

Date	Prepared by	Approved by	Document nos	Revision
10 Nov 2023	Ray Ling	Patrick Yeo	MS-6H90-IM-001	2

INSTRUCTION MANUAL MS-6H90

TABLE OF CONTENTS:

1.00 BEAMS & CONNECTORS:

- 1.10 Plan View Resultant Beam Direction
- 1.20 Plan View Connector Layout
- 1.30 Connector Ports Table

2.00 PATTERN DIAGRAM

- 2.10 Horizontal Beam Pattern
- 2.20 Vertical Beam Pattern

3.00 TILT ADJUSTMENT / RET INSTALLATION or REPLACEMENT PROCESS

- 3.10 Manual Tilt Adjustment
- 3.20 RET Installation / Replacement Process (Reverse for Uninstallation)

4.00 RET Controller Display

- 4.10 RET Discover and Active
- 4.20 Beam 1-6 Operations Display

5.00 TRANSPORTATION / INSTALLATION

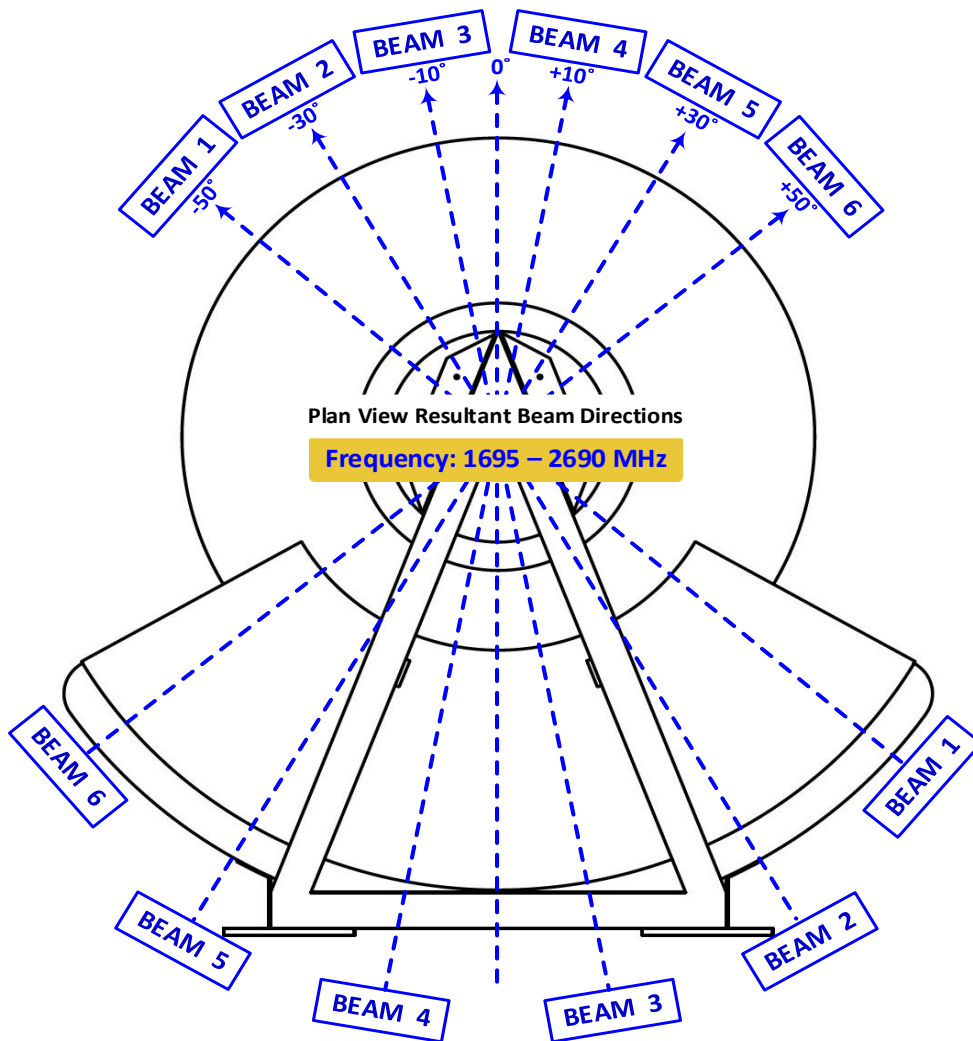
- 5.10 Transportation (From Point to Point)
- 5.20 Bracket Mounting
- 5.30 Installation using a crane
 - 5.31 Lifting the Antenna
- 5.40 Antenna Installation
 - 5.41 Antenna Leveling
 - 5.42 Digital Level Gauge Calibration
 - 5.43 Adjustment Requirement

Revision History:

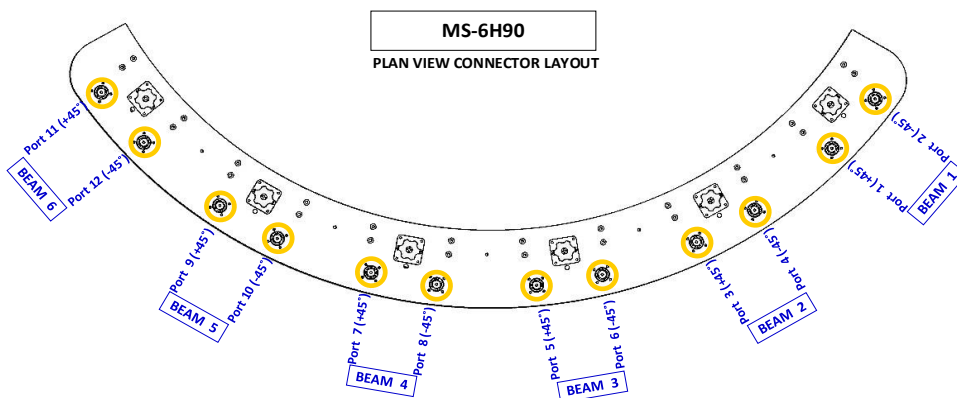
Date	Description	Revised by	Revision nos.
21-Sep-21	Revised mounting bracket types of bolts and nuts sets use and general updates.	Ray Ling	1
10-Nov-23	Include RET Controller Display & Add RET Replacement / Installation Caution Point	Ray Ling	2

1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam Direction



1.20 Plan View Connector Layout

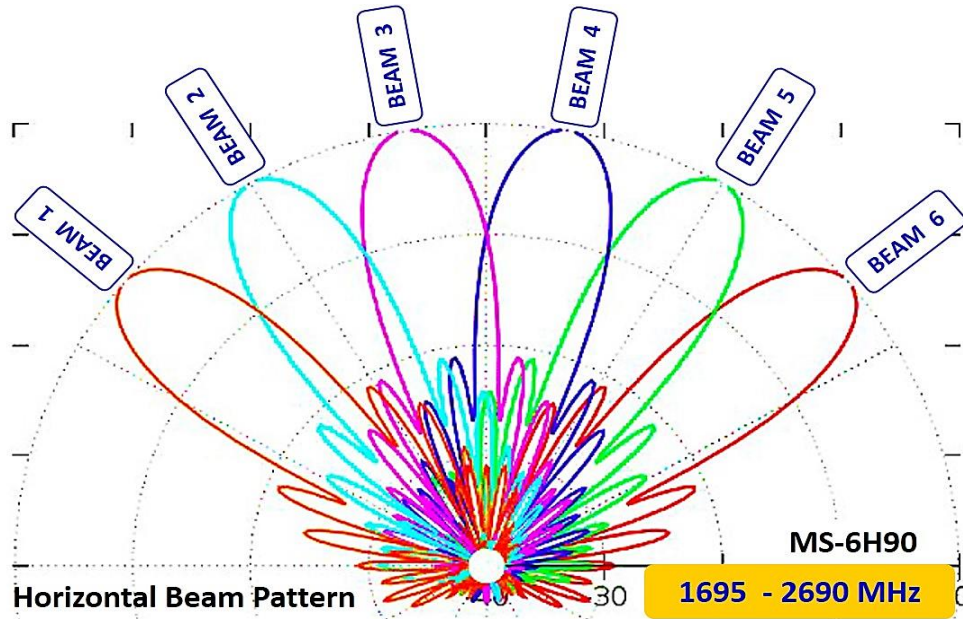


1.30 Connector Ports Table

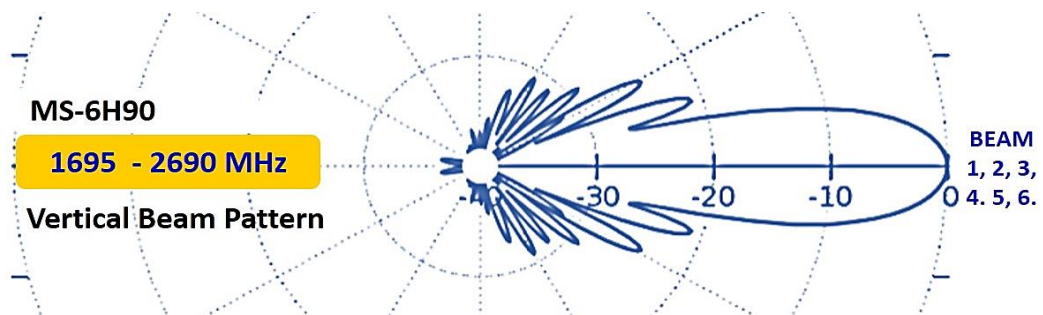
BEAM 6		BEAM 5		BEAM 4		BEAM 3		BEAM 2		BEAM 1	
PORT 11 (+45°)	PORT 12 (-45°)	PORT 9 (+45°)	PORT 10 (-45°)	PORT 7 (+45°)	PORT 8 (-45°)	PORT 5 (+45°)	PORT 6 (-45°)	PORT 3 (+45°)	PORT 4 (-45°)	PORT 1 (+45°)	PORT 2 (-45°)

2.00 PATTERN DIAGRAM

2.10 Horizontal Beam Pattern



2.20 Vertical Beam Pattern



3.00 TILT ADJUSTMENT / RET INSTALLATION or REPLACEMENT PROCESS

3.10 Manual Tilt Adjustment

Step 1:
Tilt Stopper Loosening

Step 1: Tilt Stopper Loosening
Use + Screw driver to loosen the 2 x M3 screws

Step 3: Tilt Stopper Tightening
Use + Screw driver to tighten the 2 x M3 screws after adjust

Step 2:
Adjusting the Tilt

Step 3:
Tilt Stopper Tightening

Step 2: Adjusting the Tilt
By hand turning OR use screw driver

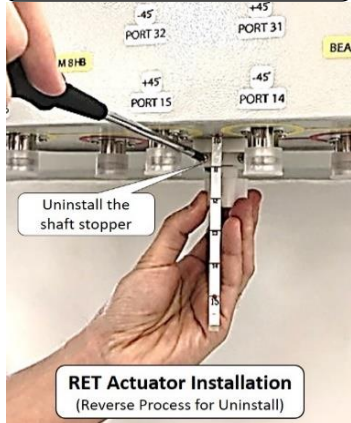
Shaft Handle

Angle Indicator

Manual Tilt Adjustment

3.20 RET Installation / Replacement Process (Reverse for Uninstallation)

Step 1: Uninstall the shaft stopper



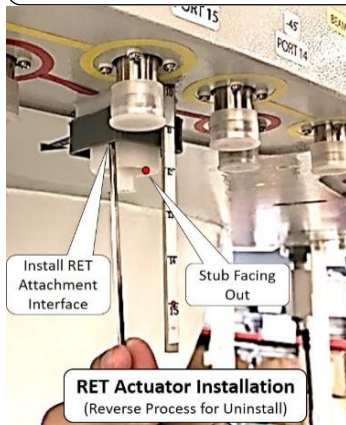
Step 2: Uninstall the shaft Handle



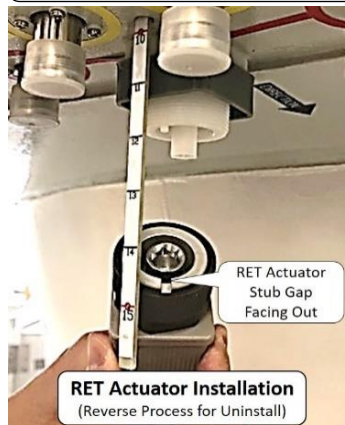
Step 3: Install the Hex adaptor and screw it on



Step 4: Install the RET attachment interface



Step 5: RET Actuator stub gap facing out



Step 6: RET Tighten to attachment interface



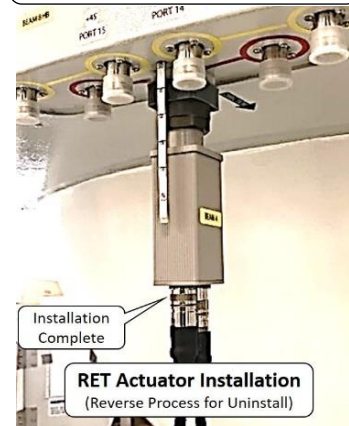
Step 7: Screw and tighten RET cable



Step 7 CAUTION

1. Do not apply any rotation force to the cable
2. Carefully align same direction to the keyway before insertion.
3. Insert direct (not angular) until well fully seated before turning.
4. Once both thread is fit can start slowly turning.
5. Tighten the AISG connector by hand only.
6. If use torque wrench do not exceed 1.1 Nm (0.8 ft if) torque.

Step 8: RET Actuator installation complete.



ADVICE:

- ** Replace the AISG cable if is faulty.
- ** Same caution apply

Repeat the same process for other actuator installation.

4.00 RET Controller Display

4.10 RET Discover and Active

Virtual AISG MCU (Version : 1.18)

File Help

ALD List

NO	HDLC	Vendor	Serial Number	Product Number	H/W Version	S/W Version	3GPP	Device	AISG	Connect	Link
1	1	MS	6H90-000000050B01	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
2	2	MS	6H90-000000050B02	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
3	3	MS	6H90-000000050B03	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
4	4	MS	6H90-000000050B04	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
5	5	MS	6H90-000000050B05	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
6	6	MS	6H90-000000050B06	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link

Model/Serial no./Beam No.

4.20 Beam 1-6 Operations Display

RET Tilt Window

RET ID : MS6H90-000000050B01

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 1	MS-6H90	MS6H9000000000050	10.0	Normal

RET Tilt Window

RET ID : MS6H90-000000050B02

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 2	MS-6H90	MS6H9000000000050	10.0	Normal

RET Tilt Window

RET ID : MS6H90-000000050B03

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 3	MS-6H90	MS6H9000000000050	10.0	Normal

RET Tilt Window

RET ID : MS6H90-000000050B04

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 4	MS-6H90	MS6H9000000000050	10.0	Normal

RET Tilt Window

RET ID : MS6H90-000000050B05

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 5	MS-6H90	MS6H9000000000050	10.0	Normal

RET Tilt Window

RET ID : MS6H90-000000050B06

RET Status and Control

Antenna Information List

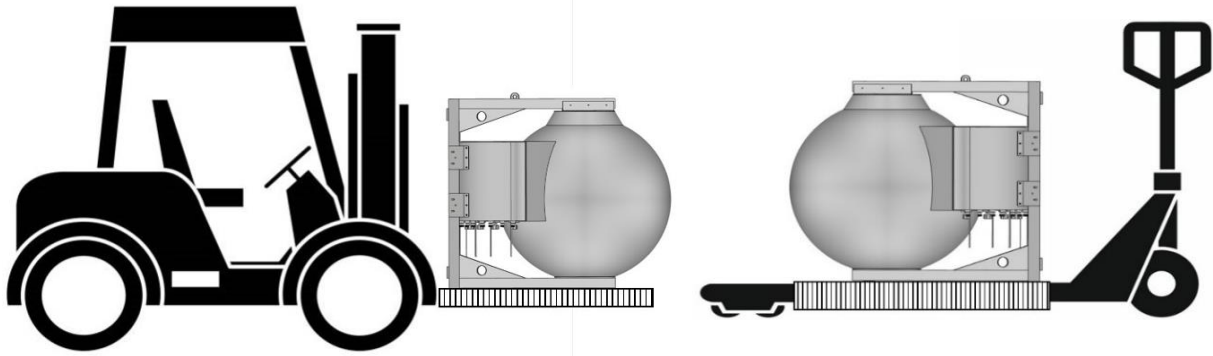
NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 6	MS-6H90	MS6H9000000000050	10.0	Normal

5.00 TRANSPORTATION / INSTALLATION

5.10 Transportation (From Point to Point)

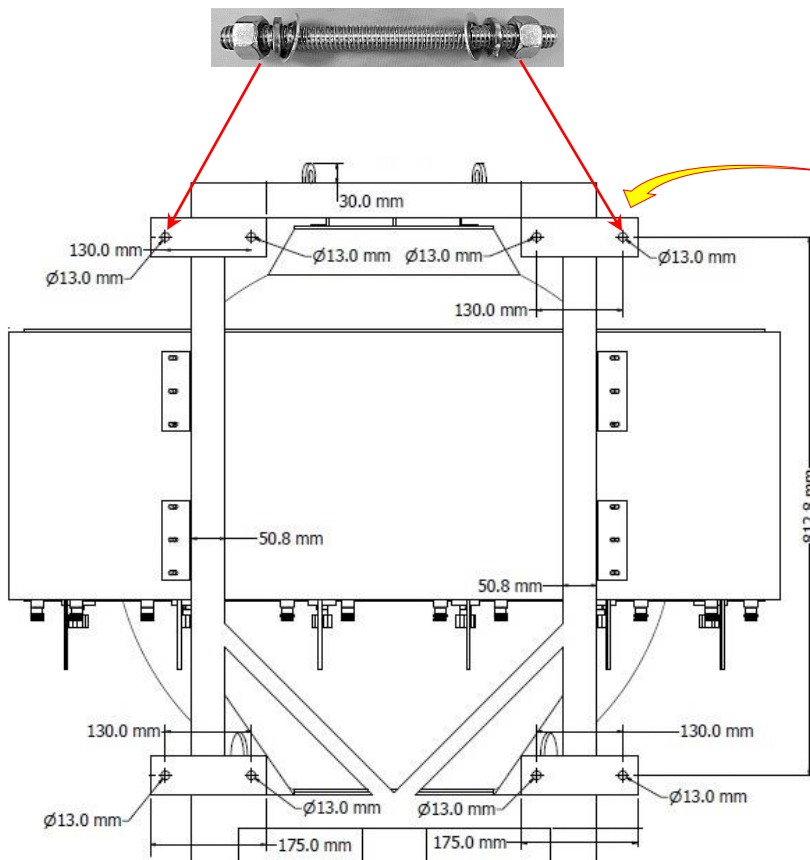
Strictly comply to the Local authority and regulatory on Workplace Safety and Health Control and Measure when moving and transportation of large or heavy equipment, appropriate material handling machine should be use.

(Risk Assessment apply for Forklift or Pallet Truck Lifting)



5.20 Bracket Mounting

Item	Lens/Types	Holes Size	Bracket Qty	Bolt & nuts sets
1	30cm to 120cm	Ø13mm x 8	4	M12 x 15cm=8sets



Attached the bracket tighten with specified bolts sets.



Important Notes:
End User is require to Custom-Make the additional supporting bracket and tighten to the existing Antenna bracket to meet the deployment needs.

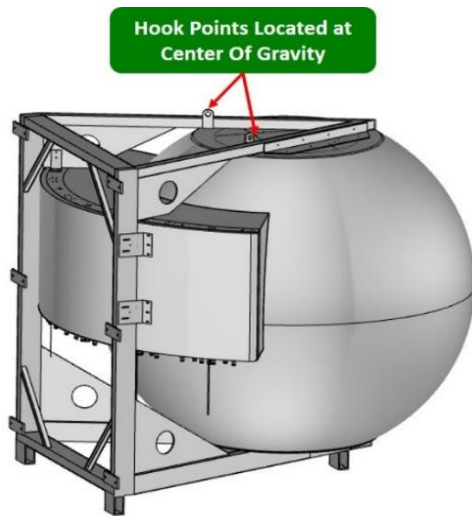
5.30 Installation using a crane

Strictly comply to the local authority and regulatory on Workplace Safety and Health Control and Measure when performing lifting of large or heavy equipment, appropriate material handling machine should be used and only certified personnel should perform the task.

(Risk Assessment requirement applies for both Up-Lifting and Down-Lifting.)

5.31 Lifting the Antenna

The antenna has 2 hook points installed on the top frame (located slightly behind the center of the sphere). These hooks are designed at the center of gravity point of the antenna. A cable, rope can be securely fastened to the hooks and the antenna can be lifted using a crane as pictured below.

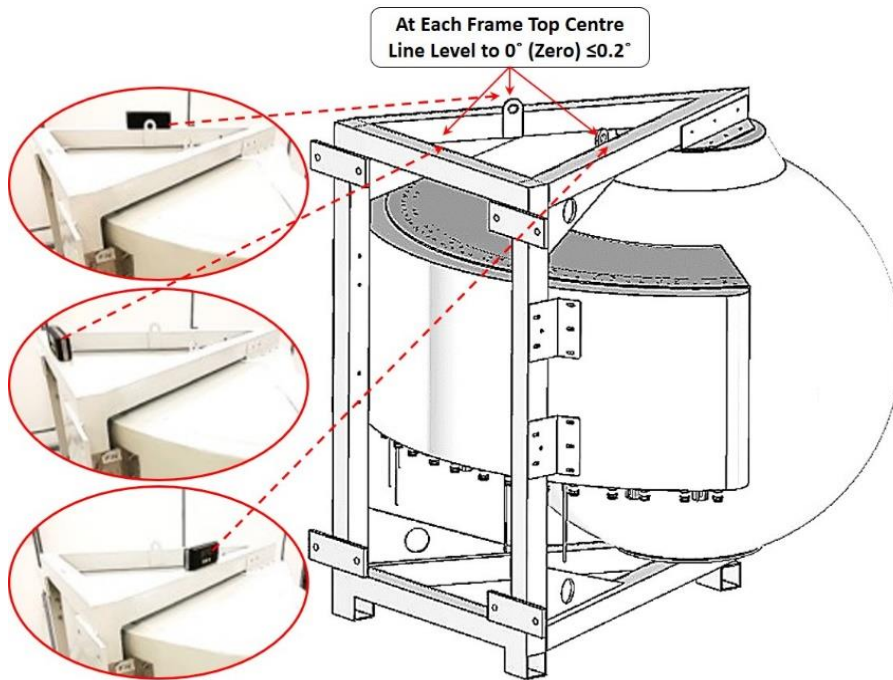


5.40 Antenna Installation

With reference to "**Bracket Mounting Procedure**", End user is required to Custom-Make the additional supporting bracket and tighten it to the existing Antenna bracket to meet the deployment needs.

5.41 Antenna Leveling

After the Antenna is mounted to the bracket, it is required to be adjusted to 0° (Zero Degree) with $\leq 0.2^\circ$ on 3 sides of the frame top level. (Rear, Right & Left=As shown in picture)



ANTENNA LEVELING ADJUSTMENT (AFTER INSTALLATION)

5.42 Digital Level Gauge Calibration



5.43 Adjustment Requirement



ANTENNA LEVELING ACCEPTED



REQUIRE ADJUSTMENT