

Date	Prepared by	Approved by	Document nos	Revision
30 Sep 2021	Ray Ling	Pavel	MS-18H90-IM-001	2

INSTRUCTION MANUAL MS-18H90

TABLE OF CONTENTS:

1.00 BEAMS & CONNECTORS:

- 1.10 Plan View Resultant Beam Direction
 - 1.11 Beam 1 to 6 (Row 1), Beam 13 to 18 (Row 3)
 - 1.12 Beam 7 to 12 (Row 2)
- 1.20 Plan View Connector Layout
- 1.30 Connector Ports Table

2.00 BEAM PATTERN

- 2.10 Vertical Beam Pattern (Top & Bottom Row)
- 2.20 Horizontal Beam Pattern (Row 1 & Row 3)
- 2.30 Horizontal Beam Pattern (Row 2)

3.00 TRANSPORTATION / INSTALLATION

- 3.10 Transportation (From Point to Point)
- 3.20 Bracket Mounting
- 3.30 Installation using a crane
 - 3.31 Lifting the Antenna
- 3.40 Antenna Installation
 - 3.41 Antenna Leveling
 - 3.42 Digital Level Gauge Calibration
 - 3.43 Adjustment Requirement

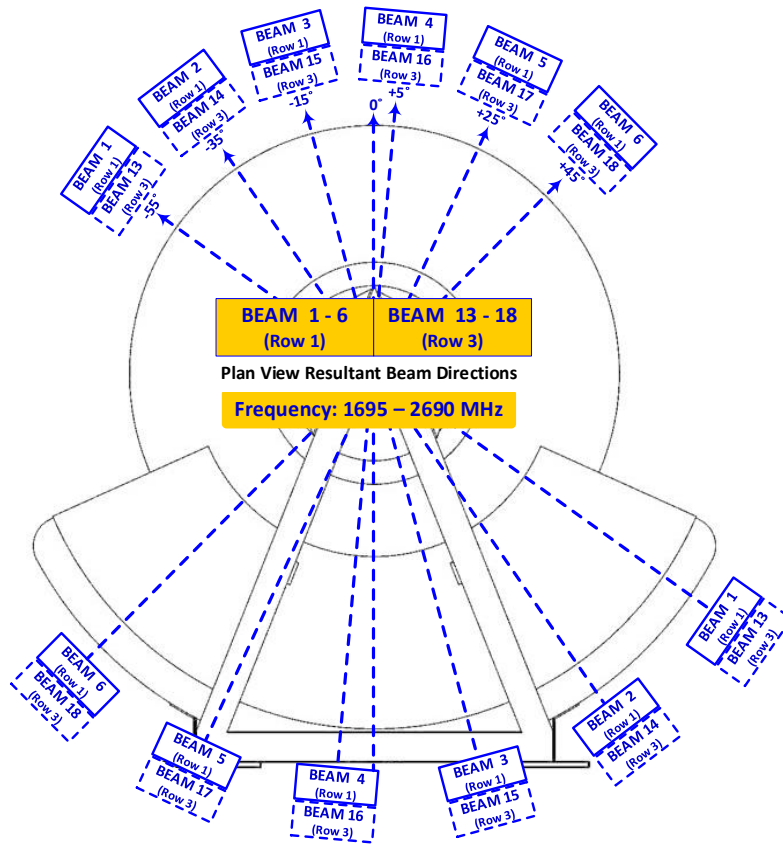
Revision History:

Date	Description	Revised by	Revision nos.
17 Jun 2021	Bracket installation update	RayLing	01
30 Sep 2021	General revision and update	RayLing	02

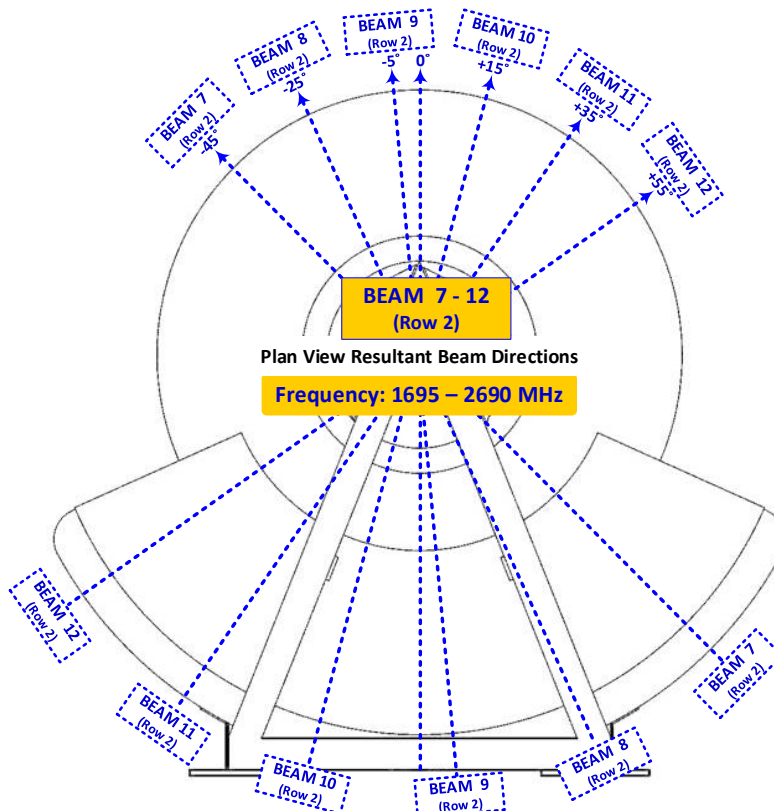
1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam Direction

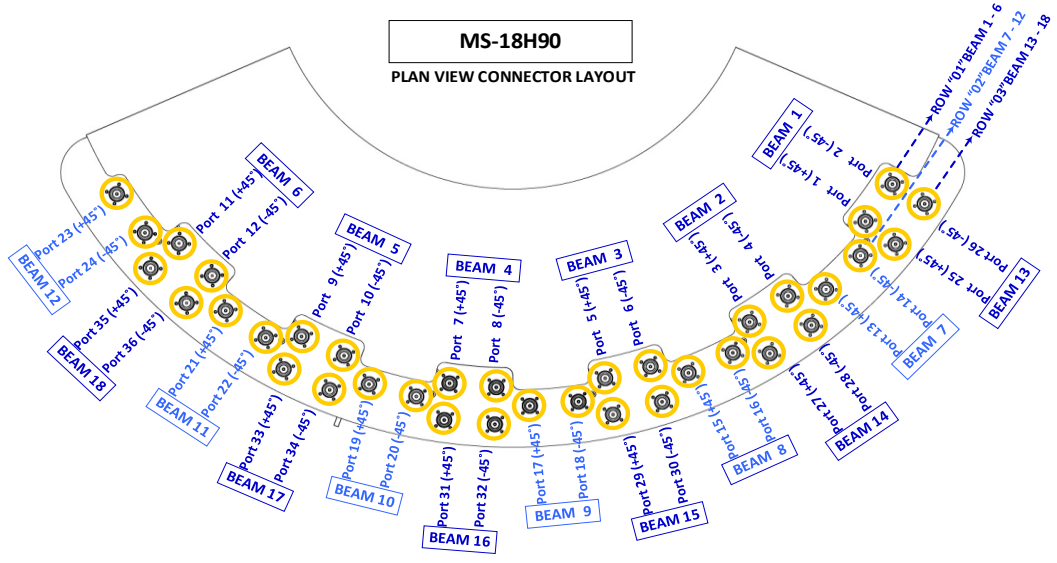
1.11 Beam 1 to 6 (Row 1), Beam 13 to 18 (Row 3)



1.12 Beam 7 to 12 (Row 2)



1.20 Plan View Connector Layout



1.30 Connector Ports Table

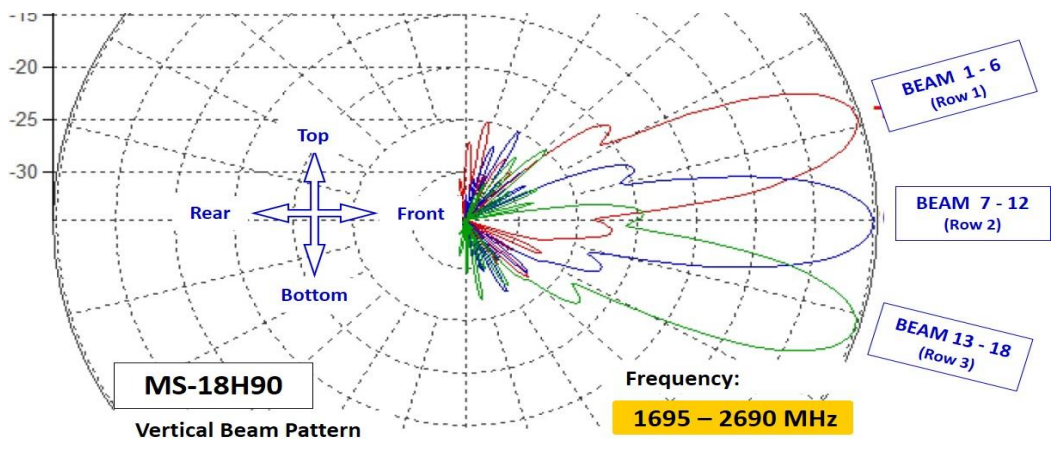
Row 1											
BEAM 6		BEAM 5		BEAM 4		BEAM 3		BEAM 2		BEAM 1	
PORT 11 (+45°)	PORT 12 (-45°)	PORT 9 (+45°)	PORT 10 (-45°)	PORT 7 (+45°)	PORT 8 (-45°)	PORT 5 (+45°)	PORT 6 (-45°)	PORT 3 (+45°)	PORT 4 (-45°)	PORT 1 (+45°)	PORT 2 (-45°)

Row 2											
BEAM 12		BEAM 11		BEAM 10		BEAM 9		BEAM 8		BEAM 7	
PORT 23 (+45°)	PORT 24 (-45°)	PORT 21 (+45°)	PORT 22 (-45°)	PORT 19 (+45°)	PORT 20 (-45°)	PORT 17 (+45°)	PORT 18 (-45°)	PORT 15 (+45°)	PORT 16 (-45°)	PORT 13 (+45°)	PORT 14 (-45°)

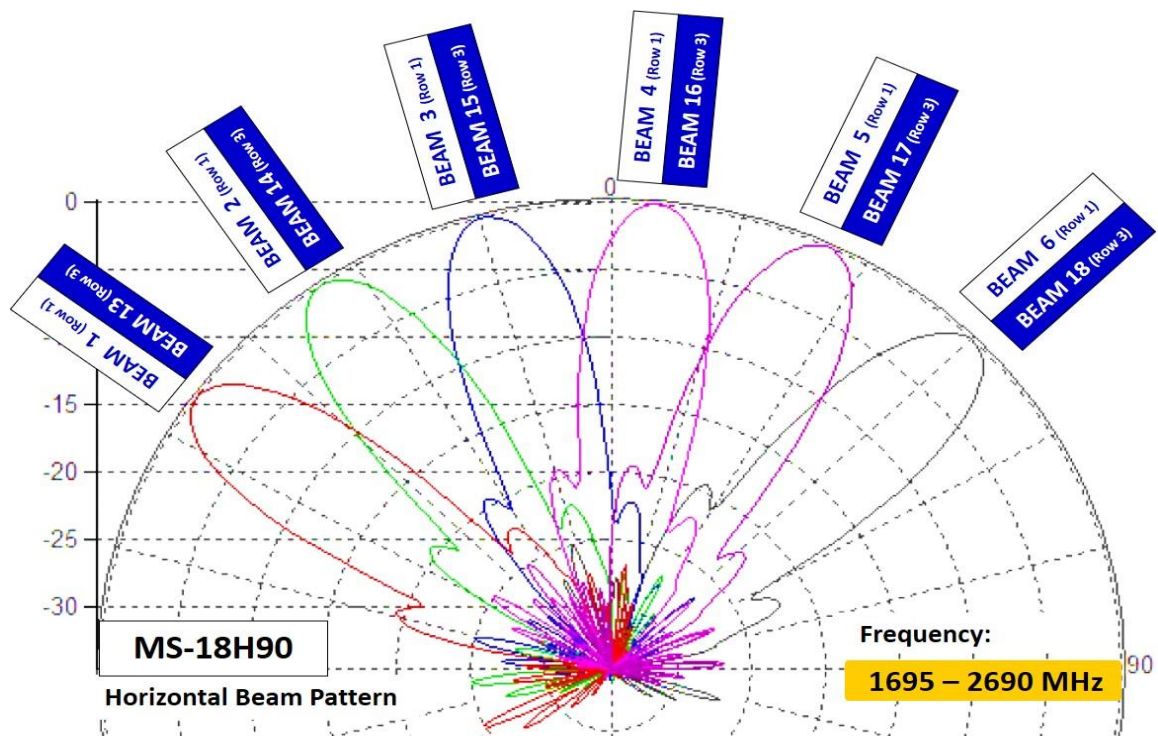
Row 3											
BEAM 18		BEAM 17		BEAM 16		BEAM 15		BEAM 14		BEAM 13	
PORT 35 (+45°)	PORT 36 (-45°)	PORT 33 (+45°)	PORT 34 (-45°)	PORT 31 (+45°)	PORT 32 (-45°)	PORT 29 (+45°)	PORT 30 (-45°)	PORT 27 (+45°)	PORT 28 (-45°)	PORT 25 (+45°)	PORT 26 (-45°)

2.00 BEAM PATTERN

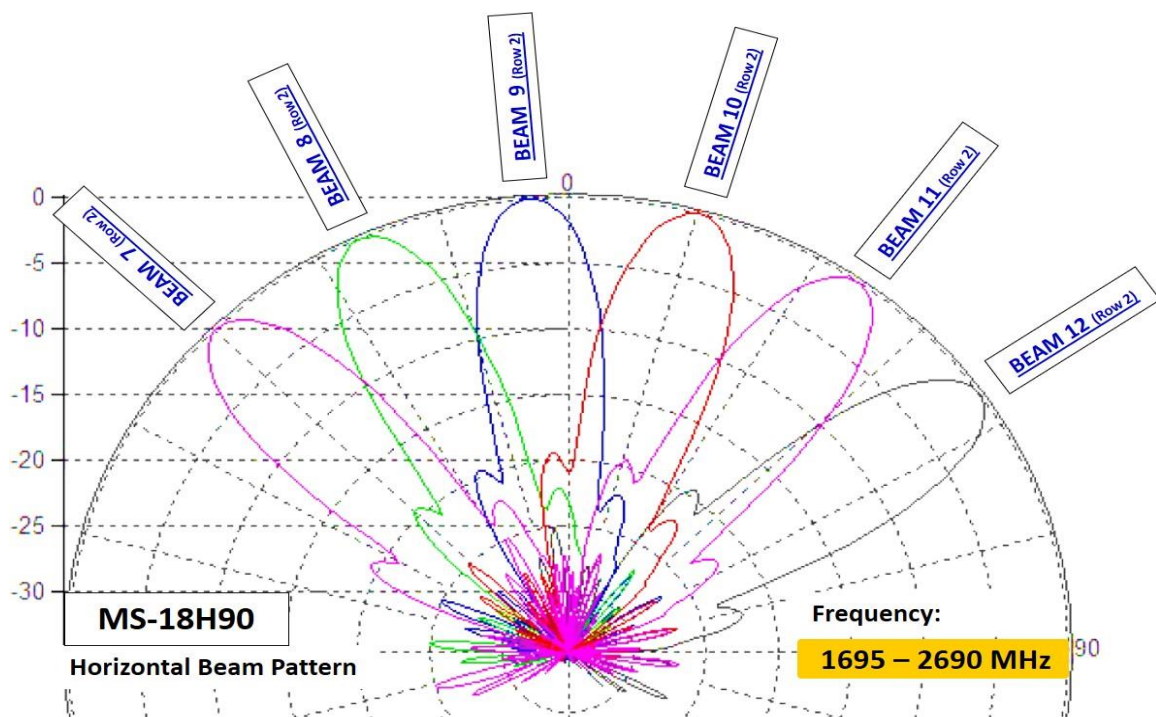
2.10 Vertical Beam Pattern (Top & Bottom Row)



2.20 Horizontal Beam Pattern (Row 1 & Row 3)



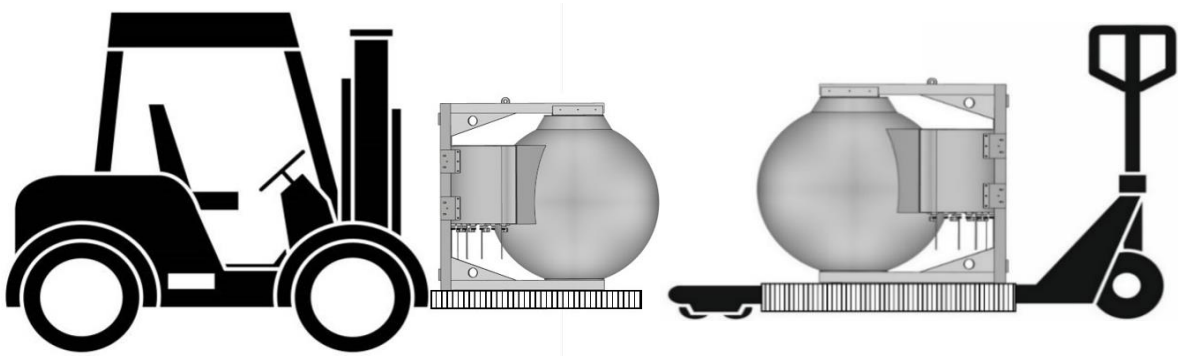
2.30 Horizontal Beam Pattern (Row 2)



3.00 TRANSPORTATION / INSTALLATION

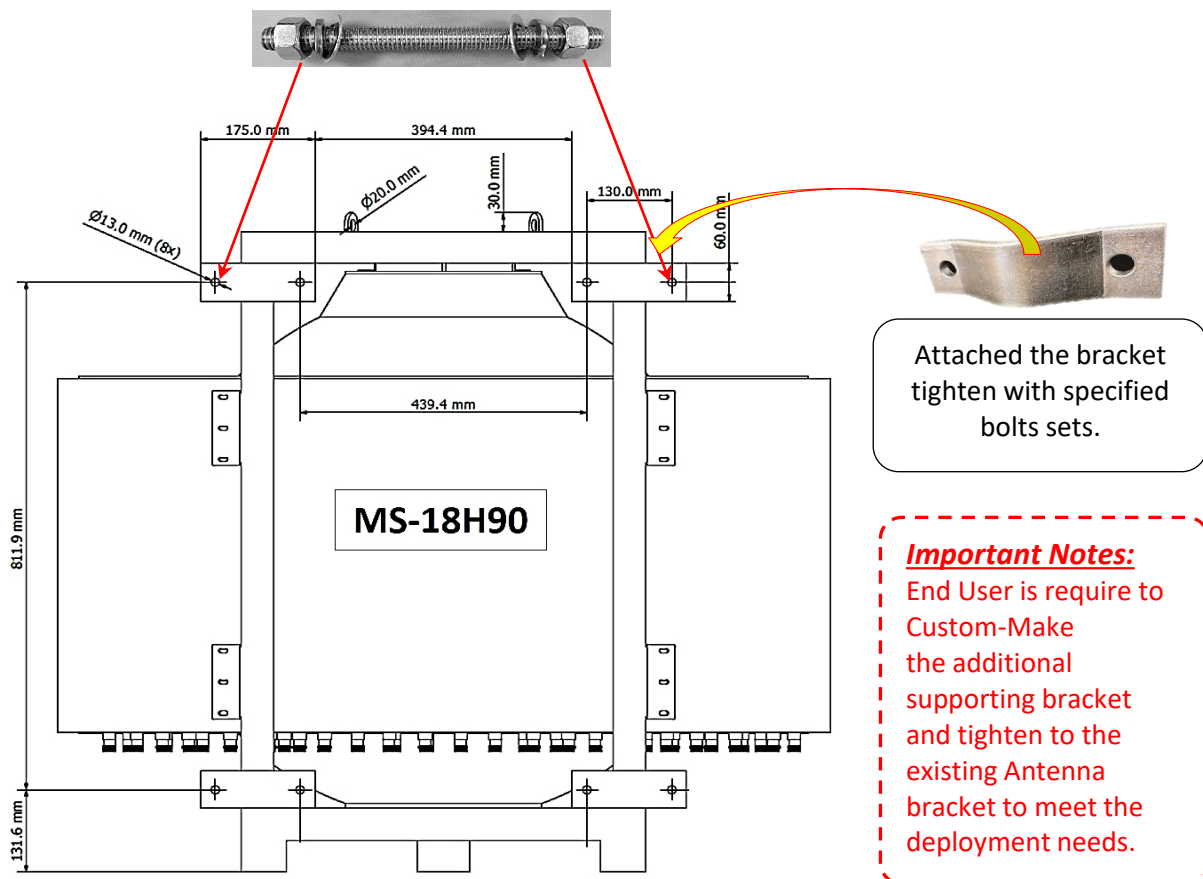
3.10 Transportation (From Point to Point)

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)**



3.20 Bracket Mounting

Item	Lens/Types	Holes Size	Bracket Qty	<u>OPEN</u> end bolt & nuts sets
1	30cm to 120cm	Ø13mm x 8	4	M12 x 15cm=8sets



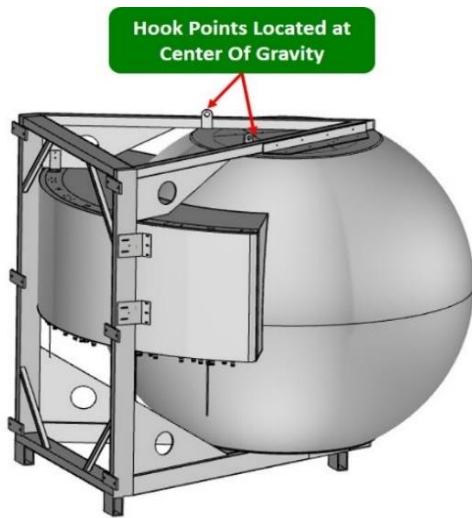
3.30 Installation using a crane

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.)

3.31 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.

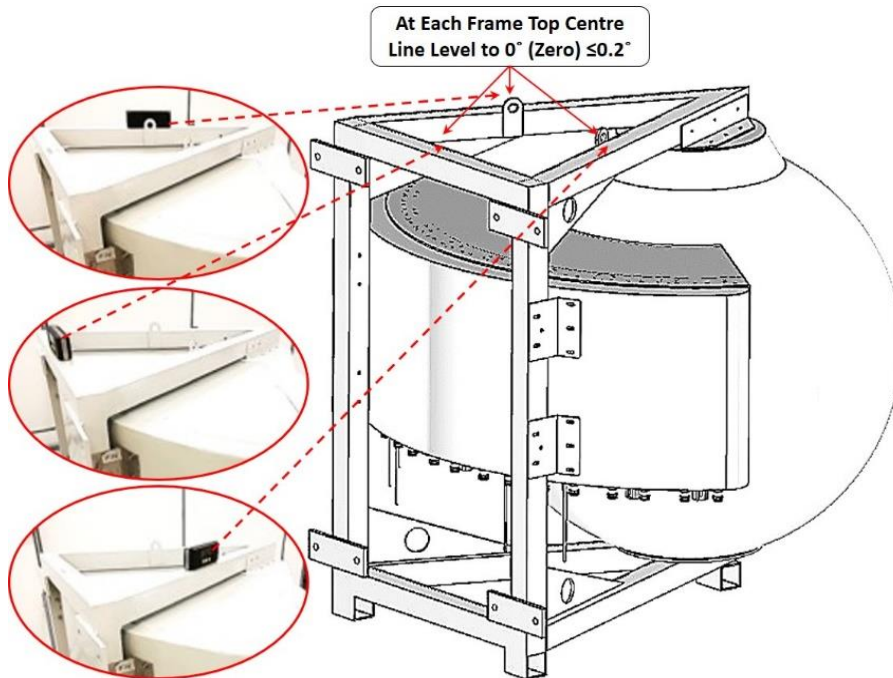


3.40 Antenna Installation

With reference to **Item 5.2 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.

3.41 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)

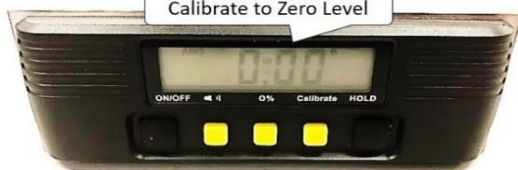


ANTENNA LEVELING ADJUSTMENT (AFTER INSTALLATION)

3.42 Digital Level Gauge Calibration

DIGITAL LEVEL GAUGE

Calibrate to Zero Level



3.43 Adjustment Requirement

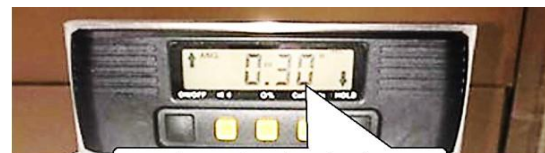


Leveling Accepted, Passed



Leveling Accepted, Passed

ANTENNA LEVELING ACCEPTED



Adjust right side to be tilt up



Adjust right side to be tilt up

REQUIRE ADJUSTMENT