Tray, EPS, Foam	277752		
7	Line Cord, 120V, Non-Polarized, Detachable, WHT	279101-002	1	
	Line Cord, 120V, Non-Polarized, Detachable, BLK	279101-001		3 ⚠
-	Line Cord, 100V, Non-Polarized, JPN, Det, WHT	280136-002	1	
	Line Cord, 100V, Non-Polarized, JPN, Det, BLK	280136-001		3 ⚠
-	Line Cord, 220V, Non-Polarized, EUR, Det, WHT	280135-002	1	
	Line Cord, 220V, Non-Polarized, EUR, Det, BLK	280135-001		3 ⚠
-	Line Cord, 230V, Non-Polarized, UKS, Det, WHT	280138-002	1	
	Line Cord, 230V, Non-Polarized, UKS, Det, BLK	280138-001		3 ⚠
-	Line Cord, 240V, Non-Polarized, AUS, Det, WHT	284243-002	1	
	Line Cord, 240V, Non-Polarized, AUS, Det, BLK	284243-001		3 ⚠
8	Carton, D-C, 13-63X8-13X6-5, WHT	277751	1	
-	Carton, D-C, SPCTOP, BLK	294676	1	4
9	Speaker Assembly, 120V, WHT	278412-002	1	
	Speaker Assembly, 120V, BLK	278412-004		
10	Power Supply, Universal, Switching, WHT (Round Connector, DOM greater than 5151)	293247-005	1	3 ⚠
-	Power Supply, Universal, Switching, BLK (Round Connector, ALL)	293247-006		3 ⚠
-	Power Supply, Universal, Switching, WHT (Square Connector, DOM less than 5150)	See Safety Bulletin 277378-SB1		3 ⚠
11	Literature Kit, 120V	285757-001	1	

Figure 1. Packing Exploded View

SPEAKER ASSEMBLY

Item Number	Description	Part Number	QTY	Note
1	GRILLE, .024" CRS , SLVR	277366-001	1	
	GRILLE, .024" CRS , GRY	277366-041		
2	TAPE, FOAM, 30X75X3MM	280225-001	1	
3	CABLE, FLEX, 4 CONDUCTOR	277640-004	1	
4	SCREW, HILO, 4-16x.375, Pan	181621-06	1	
	SCREW, HILO, 4-16x.375, Pan, BLK	288372-006		
5	IR RECEIVER PCB	290378-001	1	2
	IR RECEIVER PCB RoHS	290352-001		
6	TWIDDLER™ w/ HARNESS ASSEMBLY	273488-001	2	
	TWIDDLER™ w/ HARNESS, RoHS	273488-004		
7	FOAM, ACOUSTIC, 2.5X2.5X.75	273518-002	2	
8	*MOD ASSY, CRADLE, WHT (original Firewire charging)	279103-003	1	3 ⚠
	*MOD ASSY, CRADLE, BLK (original Firewire charging)	279103-005		
9	BOTTOM, CRADLE REAR, PC/ABS, WHT	313592-001	1	3,4 ⚠
	BOTTOM, CRADLE REAR, PC/ABS, BLK	313592-002		
10	*UPGRADE DSP BOARD / CRADLE ASSEMBLY, BLK	279103-008	1	2
	*UPGRADE DSP BOARD / CRADLE ASSEMBLY, WHT	279103-010		
11	MOD ASSY, WELDED ENCLOSURE, WHT	279104-006S	1	4
	MOD ASSY, WELDED ENCLOSURE, BLK	279104-007S		
12	MOD ASSY AMPLIFIER, RoHs	297428-003	1	2
13	SCREW, TAPP, 6-13X.625, PAN, BLK	288374-010	16	
14	FOAM, GRILLE ARRAY	272036-001	7	

*The Cradle module assembly does not include the Bose Logo. Order the Bose logo separately when replacing the Cradle module assembly.
Logo part number White - 277381-001
Logo part number Black - 277381-002

Original Cradle with Firewire charging

Upgrade DSP / Cradle with USB charging

NOTE: this DSP board is not compatable with the Firewire Cradle

Figure 2. Speaker Assembly

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WELDED ENCLOSURE ASSEMBLY

(See Figure 3)

Item Number	Description	Part Number	QTY	Note
1	Tape, PE, 3112C, Cut, 3MIL, CLR	279105-001	1	
2	Packing, Tray, EPS, Foam	277752	1	
3	Foot, Bump-on, PUR, Dome, GRY	277371-001	4	
	Foot, Bump-on, PUR, Dome, BLK	277371-002		
4	Screw, Tapp, 6-13X.625, Pan, AS, SQ	172783-10	2	

*Note: The rear enclosure is ultrasonically welded together, the individual pieces do not come apart and are not available for replacement.
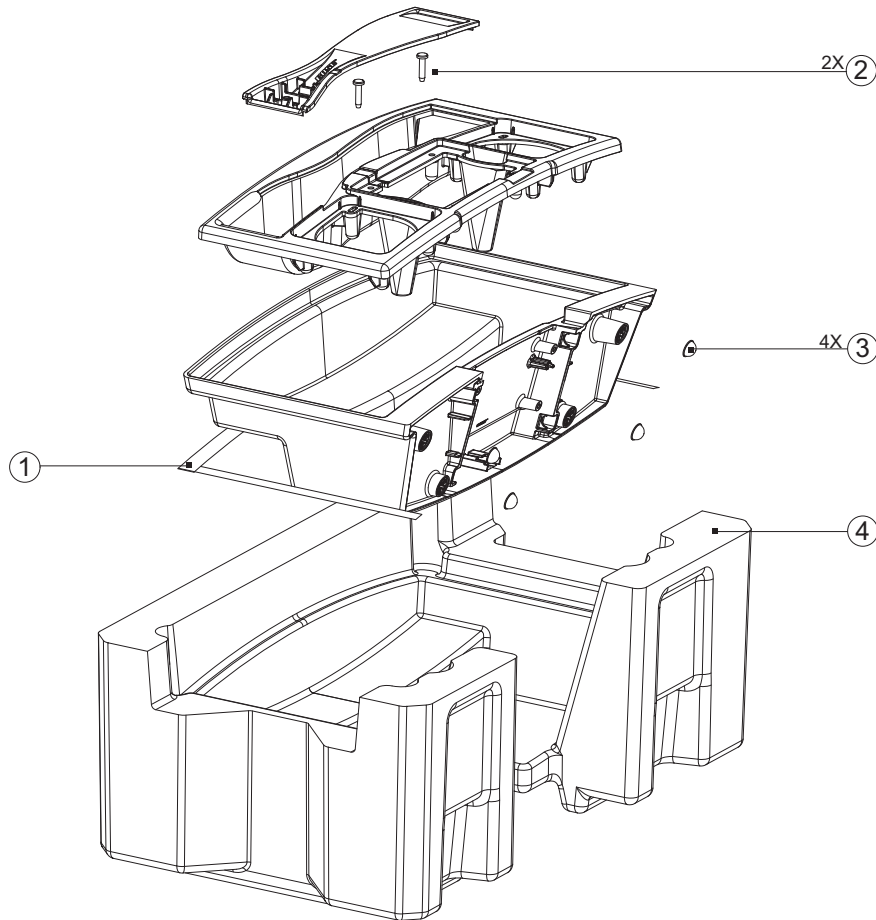
Figure 3. Welded Enclosure Assembly

DOCKING CRADLE ASSEMBLY

(Original / Firewire charging, see page 6)

Item Number	Description	Part Number	QTY	Note
1	TOP, CRADLE, PC/ABS, WHT	277901-001	1	
	TOP, CRADLE, PC/ABS, BLK	277901-002		
2	GROMMET, ISOLATION	278192-001	4	
3	BUTTON, VOL, WHT/GRY, UP	279107-001	1	
	BUTTON, VOL, BLK/GRY, UP	279107-003		
4	BUTTON, VOL, WHT/GRY, DN	279107-002	1	
	BUTTON, VOL, BLK/GRY, DN	279107-003		
5	CABLE, FFC, 24COND, DOCK/DSP	278233-124	1	
6	*MOD ASSY, CRADLE, WHT (original Firewire charging)	279103-003	-	
	*MOD ASSY, CRADLE, BLK (original Firewire charging)	279103-005		
7	*UPGRADE, CRADLE, BLK (USB charging circuit)	279103-008	-	
	*UPGRADE, CRADLE, WHT (USB charging circuit)	279103-010		
8	SCREW, THDF, 2-6X.312, BRASS, HEX	278329-04	3	
9	FOOT, DOME, GRY	277371-001	2	
	FOOT, DOME, BLK	277371-002		
10	*MOD ASSY, DOCK, PCB, WHT (original Firewire charging)	282931-003	1	2
	*MOD ASSY, DOCK, PCB, BLK (original Firewire charging)	282931-004		
11	PAD, INSULATOR, CRADLE, BLK	277670-001	1	
12	LOGO, CAST, METAL, DIAMOND CUT, WHT	277381-001	1	
	LOGO, CAST, METAL, DIAMOND CUT, BLK	277381-002		
13	FLEXIBLE FLAT CABLE (FFC), 20 COND, DSP/AMP	278324-020		

*The Cradle module assembly does not include the Bose Logo. Order the Bose logo separately when replacing the Cradle module assembly.
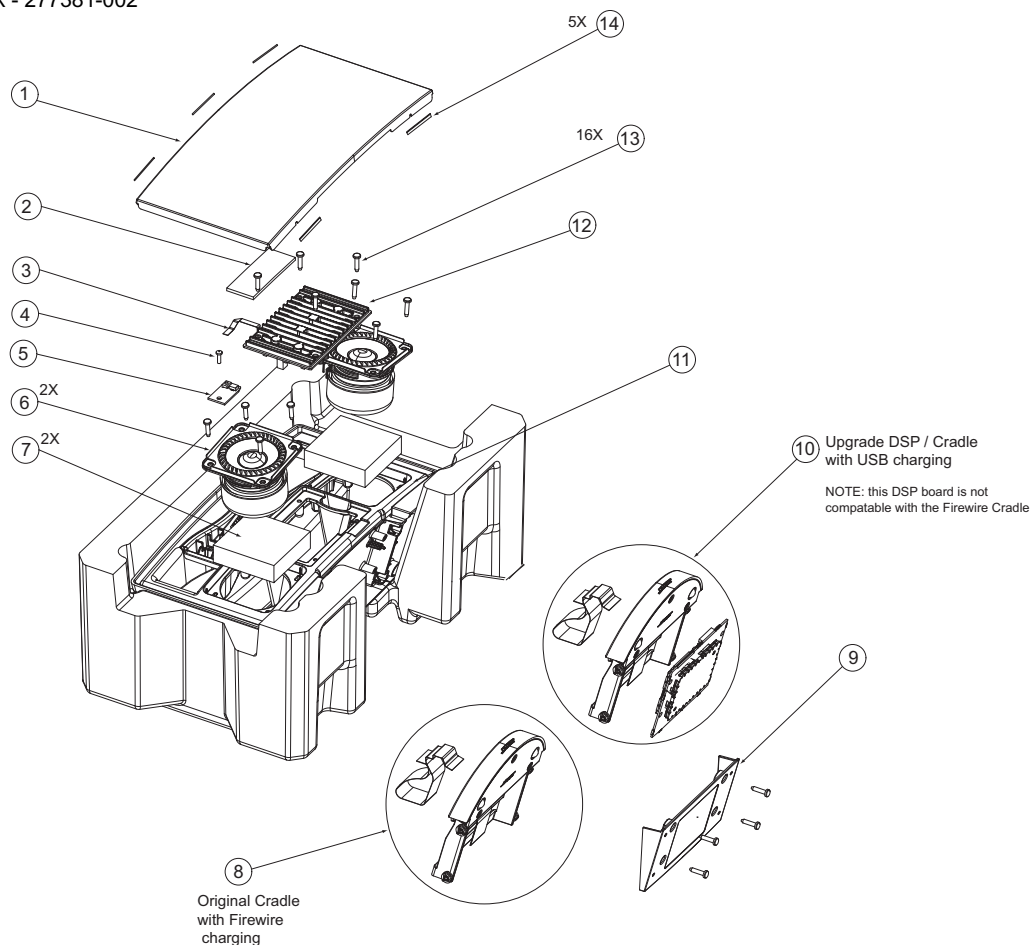Logo part number White - 277381-001
Logo part number Black - 277381-002

Original Cradle with
Firewire charging

Upgrade DSP / Cradle
with USB charging

Figure 4. Docking Cradle Assembly NOTE: this DSP board is not
compatable with the Firewire Cradle

ELECTRICAL PART LIST
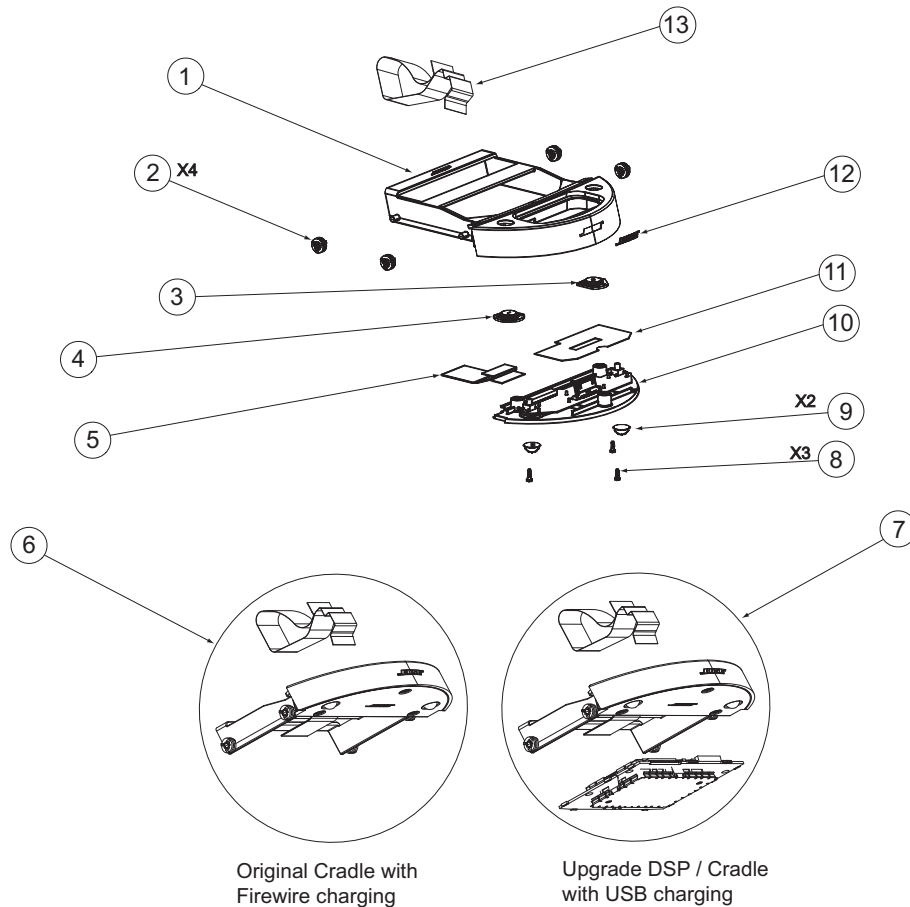
DSP PCB Assembly
Resistors

Reference Designator	Description	Part Number	Notes
R45	1.5K, 0805, 1/10W, 5%	133626-1525	
R7002	4.7K, 0603, .1W, 5%	199403-472	
R7003	4.7K, 0603, .1W, 5%	199403-472	
R7004	4.7K, 0603, .1W, 5%	199403-472	
R7005	4.7K, 0603, .1W, 5%	199403-472	
R7006	100K, 0603, .1W, 5%	199403-104	
R7008	100K, 0603, .1W, 5%	199403-104	
R7011	4.7K, 0603, .1W, 5%	199403-472	
R7012	4.7K, 0603, .1W, 5%	199403-472	
R7019	1K, 0603, .1W, 5%	199403-102	
R7021	1K, 0603, .1W, 5%	199403-102	
R7022	100K, 0603, .1W, 5%	199403-104	
R7023	5.6K, 0603, .1W, 5%	199403-562	
R7024	100K, 0603, .1W, 5%	199403-104	
R7025	909 OHM, 0603, .1W, 1%	191465-9090	
R7028	1.00K, 0805, 1/10W, 5%	133626-1025	
R7029	1.00K, 0805, 1/10W, 5%	133626-1025	
R7034	1.00K, 0805, 1/10W, 5%	133626-1025	
R7035	1.00K, 0805, 1/10W, 5%	133626-1025	
R7037	100K, 0603, .1W, 5%	199403-104	
R7038	100K, 0603, .1W, 5%	199403-104	
R7039	100K, 0603, .1W, 5%	199403-104	
R7042	10K, 0603, .1W, 1%	191465-1002	
R7043	10K, 0603, .1W, 1%	191465-1002	
R7044	10K, 0603, .1W, 1%	191465-1002	
R7050	10K, 0603, .1W, 1%	191465-1002	
R7051	10K, 0603, .1W, 1%	191465-1002	
R7052	10K, 0603, .1W, 1%	191465-1002	
R7054	19.1K, 0603, .1W, 1%	191465-1912	
R7055	19.1K, 0603, .1W, 1%	191465-1912	
R7056	17.4K, 0603, .1W, 1%	191465-1742	
R7057	1K, 0603, .1W, 1%	191465-1001	
R7058	150 OHMS, 0603, .1W, 1%	191465-1500	
R7059	150 OHMS, 0603, .1W, 1%	191465-1500	
R7060	10K, 0603, .1W, 5%	199403-103	
R7064	10 OHM, 0603, .1W, 5%	199403-100	
R7065	1K, 0603, .1W, 5%	199403-102	
R7066	1K, 0603, .1W, 5%	199403-102	
R7067	130 OHM, 2512, 1W, 5%	181895-1300	
R7068	1K, 0603, .1W, 1%	191465-1001	
R7069	549k OHM, 0603, .1W, 1%	191465-5493	
R7071	200 OHM, 2512, 1W, 5%	181895-2000	
R7072	1.00K, 0805, 1/10W, 5%	133626-1025	

ELECTRICAL PART LIST

DSP PCB Assembly
Resistors (continued)

Reference Designator	Description	Part Number	Notes
R7073	1K, 0603, .1W, 1%	191465-1001	
R7074	5.6K, 0603, .1W, 5%	199403-562	
R7077	619 OHM, 0603, .1W, 1%	191465-6190	
R7078	200 OHM, 2512, 1W, 5%	181895-2000	
R7079	1.20 OHMS, 2512, 1W, 5%	181895-1R20	
R7080	2.49K, 0603, .1W, 1%	191465-2491	
R7081	5.6K, 0603, .1W, 5%	199403-562	
R7082	100K, 0805, 1/10W, 5%	133626-1045	
R7084	1.20 OHMS, 2512, 1W, 5%	181895-1R20	
R7085	19.1K, 0603, .1W, 1%	191465-1912	
R7100	5.6K, 0603, .1W, 5%	199403-562	
R7101	10K, 0603, .1W, 5%	199403-103	
R7102	100K, 0805, 1/10W, 1%	133625-1003	
R7103	100K, 0805, 1/10W, 1%	133625-1003	

Capacitors

Reference Designator	Description	Part Number	Notes
C45	.1uF, 1206, X7R, 50V, 20%	173763-104	
C7002	0.001uF, 0603, X7R, 5%, 25V	196999-102	
C7003	10uF EL, 85C, 16V, 20%	177902-100C	
C7004	330pF, 0603, X7R, 50V	191470-331	
C7005	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7006	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7007	10uF EL, 85, 16V, 20%	177902-100C	
C7008	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7009	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7010	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7011	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7012	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7013	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7014	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7015	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7016	10uF, EL, 85C, 25V, 20%	177902-101E	
C7017	10uF, EL, 85C, 25V, 20%	177902-101E	
C7018	1000pF, 0603, X7R, 50V	191470-102	
C7019	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7020	22pF, 0603, COG, 50V, 5%	188454-220	
C7021	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7022	22pF, 0603, COG, 50V, 5%	188454-220	
C7024	330pF, 0603, X7R, 50V	191470-331	
C7025	330pF, 0603, X7R, 50V	191470-331	

ELECTRICAL PART LIST

DSP PCB Assembly

Capacitors (continued)

Reference Designator	Description	Part Number	Notes
C7028	330pF, 0603, X7R, 50V	191470-331	
C7029	.033uF, 0603, X7R, 50V, 10%	191470-333	
C7030	100pF, 0805, COG, 50V, 5%	133622-101	
C7031	330pF, 0603, X7R, 50V	191470-331	
C7034	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7036	10uF EL, 85C, 16V, 20%	177902-100C	
C7038	100pF, 0603, X7R, 50V	191470-101	
C7039	100pF, 0603, X7R, 50V	191470-101	
C7040	100pF, 0603, X7R, 50V	191470-101	
C7045	.01uF, 0603, X7R, 50V	191470-103	
C7046	.47 uF, EL, 85C, 50V, 20%	177902-R47H	
C7047	.47 uF, EL, 85C, 50V, 20%	177902-R47H	
C7048	.01uF, 0603, X7R, 50V	191470-103	
C7049	.01uF, 0603, X7R, 50V	191470-103	
C7050	.01uF, 0603, X7R, 50V	191470-103	
C7053	10uF, EL, 85C, 25V, 20%	177902-100E	
C7054	330pF, 0603, X7R, 50V	191470-331	
C7055	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7058	10uF EL, 85C, 16V, 20%	177902-100C	
C7059	33000pF, X7R SMD, 0603, 25V	257154-333K25	
C7060	10uF EL, 85C, 16V, 20%	177902-100C	
C7062	2200PF, 0603, X7R, 50V	191470-222	
C7063	2200PF, 0603, X7R, 50V	191470-222	
C7064	10uF, EL, 85C, 25V, 20%	177902-100E	
C7065	10uF, EL, 85C, 25V, 20%	177902-100E	
C7066	330pF, 0603, COG, 50V, 5%	188454-331	
C7067	47uF, EL, 85C, 6.3V, 20%	177902-470J	
C7068	10uF, EL, 85C, 25V, 20%	177902-100E	
C7069	10uF EL, 85C, 16V, 20%	177902-100C	
C7070	10uF, EL, 85C, 25V, 20%	177902-470E	
C7101	330pF, 0603, X7R, 50V	191470-331	
C7102	330pF, 0603, X7R, 50V	191470-331	
C7103	330pF, 0603, X7R, 50V	191470-331	
C7104	330pF, 0603, X7R, 50V	191470-331	
C7105	330pF, 0603, X7R, 50V	191470-331	
C7106	100pF, 0603, COG, 50V, 5%	188454-101	
C7107	100pF, 0603, COG, 50V, 5%	188454-101	
C7200	330pF, 0603, X7R, 50V	191470-331	
C7201	330pF, 0603, X7R, 50V	191470-331	

ELECTRICAL PART LIST

DSP PCB Assembly

Inductors

Reference Designator	Description	Part Number	Notes
L1	400 OHMS, INDUCTOR, CHIP, 0805	188587-401	
L7000	Inductor, 0.26A, 100uH +/-20%, SMT	275344-101T	
L7002	100uH, SMT	178370-101	

Diodes

Reference Designator	Description	Part Number	Notes
D7001	SOT-23, BAV 99	147239	
D7002	SOT-23, BAV 99	147239	
D7005	SOT-23, BAV 99	147239	
D7007	SOT-23, BAV 99	147239	
D7008	SOT-23, BAV 99	147239	
D7009	RECTIFYING, MINI-DIODE	188455-001	
D7010	RECTIFYING, MINI-DIODE	188455-001	
D7011	SCHTKY, SOD123, 0.5A, 20V	275425-002	
ZR1	ZEN, 5.6V, SOT-23, 225mW, 5%	135247-5232	

Transistors

Reference Designator	Description	Part Number	Notes
Q7000	BPLR, N, 40V, 200mA, SOT23	146819	
Q7003	BPLR, N, 40V, 200mA,SOT23	146819	

Integrated Circuits

Reference Designator	Description	Part Number	Notes
U1	SENSOR, IR, RCVR, 38kHz, SMT	278346-001	
U7001	ET, SOT-23, MAX809, 2.63V	191158-06	
U7002	FLASH, 8Mbit, 3.3V	273503-003	
U7003	INVERTER, SMD	266582-001	
U7004	VOLT REG, NEG, 7908, SOT89	260688-08	
U7007	OP AMP, DUAL, TL072	187619-001	
U7009	CODEC, WM8734	276290-001	
U7010	VOLT REG, ADJ, 500MA, DPAK	258496-001	
U7011	VOLT REG, ADJ, 500MA, DPAK	258496-001	
U7012	UC, SCF5249, QFP	269326-001	4
U7013	VOLT REG, ADJ, 500MA, DPAK	258496-001	

ELECTRICAL PART LIST

DSP PCB Assembly

Miscellaneous

Reference Designator	Description	Part Number	Notes
J100	CONN, HDR, DUAL ROW, R/A,BLK	278156-104	
J200	CONN, SMT, LIF, 24 POS, SIDE	255130-024	
J300	CONN, 20 POS, TOP ENTRY, SM	253356-T20	
J501	CONN, SMT, LIF, 4 POS, SIDE	255130-004	
JP7003	JUMPER, CHIP, 0603	196042	
JP7004	JUMPER, CHIP, 0603	196042	
Y7000	XTAL, SMD, 105C, AT41CD2, 16.9344MZ	269923-16R9C16	

ELECTRICAL PART LIST

Amplifier Module PCB Assembly

Resistors

Reference Designator	Description	Part Number	Notes
R01	9.1K , 0603, .1W, 5%	199403-912	
R02	9.1K , 0603, .1W, 5%	199403-912	
R03	5.6K, 0603, .1W, 5%	199403-562	
R04	5.6K, 0603, .1W, 5%	199403-562	
R05	5.6K, 0603, .1W, 5%	199403-562	
R06	5.6K, 0603, .1W, 5%	199403-562	
R07	30K, 0603, .1W, 5%	199403-303	
R08	1K, 0603, .1W, 5%	199403-102	
R10	10 OHM, 0603, .1W, 5%	199403-100	
R11	10 OHM, 0603, .1W, 5%	199403-100	
R12	22 OHM, 2512, 1W, 5%	181895-22R0	
R13	22 OHM, 2512, 1W, 5%	181895-22R0	
R14	6.2K, 0603, .1W, 5%	199403-622	
R15	6.2K, 0603, .1W, 5%	199403-622	
R16	10 OHM, 0603, .1W, 5%	199403-100	
R17	10 OHM, 0603, .1W, 5%	199403-100	

Capacitors

Reference Designator	Description	Part Number	Notes
C01	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C02	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C03	470uF, EL, 85C, 35V, 20%	197313-471V	
C04	470uF, EL, 85C, 35V, 20%	197313-471V	
C05	220pF, 0603, X7R, 50V	191470-221	
C06	47uF, EL, 85C, 35V, 20%	149948-470V	
C07	47uF, EL, 85C, 35V, 20%	149948-470V	
C08	.47uF, BOX, 85C, 50V, 5%	137127-474	
C09	.47uF, BOX, 85C, 50V, 5%	137127-474	
C10	.47uF, BOX, 85C, 50V, 5%	137127-474	
C11	.47uF, BOX, 85C, 50V, 5%	137127-474	
C12	330pF, 0603, COG, 50V, 5%	188454-331	
C13	330pF, 0603, COG, 50V, 5%	188454-331	
C14	220pF, 0603, X7R, 50V	191470-221	
C15	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C17	.47uF, BOX, 85C, 50V, 5%	137127-474	
C19	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C20	.1uF, BOX, 85C, 50V, 5%	137127-104	
C21	.1uF, BOX, 85C, 50V, 5%	137127-104	
C22	.015uF, 0603, X7R, 50V, 10%	191470-153	
C23	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	191470-333	

ELECTRICAL PART LIST

Amplifier Module PCB Assembly

Capacitors (continued)

Reference Designator	Description	Part number	Note
C25	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C27	22uF, EL, 85C, 50V, 20%	149948-220H	
C29	.033uF, 0603, X7R, 50V, 10%, FAIL OPEN	304991-333	
C30	.015uF, 0603, X7R, 50V, 10%	191470-153	
C31	.015uF, 0603, X7R, 50V, 10%	191470-153	
C32	220pF, 0603, X7R, 50V	191470-221	
C33	220pF, 0603, X7R, 50V	191470-221	
C34	.68uF, BOX, 85C, 63V, 5%	137127-684	
C35	.68uF, BOX, 85C, 63V, 5%	137127-684	
C36	.22uF, BOX, 85C, 50V, 5%	137127-224	
C37	.22uF, BOX, 85C, 50V, 5%	137127-224	
C38	.015uF, 0603, X7R, 50V, 10%	191470-153	
C39	.015uF, 0603, X7R, 50V, 10%	191470-153	
C40	.01uF, 0603, X7R, 50V, FAIL OPEN	304991-103	
C41	.01uF, 0603, X7R, 50V, FAIL OPEN	304991-103	
C42	.01uF, 0603, X7R, 50V, FAIL OPEN	304991-103	
C43	.01uF, 0603, X7R, 50V, FAIL OPEN	304991-103	

Inductors

Reference Designator	Description	Part number	Note
L1	BEAD, FERRITE, CHIP, 1806	256116-181	
L2	BEAD, FERRITE, CHIP, 1806	256116-181	
L6	INDUCTOR, 270uH, 4.5A, RADIAL	277046-270	

Integrated Circuits

Reference Designator	Description	Part Number	Notes
U1	POWER AMP, 2X25W, SOT-411	277612-001	

Miscellaneous

Reference Designator	Description	Part Number	Notes
J500	CONN ,SMT, LIF, 4 POS. ,SIDE	255130-004	
J600	CONN, SMT, LIF, 20 POS, SIDE	255130-020	
J700	CONN, SHROUDER HEADER, W/BOSS	273437-02	

DISASSEMBLY PROCEDURES

1. Docking Cradle Assy Removal

1.1 Remove the four Phillips-head screws located on the bottom side of the docking cradle assembly. See figure 5.0.

1.1 Lift the docking cradle assembly slightly away from the speaker enclosure and disconnect the 20 conductor flexible flat cable (FFC) before removing the cradle Assy completely.

Note: This cable provides signal paths between the amplifier and digital signal processor PCB's.

Figure 5.0

2. DSP PCB Removal

2.1 Remove the cover from the Cradle Assy and note the orientation of the 24 conductor FF cable prior to disconnecting it from the Digital Signal Processor (DSP) PCB. Ensure that the foam protection on the cable is facing the cradle cover upon reinstallation. See figure 5.1.

2.2 Slide the DSP PCB out of the cradle housing and disconnect the 24 conductor FF cable. See figure 5.1.

Figure 5.1

DISASSEMBLY PROCEDURES

3. Docking PCB removal

3.1 Remove three torx-head (T7) screws as shown in figure 5.2.

3.2 Inspect the docking connector for signs of excessive wear and replace if necessary.

Figure 5.2

Figure 5.3

4. Grille Removal

4.1 Carefully push the bottom edge of the grille up using your thumbs while pushing down on the speaker housing with your index fingers as shown in figure 5.4.

4.2 Work the remaining sides of the grille up until it is completely disengaged from the SoundDock.

4.3 Inspect the grille for damage and replace it if necessary.

Figure 5.4

DISASSEMBLY PROCEDURES

5. Amplifier PCB Assy Removal

5.1 Remove the four Phillips-head screws securing the Amplifier PCB Assy to the speaker housing as shown in figure 6.0.

5.2 Using the heatsink fins and FF cable, carefully lift the Amplifier PCB Assy away from the speaker housing.

5.3 Disconnect the IR Receiver PCB FF cable and the Left & Right driver cables from the Amplifier PCB.

5.4 Amplifier PCB, see figure 6.1.

5.5 Position the left and right driver harness as shown in figure 6.2. This will ensure that you don't confuse the phasing of the drivers when reconnecting them to the PCB.

Figure 6.0

Figure 6.1

Figure 6.2

6. Infrared Receiver PCB Removal

6.1 Peel back the foam tape concealing the IR Receiver PCB. See figure 7.0 for details

6.2 Remove the Phillips-head screw securing the PCB in place

6.3 Disconnect the four conductor FF cable from the IR PCB.

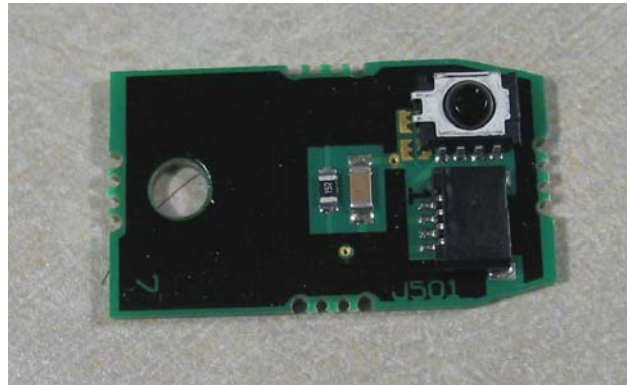**Note:** This cable provides signals to the DSP IC via the Amplifier PCB.

Figure 7.0

Figure 7.1

7. Driver removal

7.1 Remove four phillips-head screws securing the driver to the speaker housing. See Figure 8.0.

7.2 Note the routing of the driver harness before fully extracting the driver. See figure 8.0.

7.3 Ensure acoustic foam is positioned behind the driver. See figure 8.3.

Figure 8.0

Figure 8.1

TEST PROCEDURES

SoundDock Functional Tests

Equipment Required

Digital Multi-meter
Audio Signal Generator
iPod Eliminator PCB, P/N 287089

Notes:
1. Begin the test with no power applied to the SoundDock.
2. Confirm the audio signal generator output is set to zero volts before connecting it to the SoundDock.
3. Remove the input signal before removing power from the SoundDock.

1. Air Leak Test

1.1 Install the iPod Eliminator board into SoundDock's docking cradle and connect the audio signal generator to the eliminator board via a 3.5mm minijack cable.

1.2 Apply power to the SoundDock.
(Note: This will cause SoundDock to ramp to a suitable volume level for the test.)

1.3 Set the signal generator output to:
A. Voltage = 750mV $\pm$10%.
B. Frequency = 80Hz $\pm$10%

1.4 Listen for potential air leaks around all the cabinet seams, joints, and wire harness through-holes.

PASS if no audible air leaks can be heard at a distance $\geq$1ft 0.3M) from any exterior surface of the enclosure.
FAIL if any air leaks can be heard at a distance $\geq$1ft (0.3M) from any exterior surface of the enclosure.

1.5 Reduce the input signal to zero volts.

2. Left Right Driver Test

2.1 Apply the input signal to SoundDock's left channel only. Set Generator as in step 1.3, except set the frequency to 800Hz and confirm that only the left driver plays.

2.2 Reduce generator output to zero volts.

2.3 Repeat step 2.1 for the Right channel.

2.4 Reduce Input signal to zero volts and reconnect SoundDock's right channel.

3. Frequency Sweep Test

3.1 Set audio signal generator to:
A. Voltage = 750mV $\pm$10%.
B. Sweep Range = 40HZ - 5KHz $\pm$10%.

3.2 Execute the sweep for a minimum of five seconds up and then down the range.

3.3 Listen for any extraneous noises such as buzzes, rattles, ticks, and distortion.

PASS if no noise can be heard at a distance $\geq$ 1ft 0.3M).
FAIL if any noise can be heard at a distance of $\geq$ 1ft (0.3M).

3.4 Reduce the input signal to zero volts.

4. Button & Remote Control Test

4.1 Set Audio Signal generator to:
A. Voltage = 100mV $\pm$10%.
B. Frequency = 100Hz

4.2 Using the Volume Down button, momentarily press & hold the Volume Down button.
Verify that the SoundDock responds to the commands.

4.3 Using the Volume Up button, momentarily press & hold the Volume Up button.
Verify that the SoundDock responds to the command.

4.4 Using the Remote control, turn the volume down. Verify that the SoundDock responds to the command.

4.5 Adjust the generator to zero volts and disconnect it from the SoundDock.

SERVICE MANUAL REVISION HISTORY

Revision Level	Date	Description of Change	Change Driven By	Pages Affected
00	9/2004	Document released at revision	Service Manual	All
00 to 01	Unknown	C3 & C4 part number changed from 149948-471V to	ECN 35595	18
01 to 02	Unknown	1. Screw part number changed from 250816-10 to 172783-10. 2. iPod Eliminator PCB part number changed from 279574-001 to 287089. 3. Test Frequency in step 2 changed from 80Hz to 800Hz.		7,9 25 25
02 to 03	Unknown	Pcb Assy, DSP part number changed from 278059-801 to 282669-001.		7
03 to 04	Unknown	1. Both 2 & 3 piece insert kits p/ns 282111-002 & 282110-003 replaced by new 2 piece insert kit p/n 285755-002. 2. Added Note 4 to Amplifer PCB\Heatsink Assembly 3. R7025 value changed from 1k, 5% to 909, 1%. The new part number is 191465-9090.	ECN 36577 ECN 36300	6 11 12
04 to 05	7/2005	1. Updated manual to include both versions of the power supply part numbers 277646-004 and 277646-006. (Note: 006 version of power supply is not back wards compatable with SoundDocks manufactured with DOM before 5151.) 2. Add to foam pieces to grille. 3. Corrected error in manual. Part numbers called out for the Eur and UKS power cords were reversed. 4. Added AUS power cord to manual.	ECN 35899	6 6 6 6
05 to 06	11/2005	1. Changed the following Part numbers: From TO a. DSP PCB Assy 282669-001 290348-002 b. AMP Mod Assy 278544-001 290349-001 c. Dock PCB Assy 282931-001 290350-001 d. IR Receiver PCB 282670-001 290378-001 . 2. Updated manual to include insert, Part number 292498-001. This insert is needed to accommodate the Nano iPod.	These changes resulted from the singulation process	7 7 10 7 6
06 to 07	4/2006	Added part numbers for Black variant	Black SoundDock® Available	6,7,8,9,10,11
07 to 08	11/2006	Change to Lit Kit part number Power supply part number change Universal adapters added Updated Amp board part number		6
08 to 09	12/2006	Product description added Adapter description added Page 10 deleted, added amp flex cable part number to speaker assembly diagram. Software used to generate this manual was changed from InDesign to PageMaker. Updated parts list on pg 6. Added black carton 294676		4 10, 7 ALL 6
09 to 10	4/4/07	New power supply part numbers – Added Foam part numbers (for grille assy)		6 7
10 to 11	9/21/07	Deleted part numbers for the Mod Assy, Welded Enclosure and added a 4 in the notes column.		6
	12/03/07	New DSP board part number (new software). 297427-004		7
	5/15/08	Changed Nano insert part number, now using insert to accommodate gen 1 and 2 Nano's.		7
		Added packing Foam part numbers 280063, 277752 and carton kit 277751-KC		6
	6/10/08	Dock PCB part number change to 282931-003 Deleted square type Power Supply part number Changed Cradle Assembly part numbers from 279103-002 and -004 to 279103-003 and -005.		10 7 8
11 to 12	10/1/08	USB update procedure Charging circuit diagram added Upgrade DSP/Cradle part number added Original DSP board part number deleted Updated disassembly procedure. Changed Capacitors to fail open part numbers C1, C2, C15, C19, C23, C25, C29, C40, C41, C42, C43	Charging circuit changed from Firewire to USB. See front cover for details.	7 8 10 10,12 20 18,19

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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