

Date	Prepared by	Approved by	Document nos	Revision
30 Sep 2021	Ray Ling	Pavel	MS-12F90-IM-001	01

INSTRUCTION MANUAL MS12F90

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 BEAM PATTERN

- 2.10 Vertical Beam Pattern
- 2.20 Horizontal Beam Pattern

3.00 TRANSPORTATION / INSTALLATION

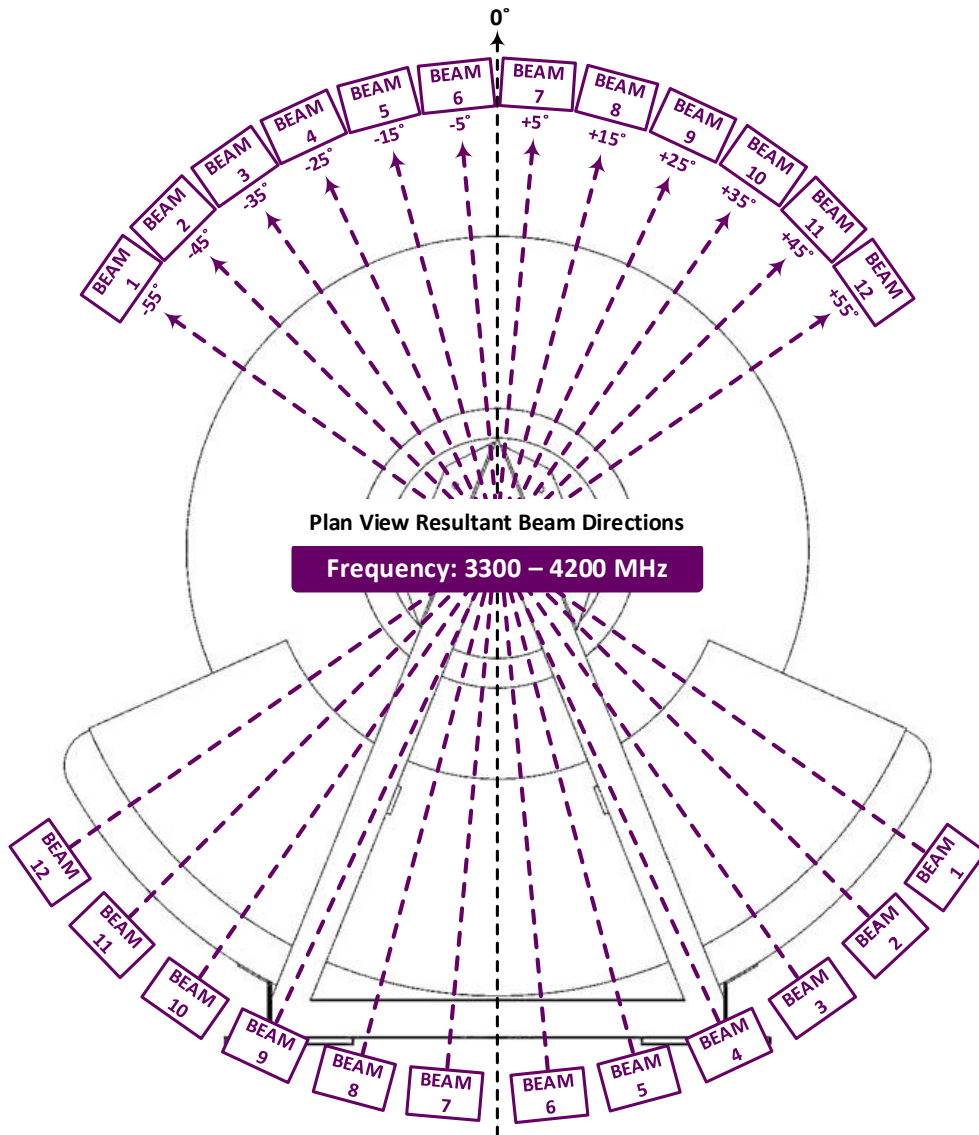
- 3.10 Transportation (From Point to Point)
- 3.20 Bracket Mounting
- 3.30 Installation using a crane
 - 3.31 Lifting the Antenna
- 3.40 Antenna Installation
 - 3.41 Antenna Leveling
 - 3.42 Digital Level Gauge Calibration
 - 3.43 Adjustment Requirement

Revision History:

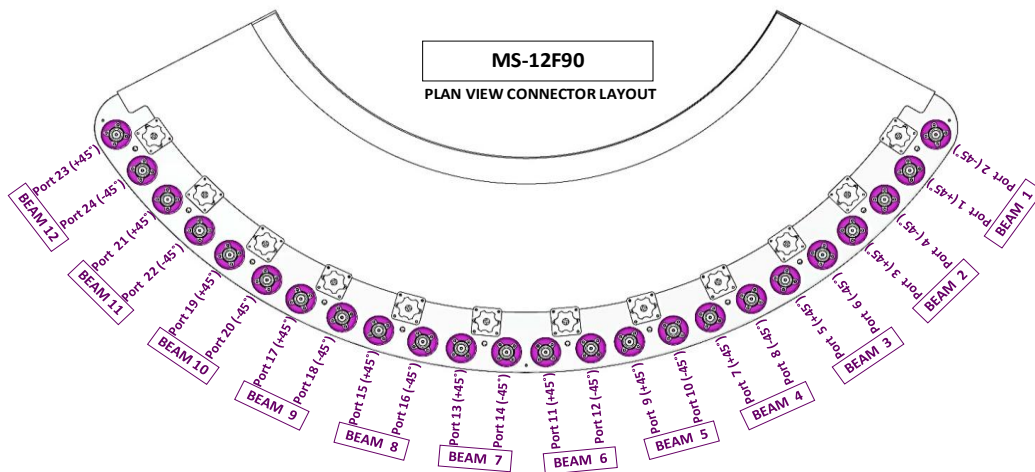
Date	Description	Revised by	Revision nos.
30-Sep-21	General revision and update	Ray Ling	01

1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam Direction



1.20 Plan View Connector Layout

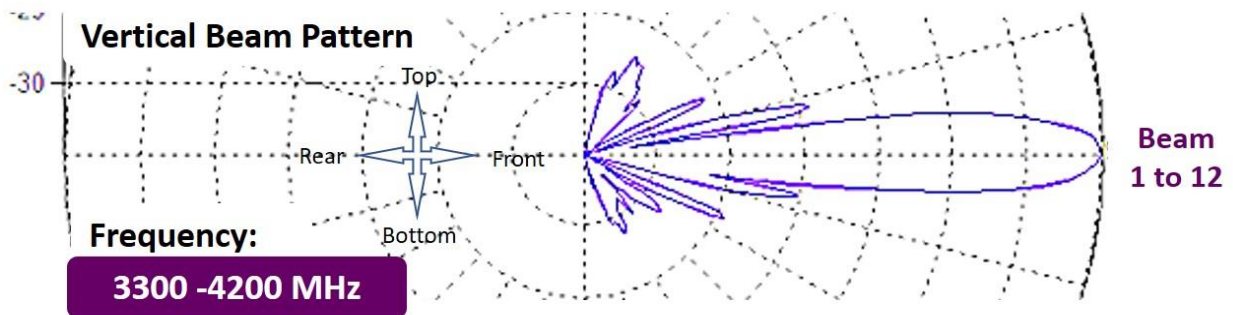


1.30 Connector Ports Table

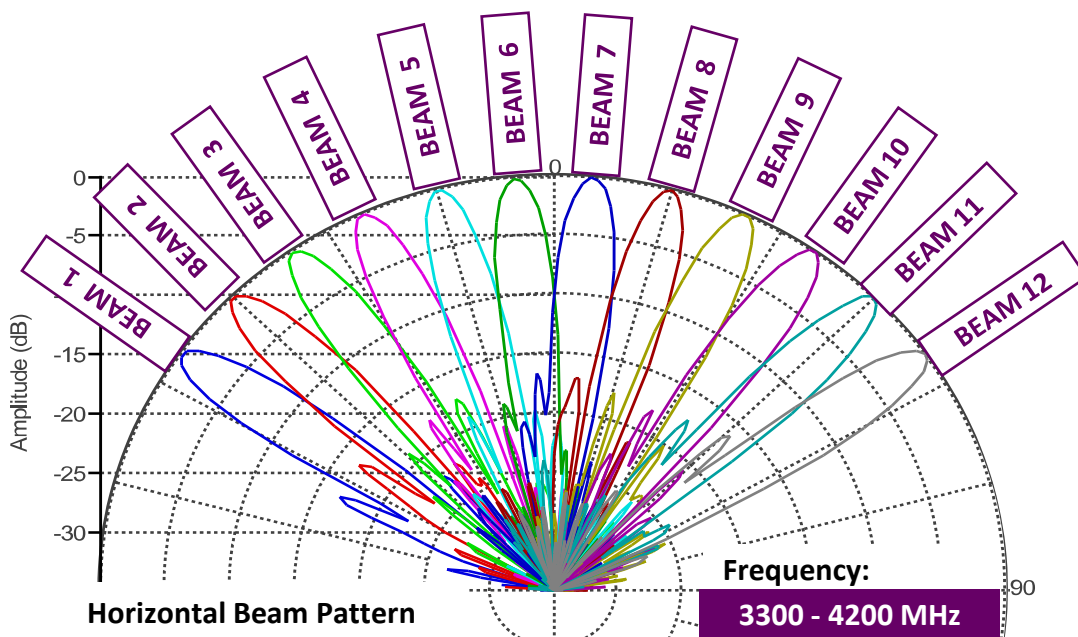
continue BEAM 7	BEAM 6		BEAM 5		BEAM 4		BEAM 3		BEAM 2		BEAM 1		
	PORT 11 (+45°)	PORT 12 (-45°)	PORT 9 (+45°)	PORT 10 (-45°)	PORT 7 (+45°)	PORT 8 (-45°)	PORT 5 (+45°)	PORT 6 (-45°)	PORT 3 (+45°)	PORT 4 (-45°)	PORT 1 (+45°)	PORT 2 (-45°)	
	BEAM 12		BEAM 11		BEAM 10		BEAM 9		BEAM 8		BEAM 7		from BEAM 6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

2.00 BEAM PATTERN

2.10 Vertical Beam Pattern



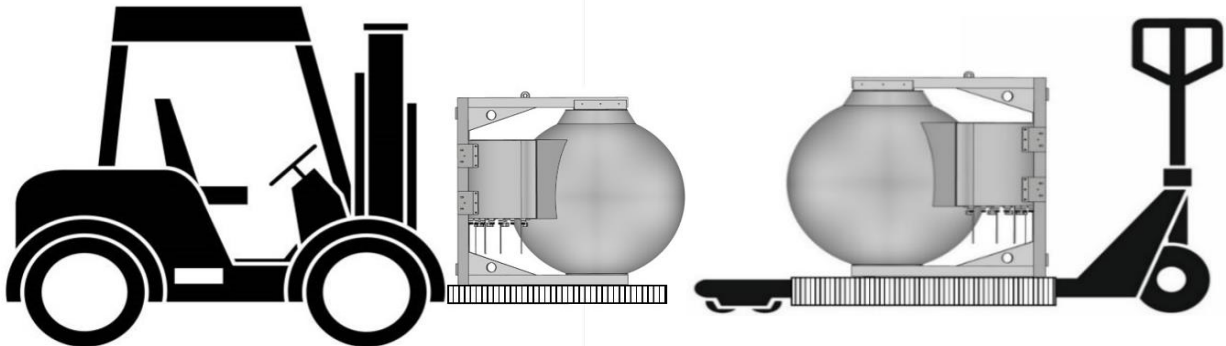
2.20 Horizontal Beam Pattern



3.00 TRANSPORTATION / INSTALLATION

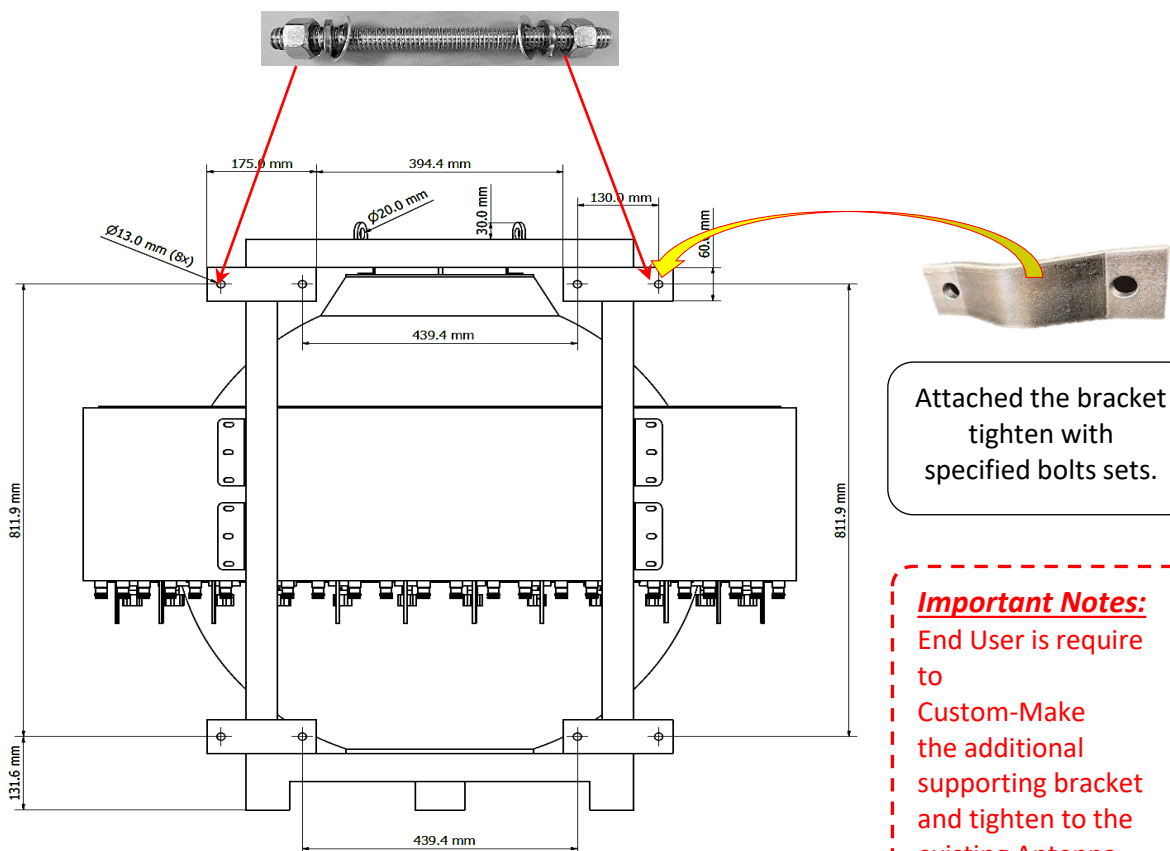
3.10 Transportation (From Point to Point)

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



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.

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.

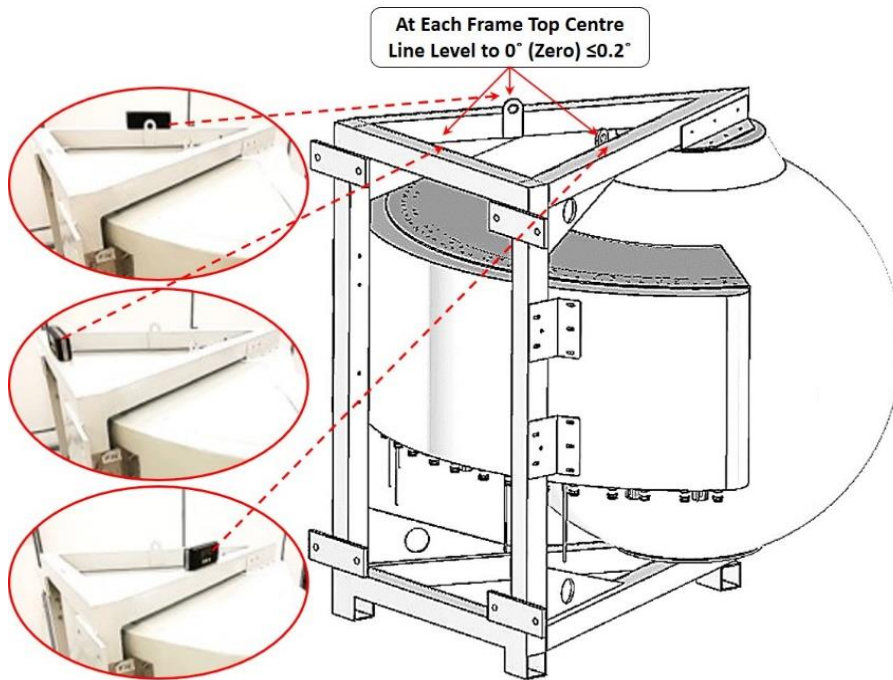


3.40 Antenna Installation

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



3.43 Adjustment Requirement



ANTENNA LEVELING ACCEPTED



REQUIRE ADJUSTMENT