Charles Universal Broadband Enclosure

SH60-362322 Series

General Description and Installation

Figure 1   Front View of the SHRD60

1. GENERAL INTRODUCTION

1.1.   Document Purpose

This document provides general information for the Charles Industries SH60-362322 series concealment shroud. A closed front view of the SHRD60 is shown in Figure 1.

> -NOTE-
>
> *Hereafter, the Charles SH60-362322 series will be referred to as the "SHRD60."*

1.2.   Product Purpose

The SHRD60 is a vented shroud that houses customer supplied remote radio heads (RRH) and ancillary equipment.

1.3.   Product Mounting and Location

The SHRD60 is suitable for outside plant-type (OSP) locations and those that may require NEC compliance. The outdoor SHRD60 products are to be mounted on a pole. The installer connects the power, fiber and copper connections. Detailed mounting and installation information is covered in Section 3.

2. PRODUCT DESCRIPTION

SH60-362322xNE5 supports one Ericsson 8843, 4449, 4478, 4426, or 4415 radio, two Ericsson 220x radios, one 6322 or two AC-08 power supplies, and two diplexers.

SH60-362322xNED supports one Ericsson 4455 radio, one Ericsson 8863 radio, two CommScope CBC1726T-4310 diplexers, one Ericsson 6585 FrontHaul WDM, and either one Ericsson 6302 or two Ericsson AC-08 power supplies.

The SH60-362322xNEH supports one Ericsson dual band radio (8843, 4449, 4890, 4490, 4478, or 4415), two Ericsson AC-08 or one Ericsson 63xx power supply, two CommScope diplexers (CBC1726 or CBC1923), and one Charles Industries CFTT fiber box. If the Ericsson 4890 or 4490 radio is used, then one 4435 radio can also be used. The AC-08 power supplies are required with the 4435 radio (63xx power supply cannot be used with the 4435).

SH60-362322xNN2 is available in four configurations:
- Configuration 1: two Nokia AHxxx radios and two APAF power supplies, with either one Nokia 1830 ITP4 WDM or one Charles Industries CFTT fiber box.
- Configuration 2: one Nokia AHxxx radio, one APAF power supply, and two Nokia Airscale Micro radios, with either one Nokia 1830 ITP4 WDM or one Charles Industries CFTT fiber box.
- Configuration 3: four Nokia Airscale Micro radios (two per side) with either one Nokia 1830 ITP4 WDM or one Charles Industries CFTT fiber box
- Configuration 4: one Nokia AHxxx radio, one Nokia Airscale Micro radio, and one Delta 2kW or ABB 1600W power supply, with either one Nokia 1830 ITP4 WDM or one Charles Industries CFTT fiber box.

SH60-362322xNN3 supports one Nokia B25 4x30W RRH, one Nokia B66 4x45W RRH, one CommScope diplexer, one Delta 2kW power supply, and one Charles Industries CFTT fiber box.

SH60-362322xNS1 is available in two configurations. Both support one Samsung CBRS, two CommScope SDX1926T-43 diplexers, one Delta 2kW, Ericsson 6302, or ABB 1600W power supply, and a Charles Industries CFTT or Nokia 1830 ITP4 WDM fiber box.
- Configuration 1: one Samsung 320W dual band RRH or one Samsung ORAN RRH
- Configuration 2: one Samsung 160W dual band RRH and one Samsung LAA Micro RRH

SH60-362322xNXX is an empty shroud that is configurable using a bracket kit. The kit is ordered separately. For some kit options, the brackets are installed at the factory. For others, the brackets must be installed in the field. See Table 2 for information about the available kits.

All radios, power supplies, combiners, WDMs, and fiber boxes are customer supplied. For all configurations that support the Delta 2kW power supply, Charles offers the 96-DLT2KWPSU1-A kit (ordered separately), which includes one Delta power supply with associated cables. When ordered, the kit is installed at the factory. Order additional kits if more power supplies are needed.

Figure 2 shows the SHRD60 dimensions. Figures 3 through 10 show the main components of the SHRD60.
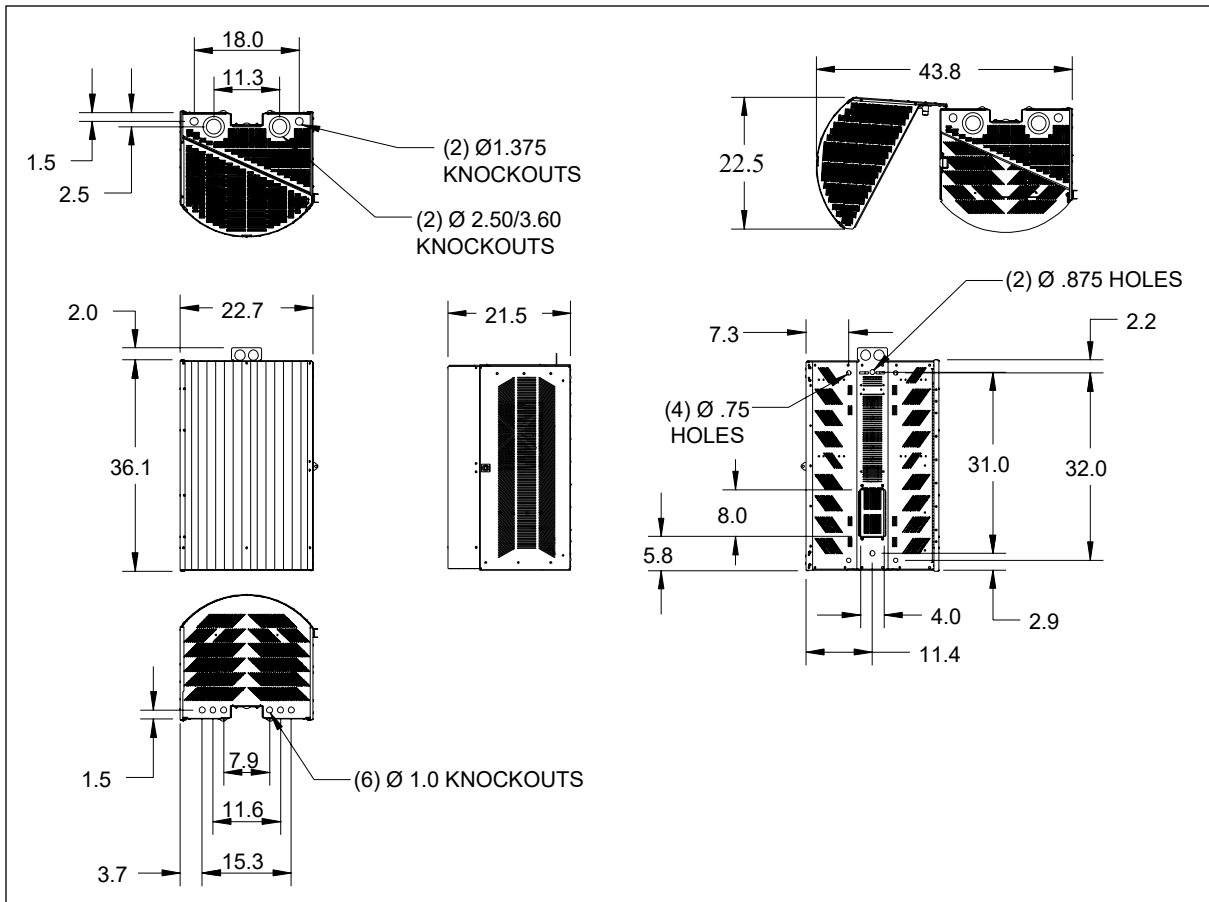
Figure 2   SHRD60 Dimensions (in inches)
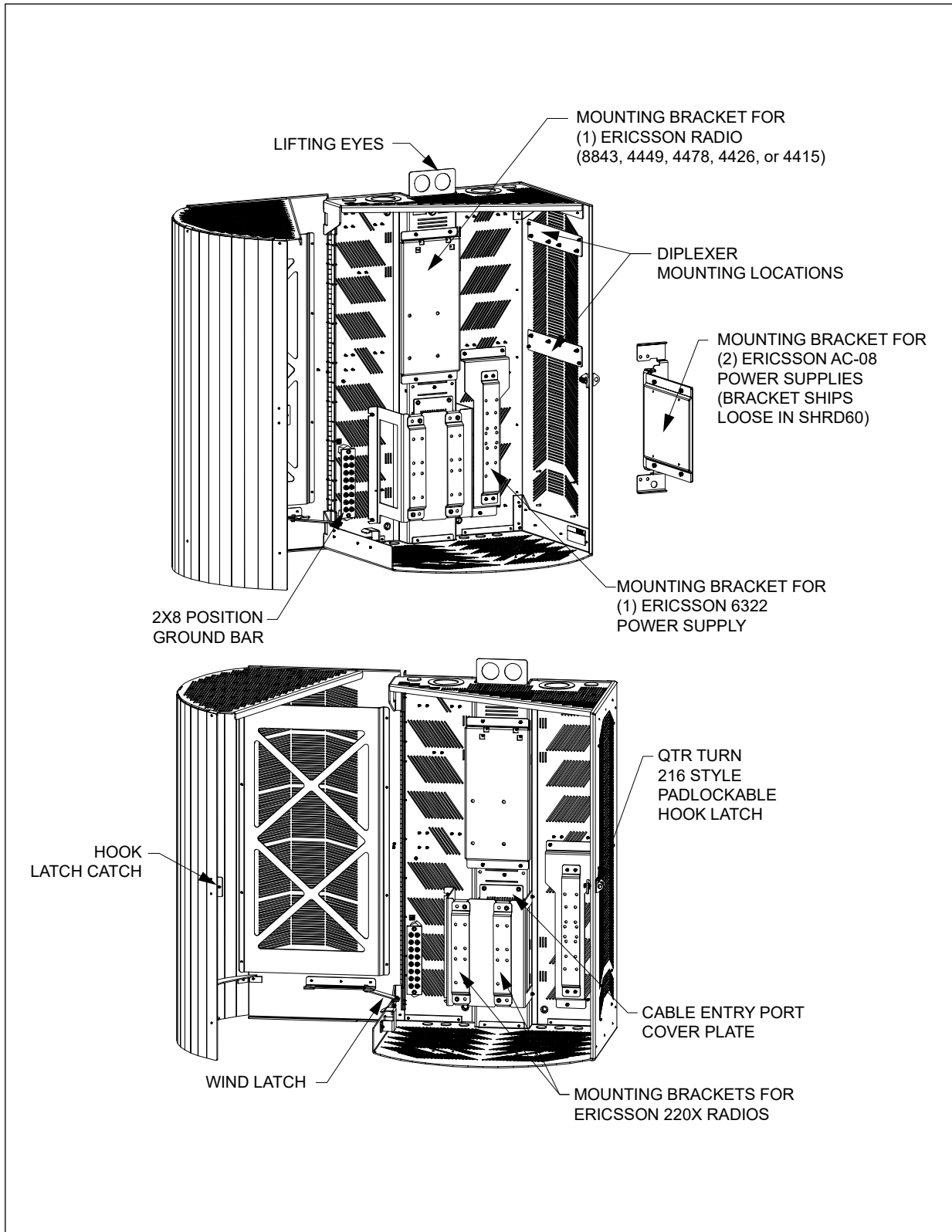
Figure 3   SH60-362322xNE5 Components
This configuration is also possible by ordering the empty SH60-362322xNXX with the 97-EMP3623221-A bracket kit.
Kit brackets are installed in the field in the positions shown here.

BRACKET FOR
ERICSSON 8863
RADIO

BRACKET FOR
ERICSSON 4455
RADIO

BRACKET FOR
(2) COMMSCOPE
DIPLEXERS

BRACKET FOR
ERICSSON 6585
FRONTHAUL WDM

BRACKET FOR
(2) ERICSSON AC-08
POWER SUPPLIES

BRACKET FOR
ERICSSON 6302
POWER SUPPLY
(SHIPS LOOSE)

CABLE ENTRY PORT
COVER PLATE

LIFTING EYES

QTR TURN
216 STYLE
PADLOCKABLE
HOOK LATCH

HOOK
LATCH CATCH

WIND LATCH

2X8 POSITION
GROUND BAR
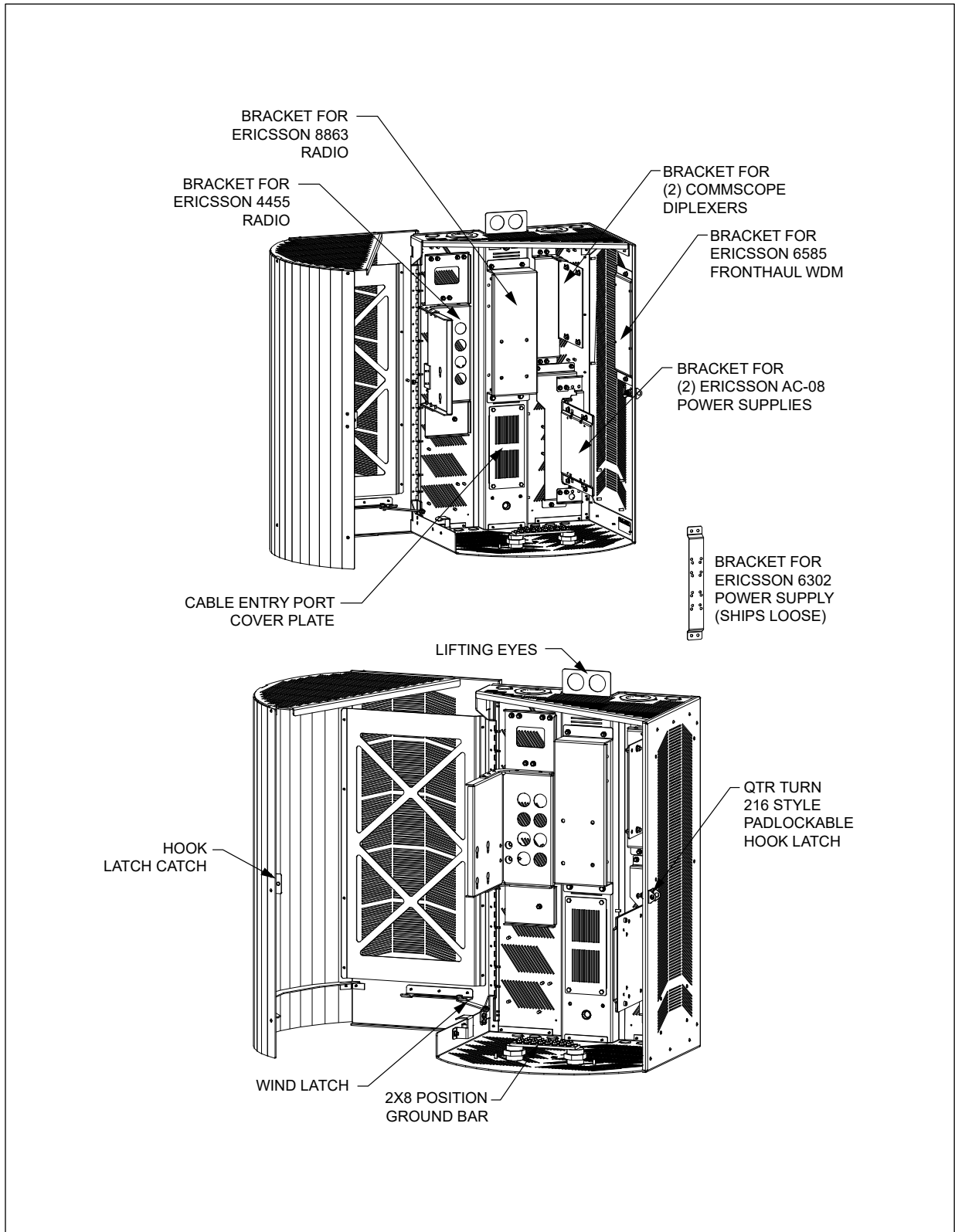
Figure 4   SH60-362322xNED Components

LIFTING EYES

MOUNTING BRACKET FOR
(1) ERICSSON RADIO
(8843, 4449, 4890,
4490, 4478, or 4415)

MOUNTING BRACKET FOR
ERICSSON 4435 RADIOS

QTR TURN
216 STYLE
PADLOCKABLE
HOOK LATCH

HOOK
LATCH
CATCH

CABLE ENTRY PORT
COVER PLATE

WIND LATCH

DIPLEXER
MOUNTING LOCATIONS
(1 ON EACH SIDE OF
THIS PANEL)

MOUNTING BRACKET
FOR (1) ERICSSON 63xx
POWER SUPPLY

2X8 POSITION
GROUND BAR

MOUNTING BRACKETS FOR
(2) ERICSSON AC-08
POWER SUPPLIES
(BRACKETS AND
MOUNTING SCREWS
SHIP LOOSE IN SHRD60)

Figure 5   SH60-362322xNEH Components

Figure 6   SH60-362322xNN2 Components

MOUNTING LOCATION FOR
CHARLES CFTT FIBER BOX

LIFTING EYES

MOUNTING BRACKET
FOR NOKIA
B25 4x30 RRH

HOOK
LATCH CATCH

QTR TURN
216 STYLE
PADLOCKABLE
HOOK LATCH

WIND LATCH

MOUNTING LOCATION
FOR DELTA 2kW
POWER SUPPLY

MOUNTING BRACKET
FOR NOKIA
B66 4x45 RRH

MOUNTING LOCATION
FOR COMMSCOPE
DIPLEXER

CABLE ENTRY PORT
COVER PLATE

2X8 POSITION
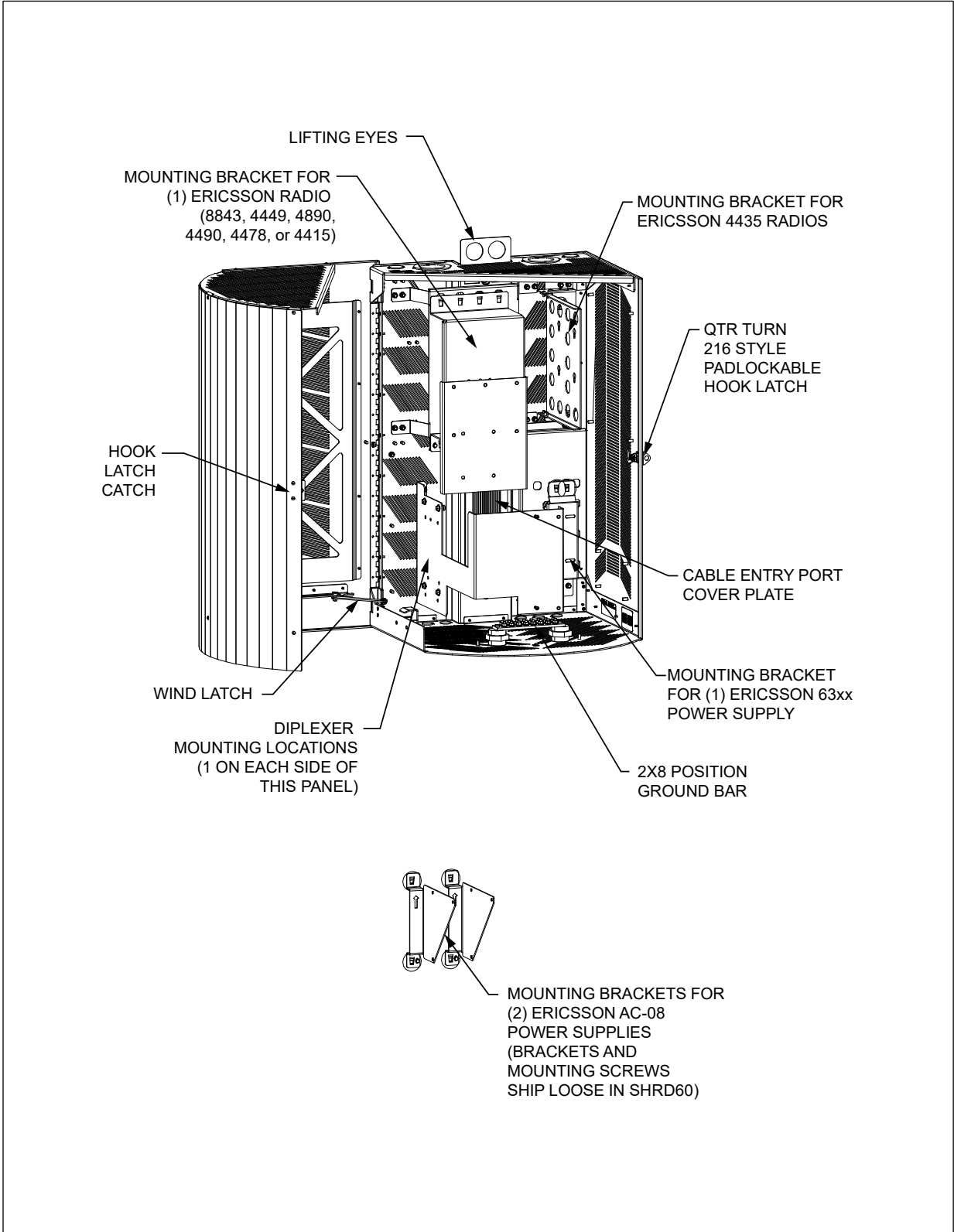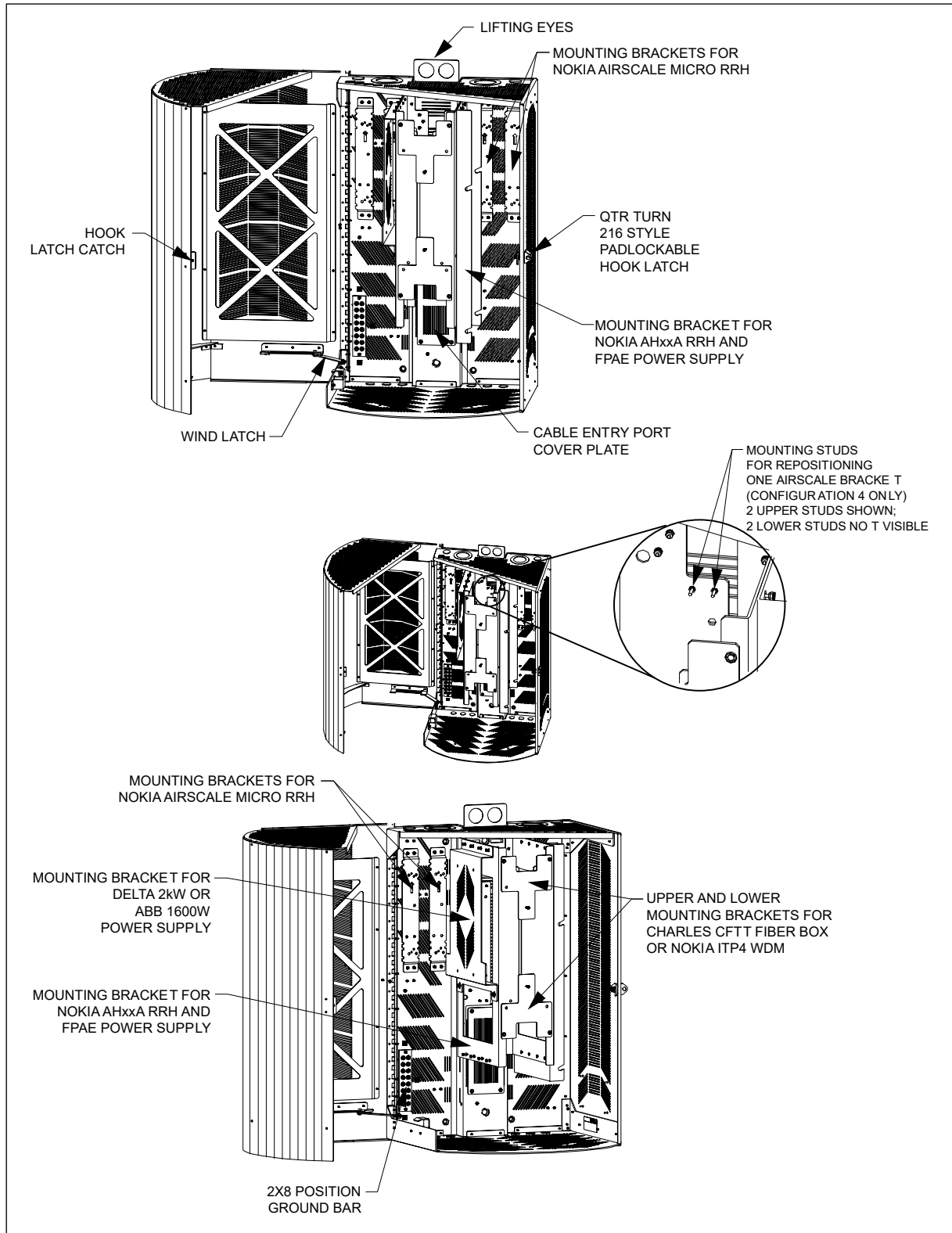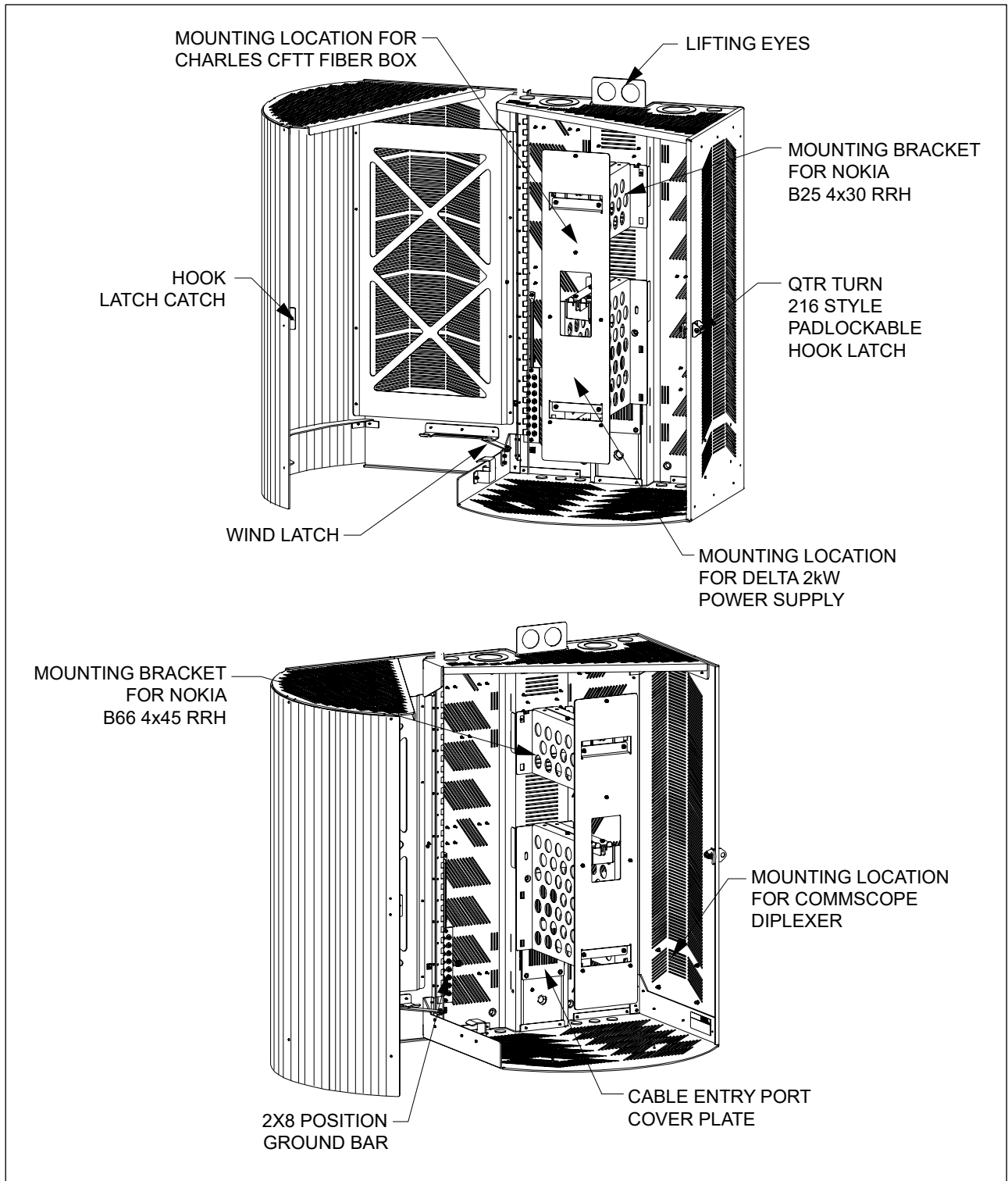GROUND BAR
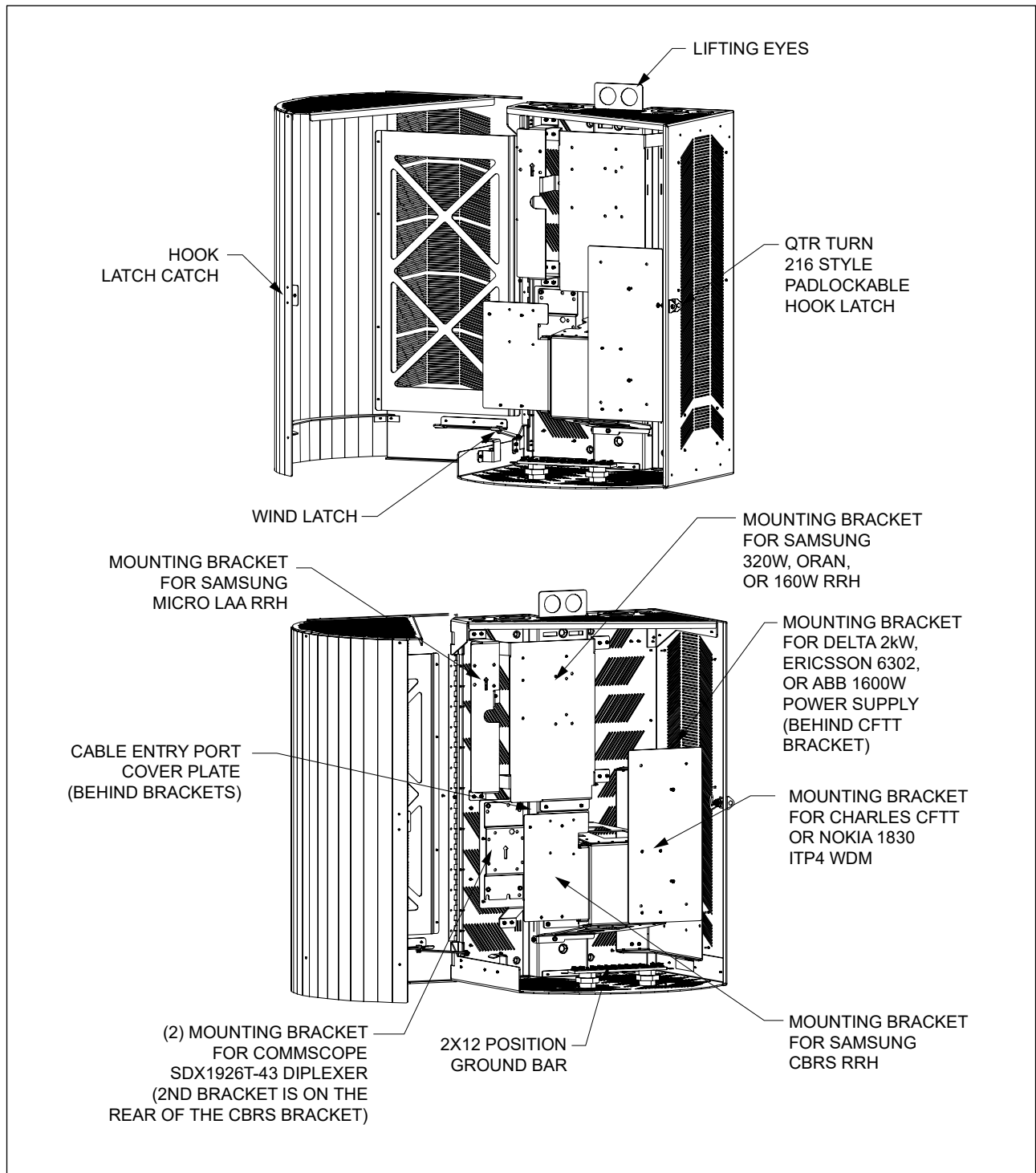
Figure 7   SH60-362322xNN3 Components

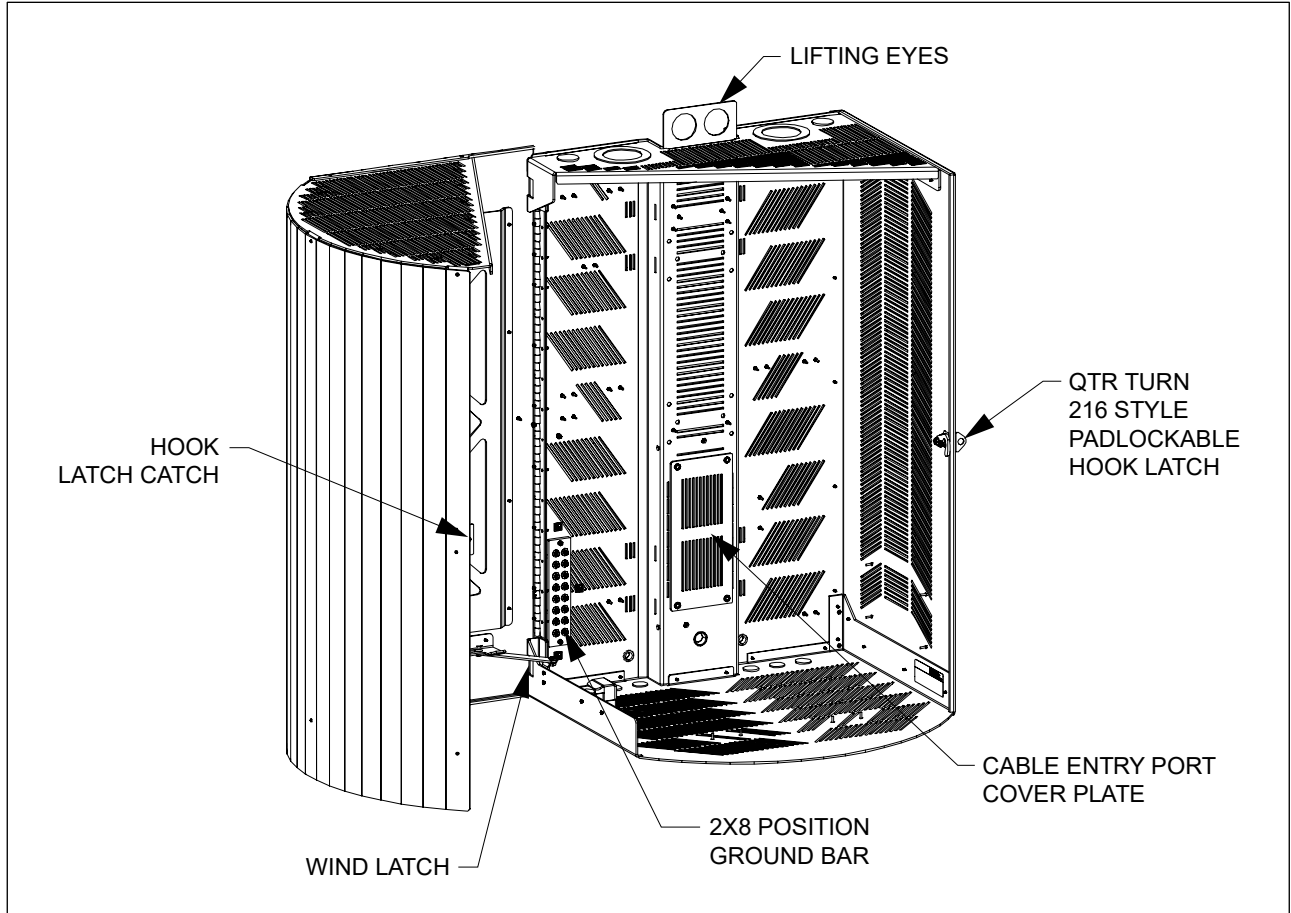**Figure 8   SH60-362322xNS1 Components**

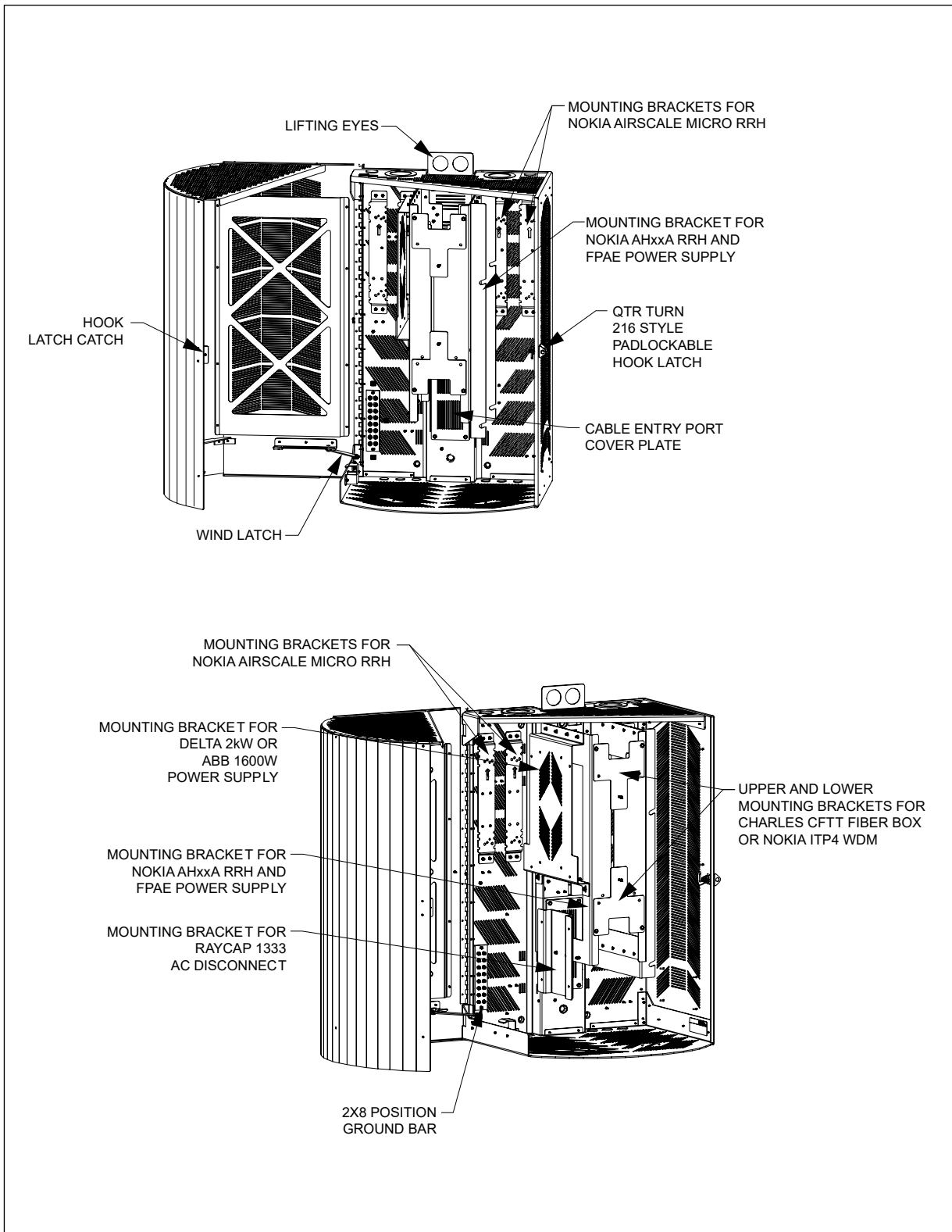**Figure 9   SH60-362322xNXX Components**

Figure 10   SH60-362322xNXX with the 97-NMP3623221-A bracket kit.
Kit brackets are installed in the field in the positions shown here.

3. INSTALLATION

3.1. Inspecting the Product

The SHRD60 is shipped in a carton on a skid. Unpack the unit and dispose of the packaging material.

> *-INSPECTION NOTE-*
>
> *Visually inspect the unit for damages prior to installation. If the equipment was damaged in transit, immediately report the extent of the damage to the transportation company.*

3.2. Following and Using Safety Precautions

Read the following site and safety tips, cautions, and warnings, then proceed with the paragraphs that follow.

- For installation, follow all National Electrical Codes (NEC) ANSI/NFPA 70, local, environmental, workplace, and company codes, safety procedures, and practices.
- Minimum spacing between the accessories and components and the housing for ITE equipment shall be maintained for safe operation of the equipment when installed in accordance with NEC ANSI/NFPA 70.
- Read all instructions, warnings and cautions on the equipment and in the documentation shipped with the product.
- Always connect ground connections first.
- Do not place this product on weak or unstable surfaces which may allow the product to fall, resulting in potentially serious damage(s) to persons or product.
- Only authorized trained personnel shall install the SHRD60.
- In windy conditions, be sure to engage the wind latch to secure the door in a stationary position.

3.3. Obtaining Tools and Equipment

Obtain the following recommended or needed items for installing the SHRD60.

- Sufficient length and quantities of fiber cable (or pigtails)
- Cable scoring, opening, and cutting tools for cable sheathing, shields, wrappings, strength members and buffer tubes
- Wire strippers
- Crimpers
- Cable, tube, wire, and fiber cleaning materials
- Protective and/or insulated work gloves
- Safety glasses
- Tape measure
- Marking utensil
- #6 ground wire or rod and earth ground materials
- Bond strap (optional, from cable bond clamp to bond post)
- Any exterior cable strain relief, per company practice
- Slotted, hex, and Phillips screwdrivers
- Torque wrench
- Assorted cable ties, clips, or fasteners (optional)
- Can wrench (216 type tool)
- Derrick for lifting
- Level

3.4. Preparing the Installation Site

Observe the following site preparation recommendations.

- Leave adequate horizontal and vertical space between multiple installations to allow for proper cable access, as well as enough room around the enclosure to open the door(s).
- The site must meet minimal personnel and equipment safety requirements.
- The distance from the cable entry point should be consistent with local installation practices.
- The pole must be able to support the weight of the SHRD60.
- Run all fiber and copper facilities to the site.

3.5. Lifting the SHRD60

See Table 1 for SHRD60 weight. Charles recommends the following procedure for lifting the SHRD60.

3.5.1. *Required Equipment*

- One derrick (crane) capable of lifting the SHRD60
- Two lifting slings or chains with a 2,500 lbs. capacity
- Connecting link to attach sling to the SHRD60's lifting bracket
- 75-ft. long tagline rope

Insert the lifting sling connecting links securely through the lifting bracket as shown in Figure 11.

3.5.2. *Warnings and Specific Safety Precautions*

⚠	WARNING	**Improper hoisting equipment and unsafe lifting procedures can result in serious injury or death.**

Observe the following local safety procedures when performing the tasks in this section.

- Keep the SHRD60 away from any power lines.
- Keep bystanders away from the work operations at all times.
- Only trained operators shall operate the crane for lifting and setting the SHRD60.
- Do not suspend loads over people or equipment.
- All persons working with hoisting equipment shall wear standard safety gear according to local practices including safety helmets and steel-toed shoes.
- Do not operate the hoisting equipment until all stabilizer are extended and in firm contact with the ground or adequate support structure.
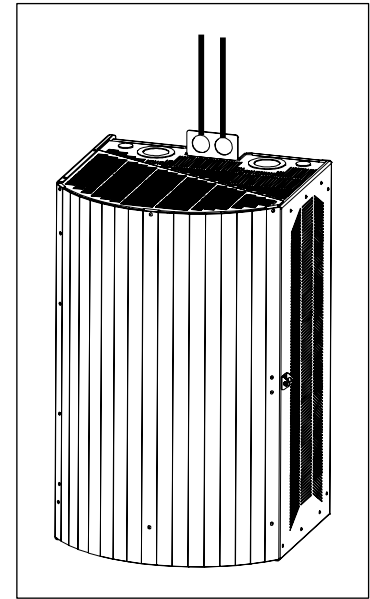- Do not attempt to retract or extend the stabilizers while a load is suspended.

Figure 11   Lifting the SHRD60

3.6. Mounting the SHRD60

Charles offers multiple options for pole mounting. Kit 97-002349x-A is a mounting bracket kit that installs the SHRD60 flush against the pole. Kit 97-002309x-A, used in conjunction with 97-002349x-A, allows installation with a 7" offset from the pole. Kit 97-002398x-A, used in conjunction with 97-002349x-A, allows installation with a 5" offset from the pole. Kit-002391x-A, used in conjunction with 97-002349x-A, allows installation with a 3" offset from the pole. See the documentation that ships with the kits for more information.

Clearance Note: Vented shrouds require a minimum of 12" of exterior clearance at all vents. Do not install the SHRD60 within 12" of any other equipment or objects.

3.7. SHRD60 Wiring and Equipment

After the SHRD60 is properly mounted in the desired location, apply No-Ox where bus bar and other 2-hole lug connections will be made. Install ground and power connections. Always ground the equipment first, before making any other connections.

⚠	WARNING	**Perform all bonding and grounding connections prior to any electrical and communications connections.**

3.7.1. *Torque Requirements*

Torque all hardware as shown below (unless otherwise noted). These values apply to SAE Grade 1 & 2 Low Carbon Steel, ASTM A307 Low Carbon Steel, and Stainless Steel Grade 18-8.

Thread Size	In-lbs	Ft-lbs
4-40	4±10%	
6-32	8±10%	
8-32	16±10%	
10-32	26±10%	
12-24	50±10%	
1/4-20/M6	60±5%	5±5%
5/16-18	125±5%	10.4±5%
3/8-16	180±5%	15.0±5%
1/2-13	500±2%	41.7±2%
5/8-11	1000±1%	83.3±1%

3.7.2. *Ground Connection*

Use the ground bar inside the SHRD60 for grounding to earth and internal equipment. This requires a 1/4-20x5/8 two-hole lug for each connection.

3.7.3. Optional Squirrel Guard Kit

The SHRD60 can be ordered with the 96-SH60SQRLGRDA kit. If ordered, the cable entry cover plate is replaced at the factory with a grommeted plate that prevents squirrel intrusion into the enclosure. This kit is also available as the field kit 97-003005A-A, which is installed by the customer. To route cables into the SHRD60, cut slits in the center of the rubber grommets and pass cables through the slits. Only cut grommets that are needed for cable entry.

3.8. Customer Equipment Mounting – SH60-362322xNE5

To ensure easy access to all equipment, mount these components in the order given. All equipment is mounted onto the brackets using customer supplied hardware. See Figure 12 for a view of the SH60-3622322xNE5 with radios and other customer supplied equipment installed. This configuration can also be obtained using the configured SH60-362322xNXX with the 97-EMP3623221-A bracket kit.

3.8.1. JMA Diplexers

Mount the diplexers to the top and bottom diplexer brackets. Mount the first diplexer onto the bracket location at the rear of the SHRD60, and the second diplexer onto the front location.

3.8.2. Ericsson 8843 or 4449 Radio

1. Remove the RRH bracket from the rear spine. Save the hardware.
2. Attach the bracket to the radio using customer supplied hardware.
3. Mount the bracket/radio assembly back onto the rear spine using hardware removed previously.

3.8.3. Ericsson 6322 Power Supply

The SHRD60 ships with the bracket for this power supply installed in the lower right corner.

1. Remove the power supply bracket from the rear spine. Save the hardware.
2. Attach the bracket to the power supply using customer supplied hardware.
3. Mount the bracket/ power supply assembly back onto the rear spine using hardware removed previously.

3.8.4. Ericsson AC-08 Power Supply

The SHRD60 ships with the bracket for these power supplies loose inside the SHRD60.

1. Remove the 6322 bracket from the SHRD60. Store or discard according to local practice. Save this bracket hardware.
2. Locate the AC-08 power supply bracket.
3. Attach the two AC-08 power supplies to the sides of this bracket using customer supplied hardware.
4. Mount the bracket/ power supply assembly back onto the SHRD60 using hardware removed previously.

3.8.5. Ericsson 220x Radio

1. Remove the RRH bracket from the rear spine. Save the hardware.
2. Attach the bracket to the radio using customer supplied hardware.
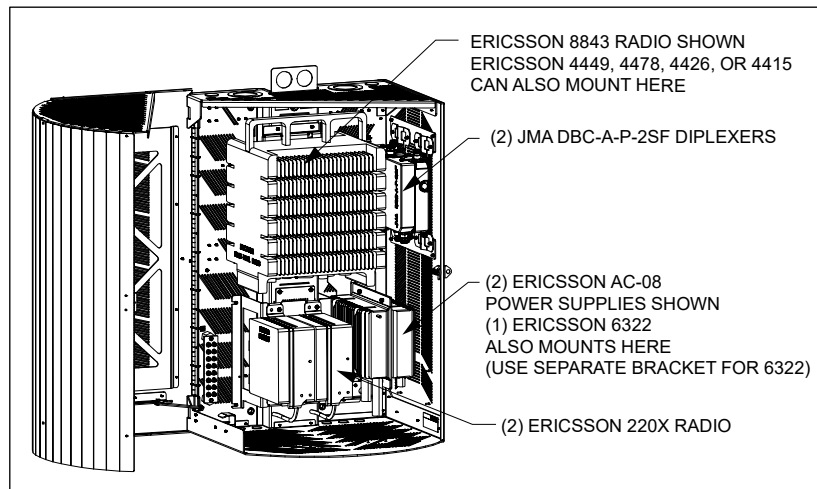3. Mount the bracket/radio assembly back onto the rear spine using hardware removed previously.

Figure 12
SH60-362322xNE5 OR SH60-362322xNXX with 97-EMP3623221-A
with Equipment Installed

3.9. Customer Equipment Mounting – SH60-362322xNED

To ensure easy access to all equipment, mount these components in the order given. All equipment is mounted onto the brackets using customer supplied hardware. See Figure 15 for a view of the SH60-3622322xNED with radios and other customer supplied equipment installed.

3.9.1. Power Supply

AC-08: If using the Ericsson AC-08 power supplies, then mount the power supplies to either side of the bracket.

6302:
1. Remove the AC-08 bracket (Figure 13) from the threaded mounting studs by removing the four Keps nuts. Save the mounting nuts. Store or discard the bracket per company practice.
2. Attach the 6302 power supply to the bracket using customer supplied hardware.
3. Mount the bracket/power supply assembly onto the same mounting studs that previously held the AC-08 bracket (Figure 14). Use the Keps nuts removed in step one to secure the bracket to the SHRD60.

3.9.2. CommScope Diplexers
1. Remove the diplexer bracket from the rear panel of the SHRD60.
2. Mount one diplexer onto each side of the forward-facing leg of the bracket using customer supplied hardware.
3. Mount the diplexer/bracket assembly onto the SHRD60 using the hardware removed previously.

3.9.3. Ericsson FrontHaul WDM
1. Remove the WDM bracket from the right side of the SHRD60.
2. Attach the WDM to the bracket using customer supplied hardware.
3. Mount the WDM/bracket assembly onto the SHRD60 using the hardware removed previously.

3.9.4. Ericsson 8863 Radio
1. Remove the 8863 bracket from the central spine of the SHRD60.
2. Attach the 8863 to the bracket using customer supplied hardware.
3. Mount the 8863/bracket assembly onto the SHRD60 central spine using the hardware removed previously.

3.9.5. Ericsson 4455 Radio

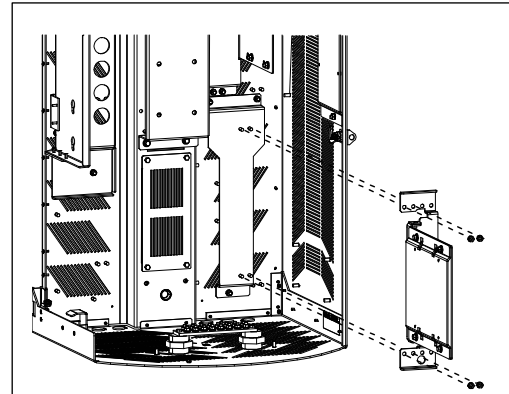Mount the 4455 radio onto the right side of the forward-facing leg of the bracket using customer supplied hardware.

Figure 13   Remove AC-08 Bracket

Figure 14   Attach 6302 and Bracket
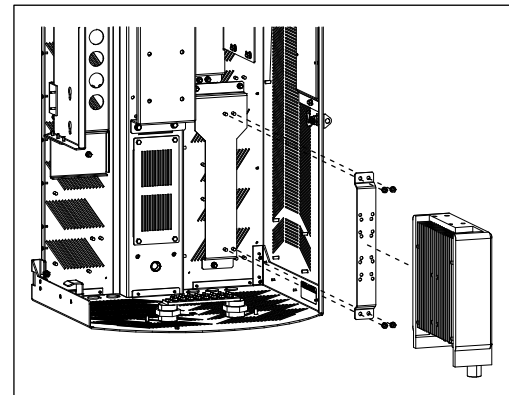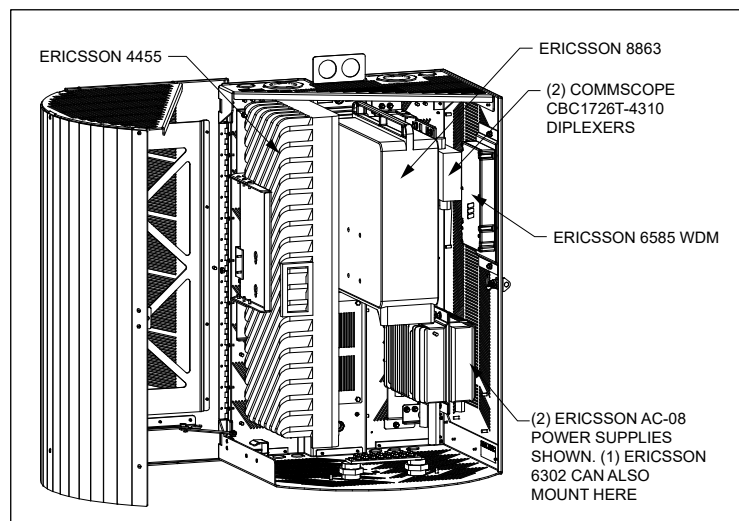

ERICSSON 4455

ERICSSON 8863

(2) COMMSCOPE CBC1726T-4310 DIPLEXERS

ERICSSON 6585 WDM

(2) ERICSSON AC-08 POWER SUPPLIES SHOWN. (1) ERICSSON 6302 CAN ALSO MOUNT HERE

Figure 15
SH60-362322xNED with Equipment Installed

3.10. Customer Equipment Mounting – SH60-362322xNEH

To ensure easy access to all equipment, mount these components in the order given. All equipment is mounted onto the brackets using customer supplied hardware. See Figures 20 and 21 for views of the SH60-3622322xNEH with radios and other customer supplied equipment installed.

3.10.1. Power Supply

63xx:
1. Remove the 63xx bracket from the SHRD60 rear panel (Figure 16). Save the mounting screw.
2. Attach the 63xx power supply to the bracket using customer supplied hardware.
3. Mount the bracket/power supply assembly to the SHRD60 rear panel using the screw removed previously.

AC-08:
1. Remove the 63xx bracket from the SHRD60 rear panel (Figure 16). Store or discard the bracket per company practice.
2. Attach the AC-08 power supplies to the brackets that ship loose with the SHRD60 using customer supplied hardware.
3. Mount the bracket/power supply assemblies onto the SHRD60 rear panel (Figure 17). Use the 12-24 hex screws included with the kit.

3.10.2. CommScope Diplexers

Mount one diplexer onto each side of the left panel on the bracket assembly using customer supplied hardware (Figure 18).

3.10.3. Charles CFTT Fiber Box

Mount the fiber box onto the front panel on the diplexer bracket assembly using hardware that ships with the SHRD60.

3.10.4. Ericsson 4435 Radio

This radio is only used if installing the Ericsson 4890 or 4490 large radio and the AC-08 power supplies. If a different large radio is used, then skip this section.

1. Loosely install the radio mounting hardware onto the back of the 4435.
2. Place the radio against the right side of the 4435 bracket so that the mounting hardware enters the large part of the keyholes.
3. Slide the radio downward so the hardware settles into the small part of the keyhole. Tighten the hardware.

3.10.5. Ericsson Large Radio

This section applies to any of the Ericsson 8843, 4449, 4890, 4490, 4478, or 4415 radios.

1. Remove the radio mounting plate. Save the mounting hardware.
2. Attach the radio to this mounting plate using customer supplied hardware.
3. Mount the radio/plate assembly in the SHRD60 using the hardware removed previously (Figure 19).
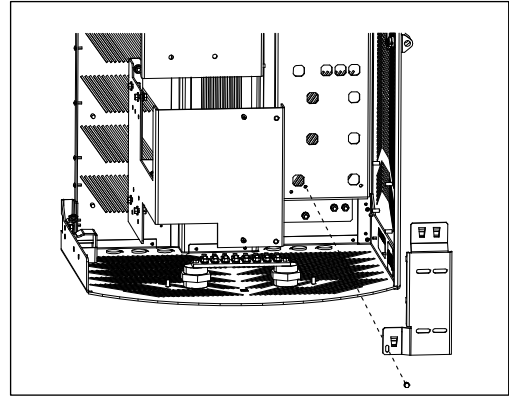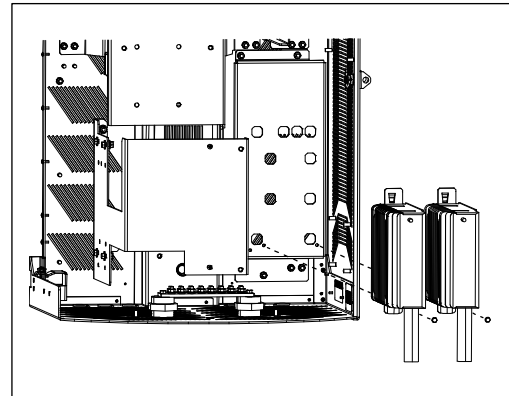

Figure 16   Remove 63xx Bracket

Figure 17   Attach AC-08
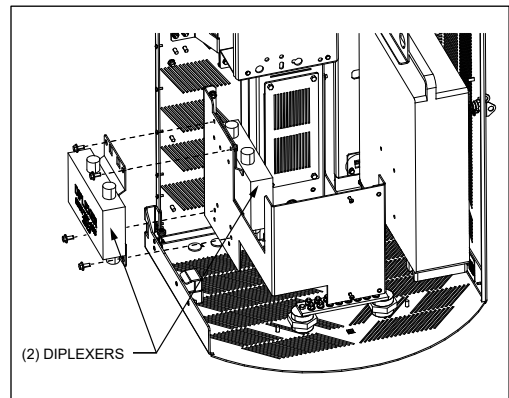
(2) DIPLEXERS

Figure 18   Mount Diplexers
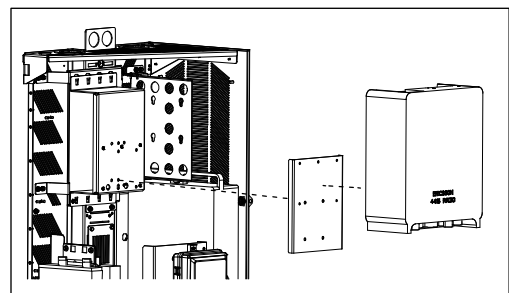
Figure 19   Attach Large Radio

ERICSSON 4890 RADIO

ERICSSON 4435 RADIO

(2) ERICSSON AC-08
POWER SUPPLIES

CHARLES CFTT

(2) COMMSCOPE DIPLEXERS
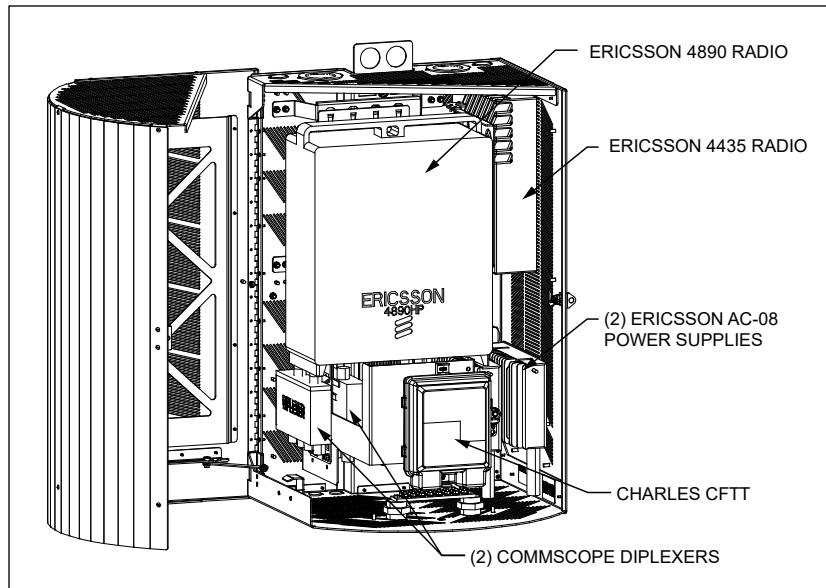
Figure 20
SH60-362322xNEH with 4890 and 4435 Radios, AC-08 Power Supplies

ERICSSON 4890 RADIO

ERICSSON 6308
POWER SUPPLY

CHARLES CFTT

(2) COMMSCOPE DIPLEXERS

Figure 21
SH60-362322xNEH with 8843 Radio, 6308 Power Supply

3.11. Customer Equipment Mounting – SH60-362322xNN2

To install customer equipment, first remove all mounting brackets from the SHRD60, saving the hardware. See Figure 4 for mounting bracket locations. Then install equipment for each confi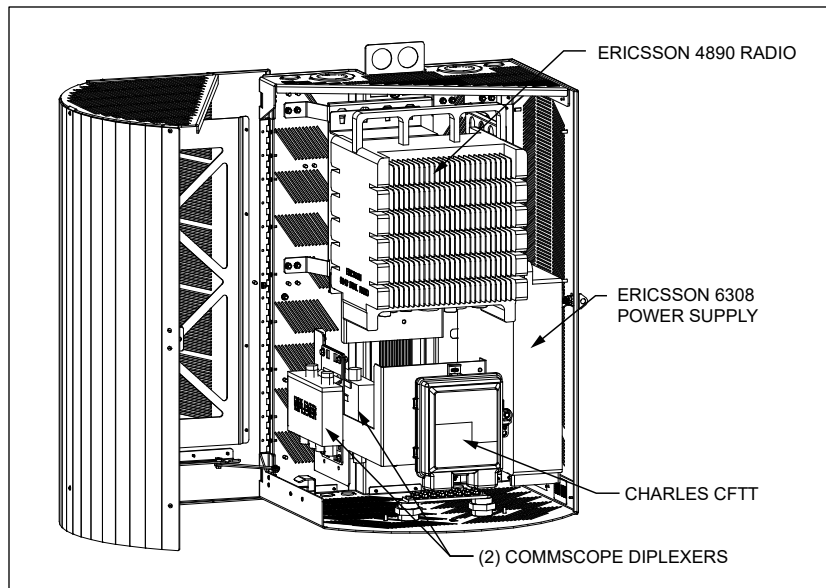guration in the order listed below. Note that in each configuration, either the CFTT or the ITP4 will be mounted (not both). Additionally, the Delta power supply bracket is discarded if using Configurations 1, 2, or 3.

3.11.1. Configuration 1

Mounting Nokia AHxxx Radio and APAF Power Supply:

1. The AHxxx radio comes with a bracket for the APAF power supply. Mount the AHxxx radio with the Nokia bracket onto the Charles bracket using customer supplied hardware.
2. Mount the APAF power supply to the back of the Nokia bracket using customer supplied hardware.
3. Mount this radio/power supply/bracket assembly back onto the SHRD60 using hardware removed previously.

3.11.2. Configuration 2

Mounting Nokia AHxxx Radio and APAF Power Supply:

1. The AHxxx radio comes with a bracket for the APAF power supply. Mount the AHxxx radio with the Nokia bracket onto the Charles bracket using customer supplied hardware.
2. Mount the APAF power supply to the back of the Nokia bracket using customer supplied hardware.
3. Mount this radio/power supply/bracket assembly back onto the SHRD60 using hardware removed previously.

Mounting Nokia Airscale Micro Radio:

1. Mount the bracket onto the back of the radio using customer supplied hardware. These brackets have an arrow stamped on them that designates the top. When mounting, ensure that the top of the radio aligns with the top of the bracket.
2. Mount the radio/bracket assembly back onto the SHRD60 using hardware removed previously. Ensure that arrow points to the top of the SHRD60

3.11.3. Configuration 3

Mounting Nokia Airscale Micro Radio:

1. Mount the bracket onto the back of the radio using customer supplied hardware. These brackets have an arrow stamped on them that designates the top. When mounting, ensure that the top of the radio aligns with the top of the bracket.
2. Mount the radio/bracket assembly back onto the SHRD60 using hardware removed previously. Ensure that arrow points to the top of the SHRD60

3.11.4. Configuration 4

Mounting Nokia AHxxx Radio:

1. Mount the AHxxx radio with the Nokia bracket onto the Charles bracket using customer supplied hardware.
2. Mount this radio/bracket assembly back onto the SHRD60 using hardware removed previously.

Mounting Nokia Airscale Micro Radio:

1. Mount the bracket onto the back of the radio using customer supplied hardware. These brackets have an arrow stamped on them that designates the top. When mounting, ensure that the top of the radio aligns with the top of the bracket.
2. Locate the mounting studs in the center of the SHRD60 spine (shown in Figure 3). Mount the radio/bracket assembly onto these studs using hardware removed previously. Ensure that arrow points to the top of the SHRD60

Mounting Delta 2kW or ABB 1600W Power Supply:

1. Secure the power supply to the bracket using customer supplied hardware.
2. Attach the bracket onto its original position using hardware removed previously.

3.11.5. All Configurations

Mounting Charles CFTT Fiber Box:

1. Mount the two Y-shaped brackets back into the SHRD60 in their original positions in the SHRD60.
2. Mount the CFTT onto the studs on these brackets using the nuts included on the studs.

Mounting Nokia 1830 ITP4 WDM:

1. Mount the two Y-shaped brackets back into the SHRD60 in their original positions in the SHRD60, but with the brackets flipped so that the mounting studs now point toward the back of the SHRD60. These studs are not used for the ITP4.
2. Mount the ITP4 onto the mounting holes on these brackets using customer supplied hardware.

See Figures 22 through 25 for views of the configurations with all customer equipment installed. All views show the CFTT fiber box.

Figure 22
SH60-362322xNN2
Configuration 1 with Equipment Installed

Figure 23
SH60-362322xNN2
Configuration 2 with Equipment Installed

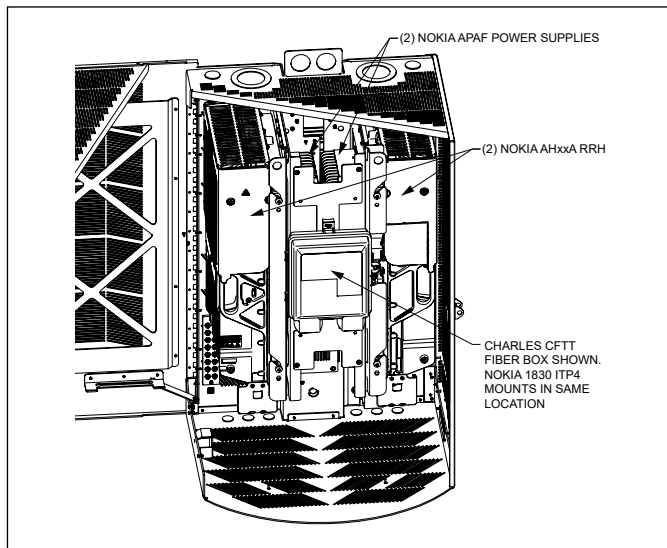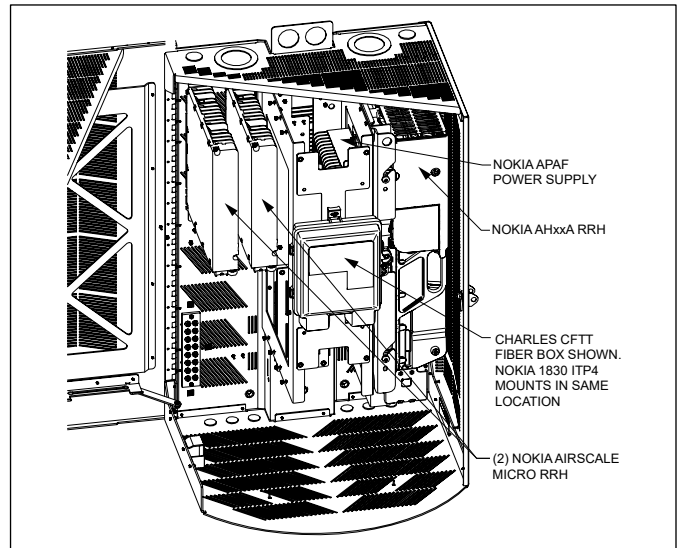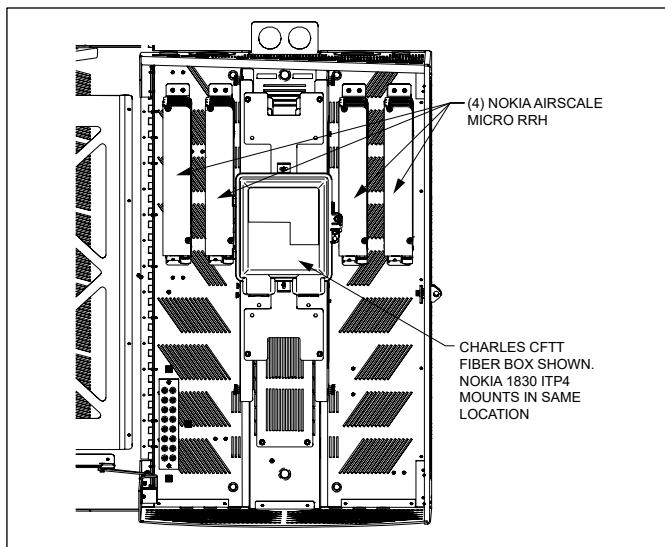**Figure 24**
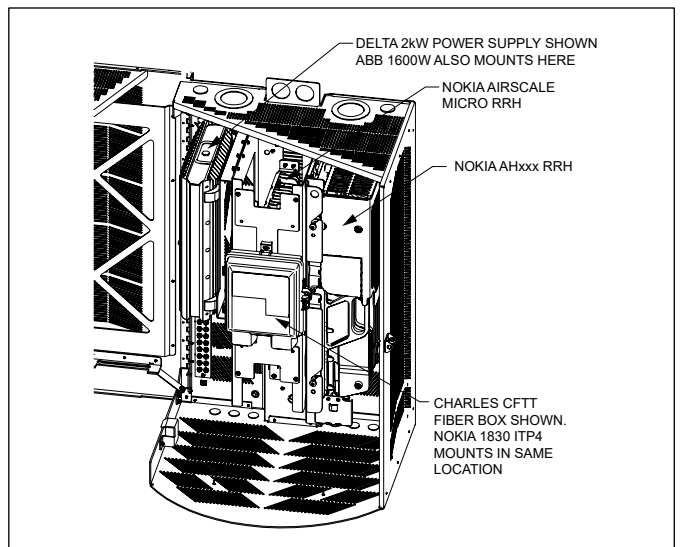**SH60-362322xNN2 Configuration 3 with Equipment Installed**

Figure 25
SH60-362322xNN2 Configuration 4 with Equipment Installed

3.12. Customer Equipment Mounting – SH60-362322xNN3

Prior to installing equipment, remove the front-facing bracket for the fiber box and power supply. Set this bracket and hardware aside.

Next, remove the four hanging radio mounting brackets from the bracket in the center of the SHRD60 (two radio brackets per side).

3.12.1. *Nokia B66 4x45 RRH*

Locate the two radio brackets that were removed from the left side of the center bracket.

1. Mount these two brackets onto the back of the radio using customer supplied hardware.
2. Mount the radio/bracket assembly back onto the center bracket.

3.12.2. *Nokia B25 4x30 RRH*

Locate the two radio brackets that were removed from the right side of the center bracket.

1. Mount these two brackets onto the back of the radio using customer supplied hardware.
2. Mount the radio/bracket assembly back onto the center bracket.

3.12.3. *Charles CFTT Fiber Box*

1. Locate the front-facing bracket that was removed at the beginning and re-mount it in its position.
2. Mount the CFTT fiber box on studs near the top of this bracket using the provided nuts.

3.12.4. *Delta 2kW Power Supply*

1. Mount the power supply onto the wall mounting bracket that comes with the power supply (provided by Delta).
2. Attach this wall mount bracket to the bottom of the front-facing bracket in the SHRD60 using customer supplied hardware.

3.12.5. *Diplexer*

Mount the diplexer on the existing mounting studs on the right side of the SHRD60.
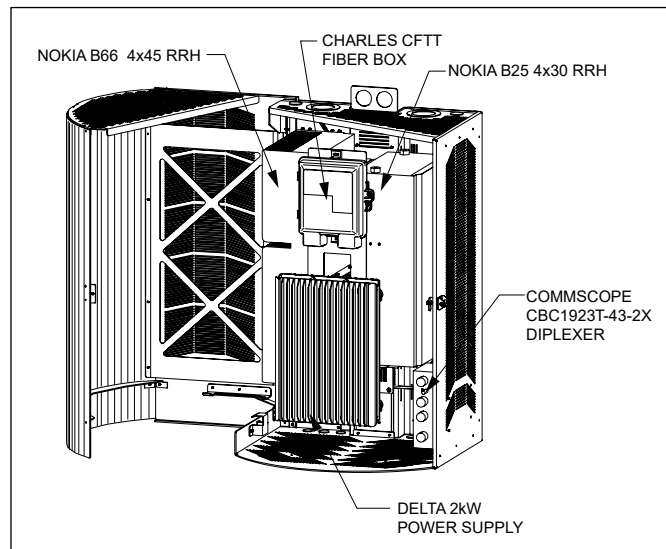

Figure 26   SH60-362322xNN3 with Equipment Installed

3.13. Customer Equipment Mounting – SH60-362322xNS1

Prior to mounting equipment, remove the CBRS and CFTT brackets from the rear panel of the SHRD60. Set these and the hardware aside.

3.13.1. Delta 2kW, ABB 1600W, or Ericsson 6302 Power Supply

1. Remove the power supply mounting bracket, saving the hardware.
2. Secure the power supply to the bracket using customer supplied hardware.
3. Mount the power supply/bracket assembly back to the SHRD60 using hardware removed previously.

3.13.2. Samsung LAA Micro RRH

This section is for Configuration 2 only. If using Configuration 1, remove and discard the LAA RRH mounting bracket.

1. Remove the finger guard cage from the front of the radio.
2. Remove the radio mounting bracket, saving the hardware.
3. Secure the radio to the bracket using customer supplied hardware.
4. Mount the radio/bracket assembly back to the SHRD60 using hardware removed previously.

3.13.3. Samsung 320W, ORAN, or 160W RRH

1. Remove the radio mounting bracket, saving the hardware.
2. Secure the radio to the bracket using customer supplied hardware.
3. Mount the radio/bracket assembly back to the SHRD60 using hardware removed previously.

3.13.4. CommScope Diplexer

1. Remove the diplexer mounting bracket, saving the hardware.
2. Secure the diplexer to the bracket using customer supplied hardware.
3. Mount the r diplexer/bracket assembly back to the SHRD60 using hardware removed previously

3.13.5. Samsung CBRS RRH

This bracket was removed from the SHRD60 at the beginning of this process. Mount the radio to this bracket using customer supplied hardware.

3.13.6. Charles CFTT or Nokia WDM

This bracket was removed from the SHRD60 at the beginning of this process. Mount the WDM or CFTT to this bracket using customer supplied hardware.

3.13.7. Completion

Take the bracket assembly removed at the beginning (that now has a CBRS RRH and a CFTT/WDM secured to it) and mount it in the SHRD60 using hardware removed previously.

Note: the 97-002423-A kit includes all brackets for this configuration. See Table 1 for more information.
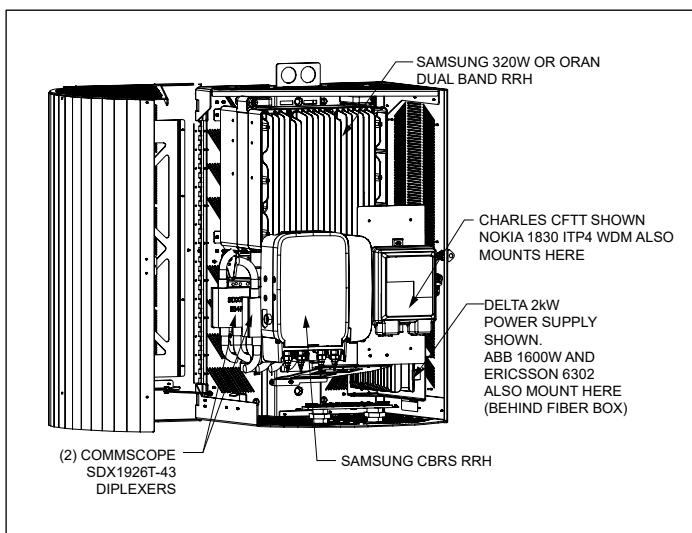
Figure 27
SH60-362322xNS1 Configuration 1 with Equipment Installed
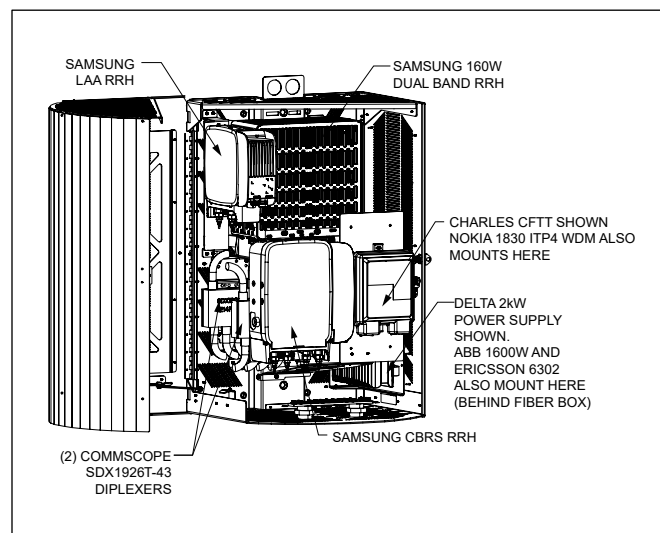
Figure 28
SH60-362322xNS1 Configuration 2 with Equipment Installed

3.14.   Customer Equipment Mounting – SH60-362322xNXX

The SH60-362322xNXX is an empty shroud that must be ordered with a 96-CRNPIT36CFG1 mounting bracket kit (bracket kits are sold separately). The kit is installed at the factory and is described in Table 2.

3.14.1. Ericsson 220x RRH

1.   Remove the RRH mounting brackets from the SHRD60, saving the hardware.
2.   Attach the bracket to the radio using customer supplied hardware.
3.   Secure the radio/bracket assembly to its original position in the SHRD60 using the hardware removed previously.

3.14.2. OCC OCO12N Fiber Box

Mount the fiber box onto the left side of the vertical panel using customer supplied hardware.
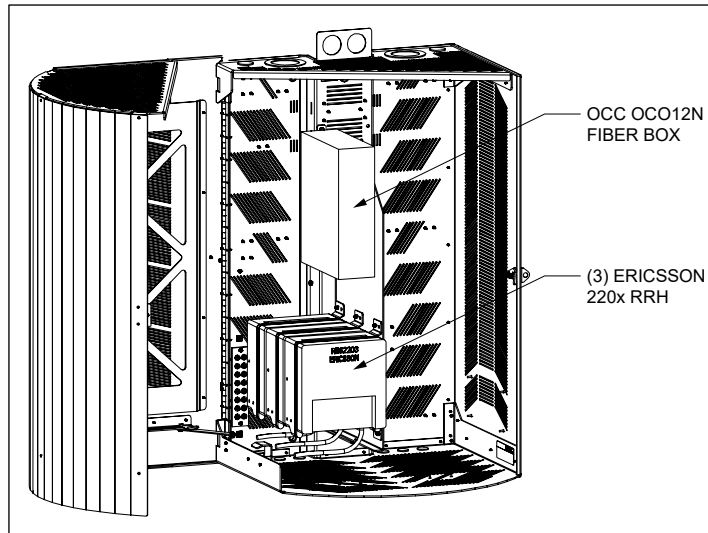
Figure 29
SH60-362322xNXX with 96-CRNPIT36CFG1 and Equipment Installed

3.15. Customer Equipment Mounting – SH60-362322xNXX

The SH60-362322xNXX is an empty shroud. When ordered with the field installed 97-NMP3623221-A bracket kit, the enclosure supports the same configurations as the SH60-362322xNN2 (see instructions and illustrations in section 3.9) with one addition. This kit also includes a bracket on the lower left side for a Raycap 1333 AC disconnect device. However, if the Raycap device is installed, then the left side bracket cannot support the Nokia AHxxx radio. Only one of these items will fit. This configuration is shown below.

Note that this Raycap bracket is also available as kit 97-002406-A. This is a field installed kit that only includes the Raycap bracket. Install the bracket on the mounting studs at the bottom of the left side radio bracket (Figure 31).

Figure 30
Installing the Raycap Bracket

Figure 31
SH60-362322xNXX with 97-NMP3623221-A and Equipment Installed

4. PERIODIC MAINTENANCE

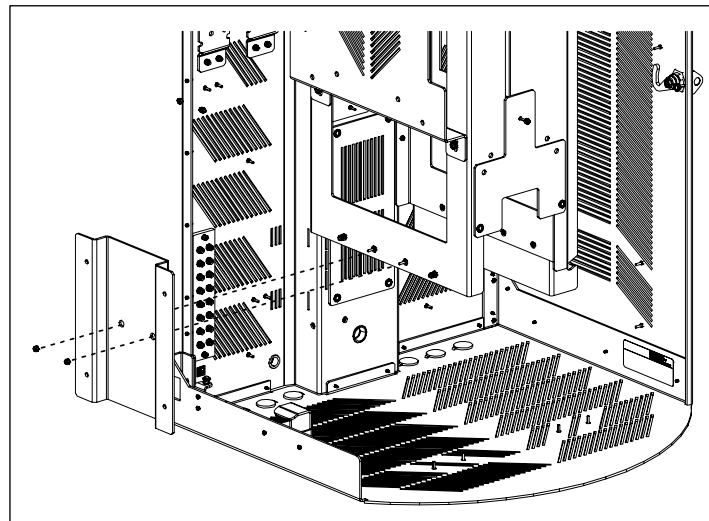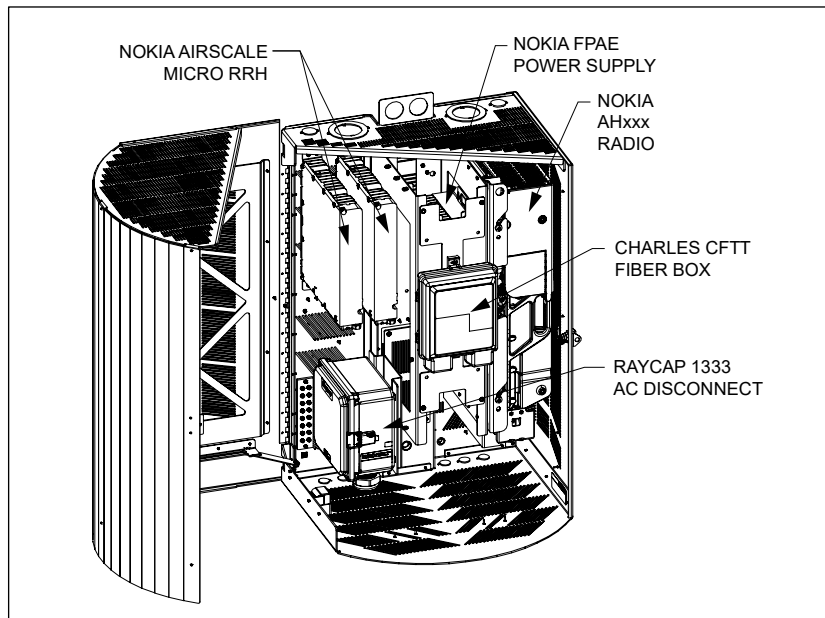In the event that the enclosure needs to be opened in freezing conditions, a narrow, pointed metallic object such as a screwdriver or chisel, along with a non-metallic device such as a rubber mallet, may be used to remove excessive ice buildup around the door and locking mechanism. A commercial aerosol de-icer spray can be used to free up locks and latches if needed.

5. TECHNICAL ASSISTANCE AND REPAIR SERVICE

For questions on product repair or if technical assistance is required, contact Charles Technical Support.

> 847-806-8500
> techserv@charlesindustries.com (email)
> http://www.charlesindustries.com/techserv.htm

6. WARRANTY & CUSTOMER SERVICE

Charles Industries LLC offers a one-year warranty on the SHRD60 product. The Charles warranty is limited to the operation of the SHRD60 hardware as described in this documentation and does not cover equipment which may be integrated by a third party. The terms and conditions applicable to any specific sale of the product shall be defined in the resulting sales contract. For questions on warranty or other customer service assistance, contact your Charles Customer Service Representative.

> 847-806-6300
> mktserv@charlesindustries.com (email)
> http://www.charlesindustries.com/main/telecom_sales_support.htm

7. SPECIFICATIONS

Physical	
Dimensions and Weight	36"Hx23"Wx22"D SH60-362322xNE5: approx. 96 lbs. as shipped SH60-362322xNED: approx. 103 lbs. as shipped Sh60-362322xNEH: approx. 113 lbs. as shipped SH60-362322xNN2: approx. 95 lbs. as shipped SH60-362322xNN3: approx. 105 lbs. as shipped SH60-362322xNS1: approx. 107 lbs. as shipped SH60-362322xNXX: approx. 77 lbs. as shipped
Material	Spine: 12 gauge steel Door and sides: 0.125" aluminum
Electrical	
Bonding and Grounding	One ground bar inside enclosure
Cable Entrance	Refer to Figure 2
Environmental	
Operating Temp. Range, Inside Enclosure	-40° to +131°F, -40° to 55°C
Operating Temp. Range, Outside Enclosure	-40° to +115°F, -40° to 46°C
Humidity	0 to 95% (non-condensing)
Altitude	Up to 2,000 meters (6560')
Kits and Replacement Parts	
1/4 Turn Latch with Hook and Padlock Hasp	39-200801-0
Hook Latch Catch	22-105089-0
Retrofit Kit to Convert from Nokia to Samsung Configuration*	97-002423-A
Delta 2kW Power Supply Kit	96-DLT2KWPSU1-A

Table 1   SHRD60 Specifications

* To use this kit, start with the empty SH60-362322xNXX or the SH60-362322xNN2. Remove all brackets from the SHRD60, then install the kit brackets as they appear in the SH60-362322xNS1 images.

Configuration	Supported Equipment	Approx. Configured Weight (lbs)
SH60-362322xNE5 *OR* SH60-362322xNXX with 97-EMP3623221-A (these brackets are installed in the field)	(1) Ericsson 8843, 4449, 4478, 4426, or 4415 radio (2) Ericsson 220x radios (2) JMA DBC-A-P-2SF diplexers (1) Ericsson 6322 or (2) Ericsson AC-08 power supplies	236
SH60-362322xNED	(1) Ericsson 4455 radio (1) Ericsson 8863 radio (2) CommScope CBC1726T-4310 diplexers (1) Ericsson 6585 FrontHaul WDM (1) Ericsson 6302 power supply OR (2) Ericsson AC-08 power supplies	261
SH60-362322xNEH	(1) Ericsson 8843, 4449, 4890, 4490, 4478, or 4415 radio (1) Ericsson 4435 radio (if using the 4890 or 4490 above, and only with the AC-08 power supplies) (1) Ericsson 63xx or (2) Ericsson AC-08 power supplies (2) CommScope CBC1726 or CBC1923 diplexers (1) Charles CFTT fiber box	326 max. (with heaviest radio options)
SH60-362322NN2, Configuration 1	(2) Nokia AHxxx radios (2) APAF power supplies (1) Nokia 1830 ITP4 WDM OR (1) Charles CFTT fiber box	275
SH60-362322NN2, Configuration 2 *OR* SH60-362322xNXX with 97-NMP3623221-A (these brackets are installed in the field)	(1) Nokia AHxxx radio (1) APAF power supply (2) Nokia Airscale Micro radios (1) Nokia 1830 ITP4 WDM OR (1) Charles CFTT fiber box (1) Raycap 1333 AC Disconnect (with 97-NMP3623221-A only)	225
SH60-362322NN2, Configuration 3 *OR* SH60-362322xNXX with 97-NMP3623221-A (these brackets are installed in the field)	(4) Nokia Airscale Micro radios (1) Nokia 1830 ITP4 WDM OR (1) Charles CFTT fiber box (1) Raycap 1333 AC Disconnect (with 97-NMP3623221-A only)	175
SH60-362322NN2, Configuration 4 *OR* SH60-362322xNXX with 97-NMP3623221-A (these brackets are installed in the field)	(1) Nokia AHxxx radio (1) Nokia Airscale Micro radio (1) Delta 2kW or (1) ABB 1600W power supply (1) Nokia 1830 ITP4 WDM OR (1) Charles CFTT fiber box (1) Raycap 1333 AC Disconnect (with 97-NMP3623221-A only)	205
SH60-362322xNN3	(1) Nokia B25 4x30W RRH (1) Nokia B66 2x45W RRH (1) CommScope diplexer (1) Delta 2kW power supply (1) Charles CFTT fiber box	244
SH60-362322xNS1, Configuration 1	(1) Samsung 320W dual band RRH or Samsung ORAN RRH (1) Samsung CBRS RRH (2) CommScope SDX1926T-43 diplexers (1) Delta 2kW OR (1) ABB 1600W OR (1) Ericsson 6302 power supply (1) (1) Charles CFTT fiber box OR Nokia 1830 ITP4 WDM	229
SH60-362322xNS1, Configuration 2	(1) Samsung 160W dual band RRH (1) Samsung LAA Micro RRH (1) Samsung CBRS RRH (2) CommScope SDX1926T-43 diplexers (1) Delta 2kW OR (1) ABB 1600W OR (1) Ericsson 6302 power supply (1) (1) Charles CFTT fiber box OR Nokia 1830 ITP4 WDM	264
SH60-362322xNXX with 96-CRNPIT36CFG1	(3) Ericsson 220x (1) OCC OCO12N fiber box	126

Table 2   SHRD60 Supported Equipment

Part Number	Color	Touch-up Paint	Flush Mounting	7" Offset Mounting	5" Offset Mounting	3" Offset Mounting
SH60-362322DNE5	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNE5	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNE5	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322WNE5	Dark Bronze	02-000739-0	97-002349W-A	97-002309W-A with 97-002349W-A	97-002398W-A with 97-002349W-A	97-002391W-A with 97-002349W-A
SH60-362322DNED	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNED	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNED	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322DNEH	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNEH	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNEH	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322DNN2	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNN2	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNN2	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322DNN3	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNN3	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNN3	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322DNS1	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNS1	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNS1	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322DNXX	Classic Texture Gray	02-000629-0	97-002349D-A	97-002309D-A with 97-002349D-A	97-002398D-A with 97-002349D-A	97-002391D-A with 97-002349D-A
SH60-362322FNXX	Onyx Black	02-000611-0	97-002349F-A	97-002309F-A with 97-002349F-A	97-002398F-A with 97-002349F-A	97-002391F-A with 97-002349F-A
SH60-362322GNXX	National Park Brown	02-000626-0	97-002349G-A	97-002309G-A with 97-002349G-A	97-002398G-A with 97-002349G-A	97-002391G-A with 97-002349G-A
SH60-362322RNXX	Light Gray	02-000736-0	97-002349R-A	97-002309R-A with 97-002349R-A	97-002398R-A with 97-002349R-A	97-002391R-A with 97-002349R-A
SH60-362322WNXX	Dark Bronze	02-000739-0	97-002349W-A	97-002309W-A with 97-002349W-A	97-002398W-A with 97-002349W-A	97-002391W-A with 97-002349W-A

Table 3   SHRD60 and Mounting Kit Part Numbers