HUGHES®
An EchoStar Company

HL1100 Non-Adjustable Mobility Mount

Assembly and Installation Manual

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Understanding safety alert messages

Safety alert messages call attention to potential safety hazards and tell you how to avoid them. These messages are identified by the signal words DANGER, WARNING, CAUTION, or NOTICE, as illustrated below. To avoid possible property damage, personal injury, or in some cases possible death, read and comply with all safety alert messages.

Messages concerning personal injury

The signal words DANGER, WARNING, and CAUTION indicate hazards that could result in personal injury or in some cases death, as explained below. Each of these signal words indicates the severity of the potential hazard.

The signal words DANGER, WARNING, and CAUTION indicate hazards that could result in personal injury or in some cases death, as explained below. Each of these signal words indicates the severity of the potential hazard.

DANGER indicates a potentially hazardous situation which, if not avoided, *will* result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Messages concerning property damage

A NOTICE concerns property damage only.

NOTICE is used for advisory messages concerning possible property damage, product damage or malfunction, data loss, or other unwanted results—but *not* personal injury.

Safety symbols

The generic safety alert symbol calls attention to a potential personal injury hazard. It appears next to the DANGER, WARNING, and CAUTION signal words as part of the signal word label. Other symbols may appear next to DANGER, WARNING, or CAUTION to indicate a specific type of hazard (for example, fire or electric shock). If other hazard symbols are used in this document they are identified in this section.

Additional symbols

This document uses the following hazard symbols:

Indicates a safety message that concerns digging.

Indicates a safety message that concerns a potential electric shock hazard.

Indicates a safety message that concerns handling of an electrostatic-sensitive device or component.

Indicates a safety message that concerns the possibility of an explosion.

Indicates a safety message that concerns a potentially hazardous situation in which you could fall.

Indicates a safety message that concerns a possible fire hazard.

Indicates a safety message that concerns lifting a heavy object.

Indicates a safety message that concerns a hot surface.

Indicates a safety message that concerns laser radiation.

Indicates a safety message that concerns radio frequency (RF) energy.

Indicates a safety message that concerns ionizing radiation.

Indicates a safety message that concerns a heavy object that could crush you if it fell.

Indicates a safety message that concerns protective eyewear.

Indicates a safety message that concerns wearing a hard hat.

Chapter 1
Introduction

This document refers to the Hughes single panel non-adjustable vehicle adapter kit for the HL1100 antenna. During the assembly of the Hughes non-adjustable mobility mount, it is mandatory to use medium strength threadlocker on ALL fasteners.

Refer to the *Fastener torque tables* on page 23 for the general fastener tightening torques and threadlocker strengths, unless otherwise specified in the instructions.

1.1 Required materials

Listed below are materials and tools that will be required for the assembly and installation of the Hughes non-adjustable mobility mount:

- Metric Allen Key set
- Torque Wrench
- Medium Strength Threadlocker

Included hardware:

- (M5 x 35 Button Head Socket Screws) x 4
- (M8 x 20 Socket Flat Head Screws) x 4
- Support Rail x 2
- Cross Bar x1

Figure 1: HL1100 ODU

Chapter 2

Specifications

This chapter describes the mounting surface information and physical dimensions of the HL1100 mobility mount.

2.1 Mounting surface

Hughes recommends mounting the non-adjustable mobility mount directly to roof racks. Refer to *Mount specifications* on page 12 of this manual for mounting features. If mounting on flat surface, the mounting surface must be flat within 1/16” (1.6mm). A hole may be required near the mounting surface to allow you to routing cables into the vehicle.

2.2 HL1100 specifications

The following images depict the overall dimensions (in millimeters) of the HL1100 ESA with the non-adjustable mobility mount installed.

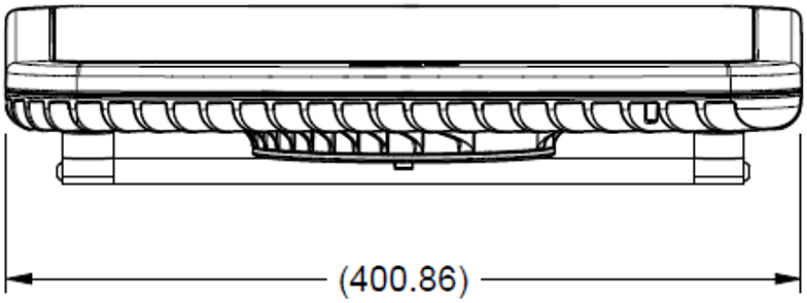

Figure 2: HL1100 with mobility mount installed: front view

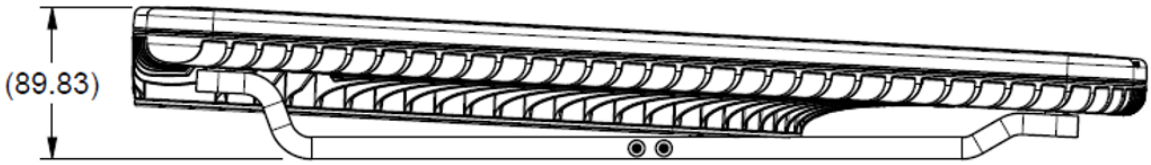

Figure 3: HL1100 with mobility mount installed: side view

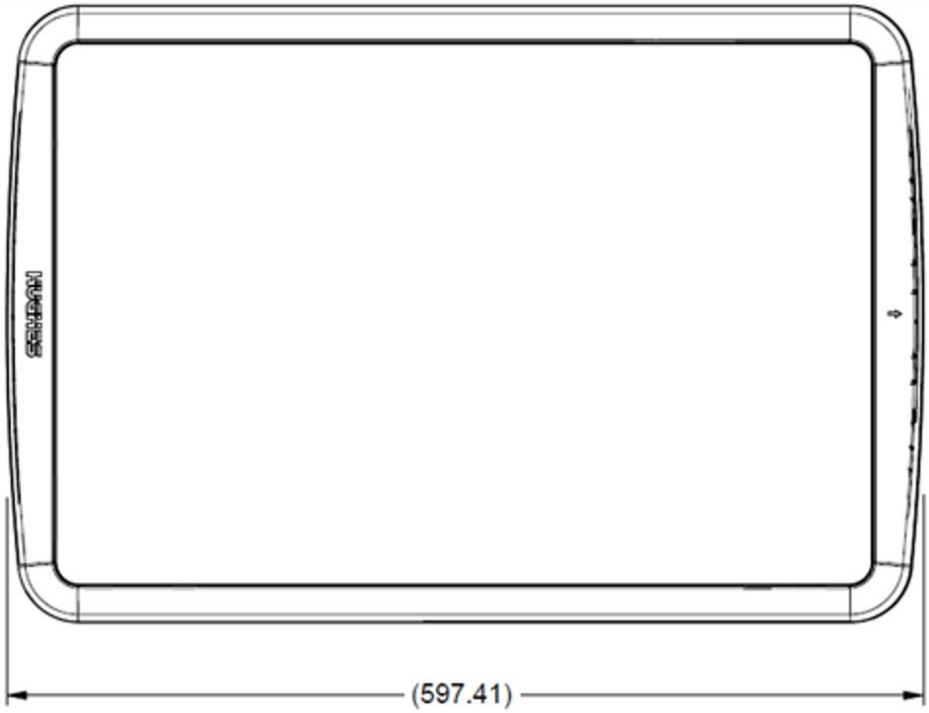

Figure 4: HL1100 with mobility mount installed: top view

2.3 Mount specifications

The Hughes Non-Adjustable Mobility Mount has eight total Mounting Slots, four on each Side Rail. Refer to image below for Mounting Slot locations and dimensions.

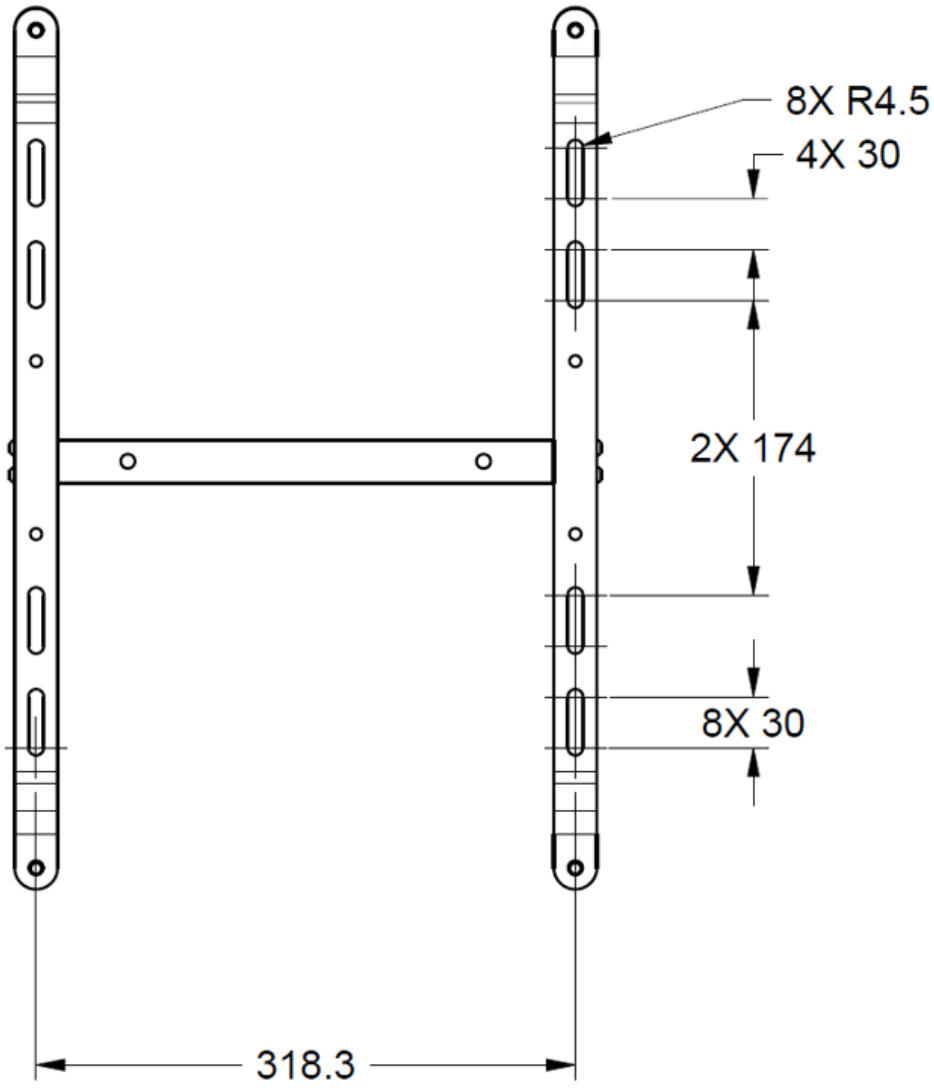

Figure 5: Mobility mount dimensions

Chapter 3

Mount assembly

This chapter describes how to assemble the mobility mount prior to installation.

3.1 Mount assembly steps

Follow the steps below to assemble the mobility mount.

1. Using two M5 x 35 button head screws, install the Mid-section cross bar to the right support rail. Ensure that counter sunk hole is facing upwards. Do not tighten the screws at this time.

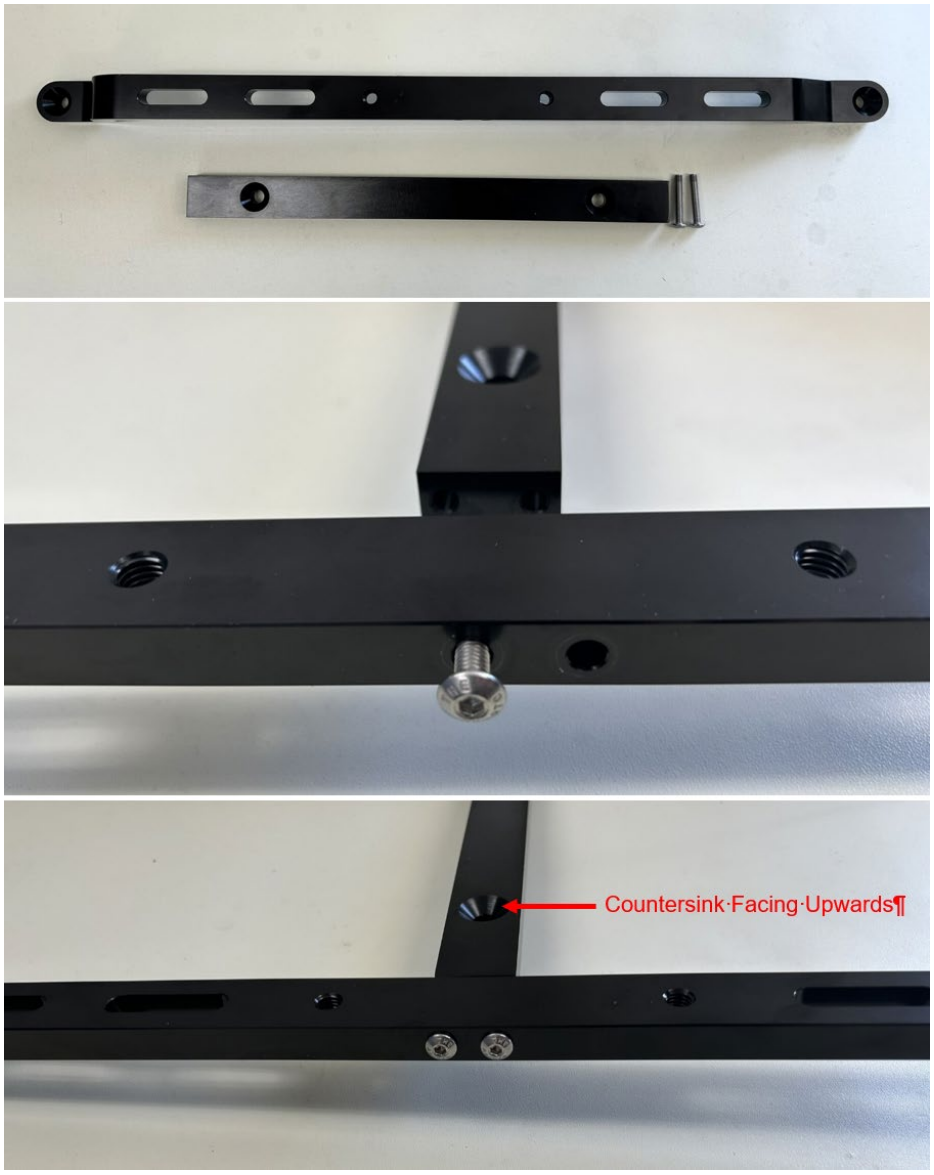

Figure 6: Installing the cross bar and right support rail

2. Using two M5 x 35 button head screws, install the mid-section cross bar to the left support rail. Do not tighten the screws at this time.

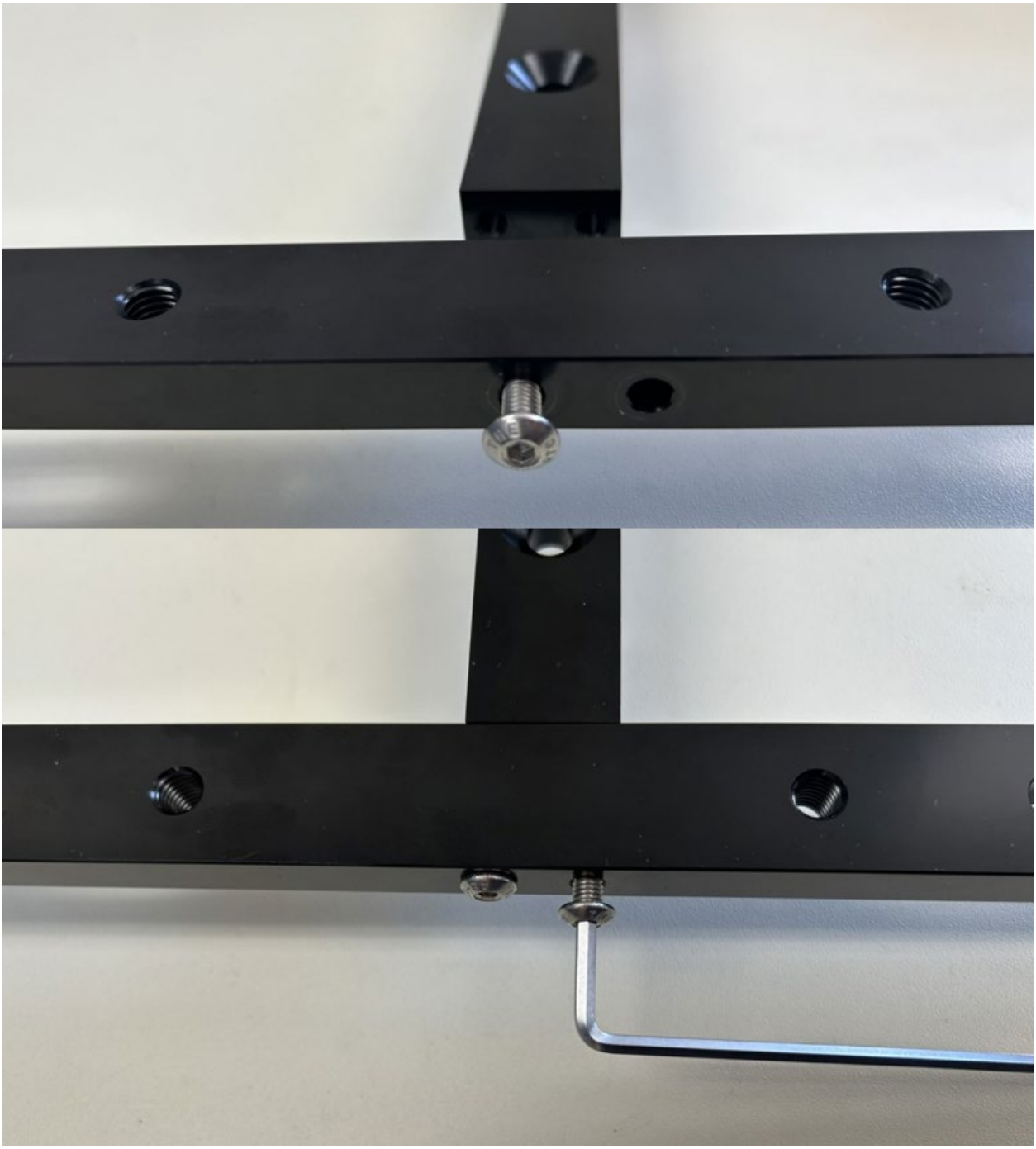

Figure 7: Installing the left support rail

3. Keep screws loose until the mount has been installed to panels. The Hughes non-adjustable mobility mount is now fully assembled.

Figure 8: Fully assembled mobility mount

Chapter 4

Mount installation

This chapter describes how to install the mobility mount onto the HL1100.

4.1 Mobility mount installation

The steps below show how to install the mobility mount, as shown in Figure 9.

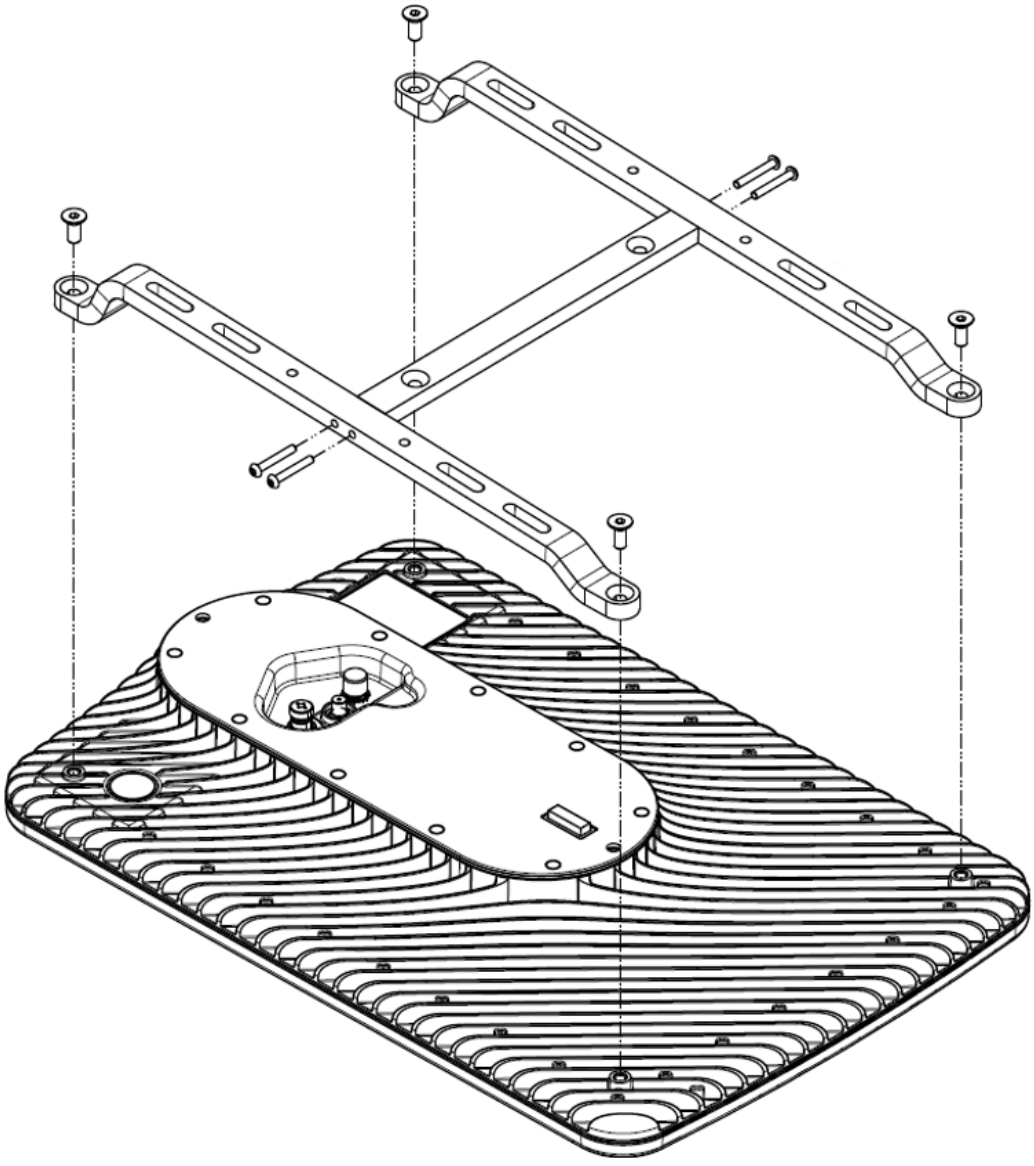

Figure 9: Mobility mount installation overview

1. Align the mount with the back of the panel as shown in Figure 10 below.

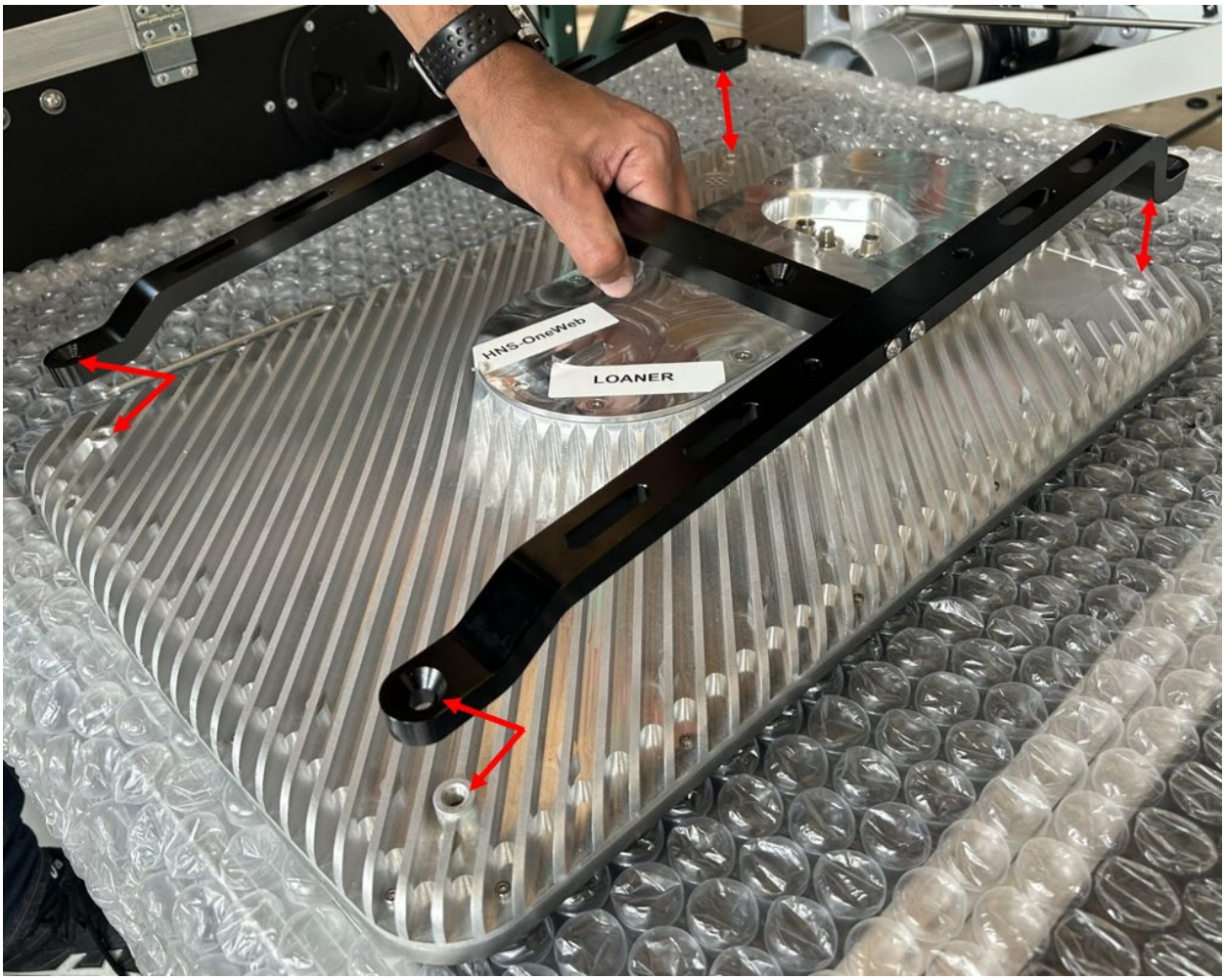

Figure 10: Aligning the mount

2. Install four M8 x 20 flat head screws to fasten the mobility mount to the panel. Tighten to specified torque. See Figure 11 below for screw locations.

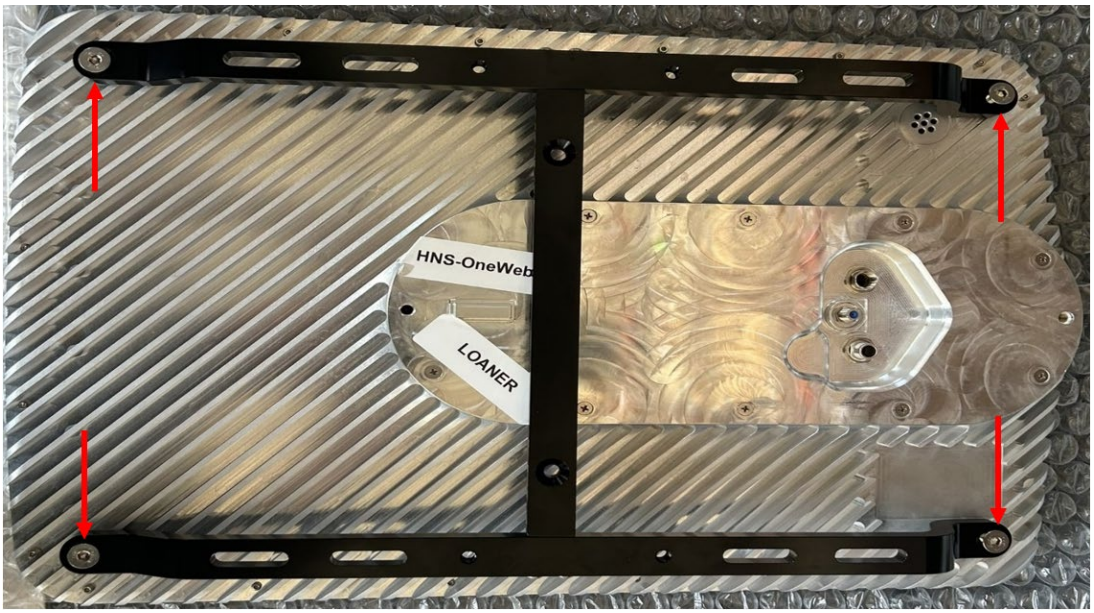

Figure 11: Securing the mount to the HL1100

3. Tighten the four loose screws installed during the *Mount assembly steps* section on page 15 of this manual. Be sure to tighten these screws to the specified torque.

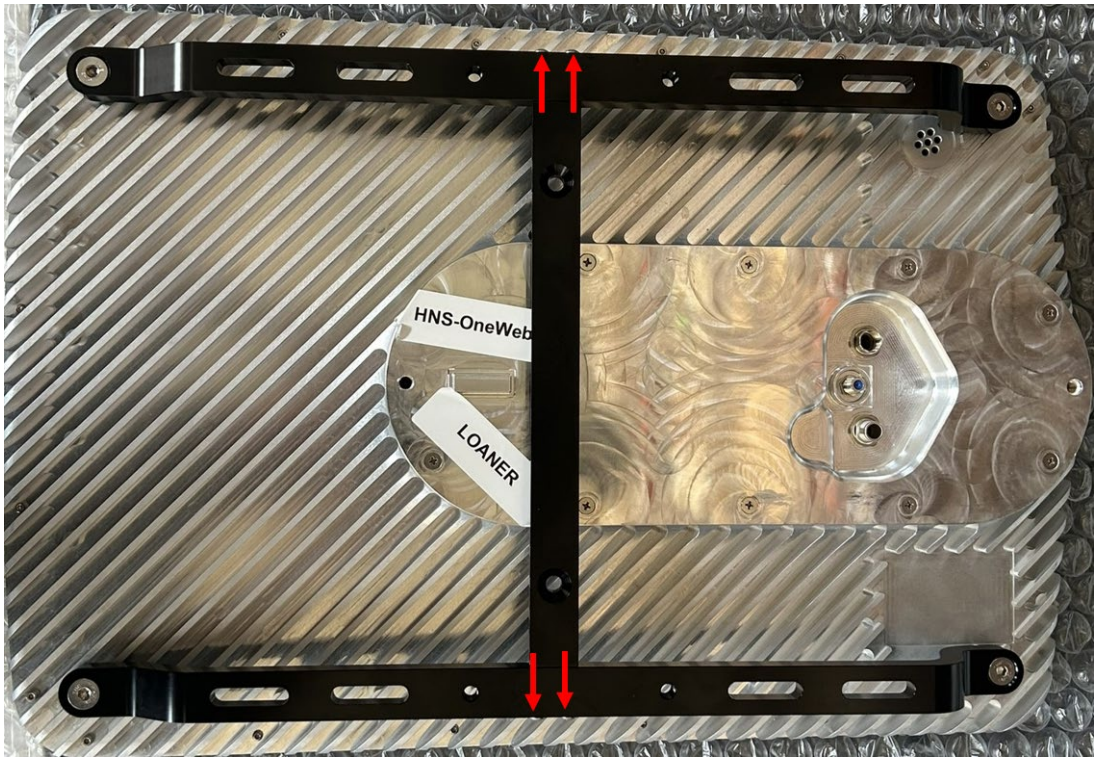

Figure 12: Tightening the loose screws

4. The Hughes non-adjustable mobility mount has now been fully installed onto the HL1100 antenna.

Figure 13: HL1100 with mobility mount installed

Appendix A

Torque tables

This appendix lists torque values for the HL1100 mobility mount.

A.1 Fastener torque tables

Tightening torque values for stainless steel metric fasteners are listed in the tables below. This applies for A2/A4-70 grade stainless steel with plain or non-lubricated threads (μ total = 0.20).

Note: Tightening torque values and threadlocker applies for all fasteners unless otherwise specified in the MAP.

Table 1: Socket head (ISO 4762, DIN 912) / Hex Head (ISO 4014/4017, DIN 931/933)

Thread diameter	Torque (Nm)	Threadlocker strength
M3	0.9	Low
M4	2.6	Low
M5	5.1	Medium
M6	8.7	Medium
M8	22	Medium
M10	43	Medium
M12	75	Medium

Table 2: Socket button head (ISO 7380) / Socket flat head (DIN 7991) / Socket low head (DIN 7984)

Thread diameter	Torque (Nm)	Threadlocker strength
M3	0.6	Low
M4	1.4	Low
M5	2.5	Low
M6	5.5	Medium
M8	10	Medium
M10	24	Medium
M12	39	Medium

Table 3: Socket set screw (ISO 4026-4029, DIN 913-916)

Thread diameter	Torque (Nm)	Threadlocker strength
M3	0.2	Low
M4	0.5	Low
M5	1.5	Low
M6	2.5	Low
M8	5	Medium
M10	10	Medium
M12	20	Medium

Acronyms

E

ESA – Electronically steered antenna

I

IDU – Indoor unit

M

MAP – Manufacturing assembly procedure
mm – Millimeter

O

ODU – Outdoor unit