

Date	Prepared by	Approved by	Document nos	Revision
16 Dec 2019	Ray Ling	Patrick Yeo	MS-12L180-IM-001	00

INSTRUCTION MANUAL MS-12L180

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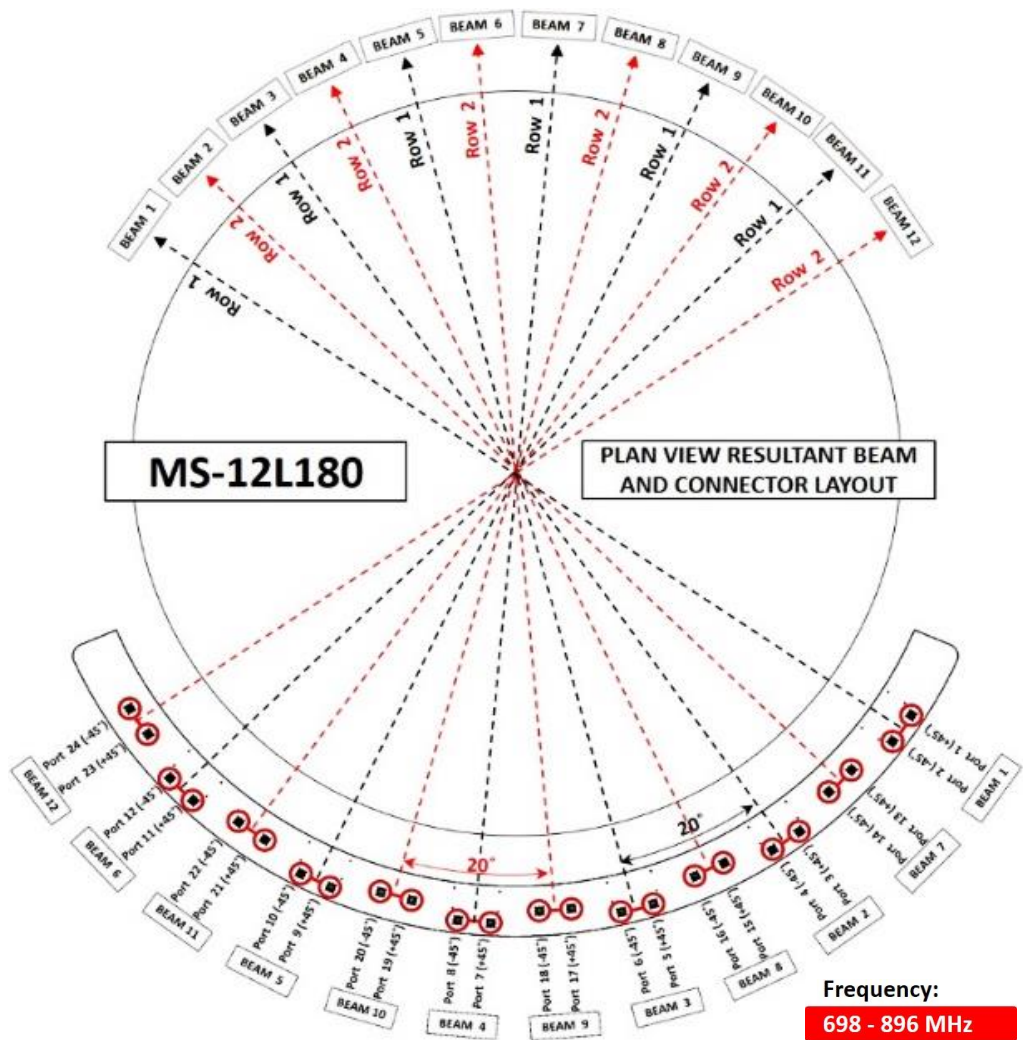
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Revision History:

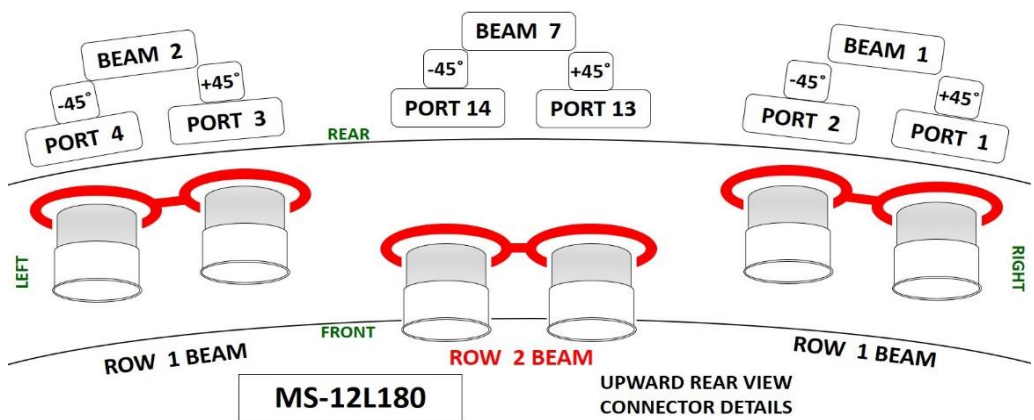
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1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam And Connector Layout



1.20 Connector Details



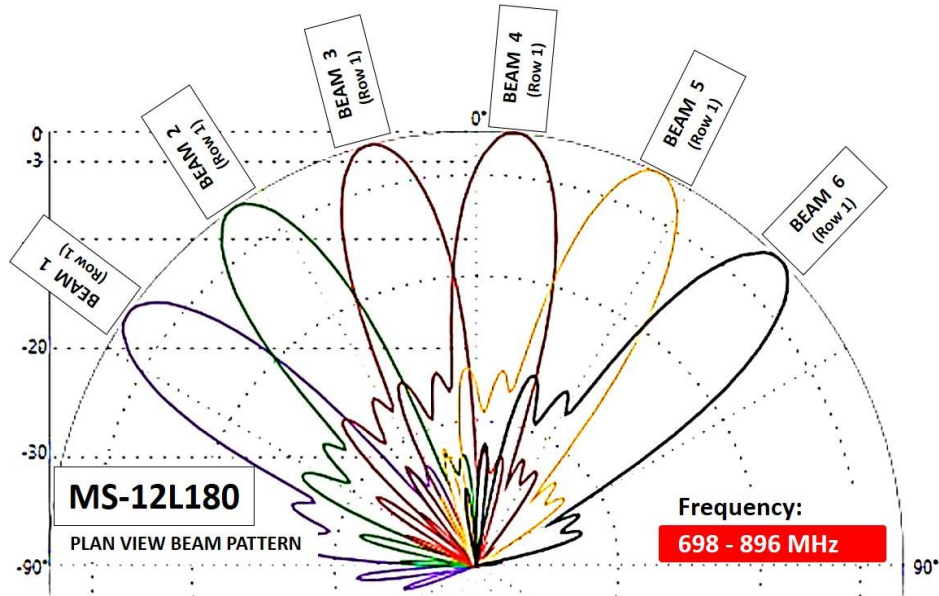
1.30 Connector Ports Table

Row 1	BEAM 6		BEAM 5		BEAM 4		BEAM 3		BEAM 2		BEAM 1	
	Port 12	Port 11	Port 10	Port 9	Port 8	Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1
	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)
BEAM 12		BEAM 11		BEAM 10		BEAM 9		BEAM 8		BEAM 7		Row 2
Port 24	Port 23	Port 22	Port 21	Port 20	Port 19	Port 18	Port 17	Port 16	Port 15	Port 14	Port 13	
(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	(-45°)	(+45°)	

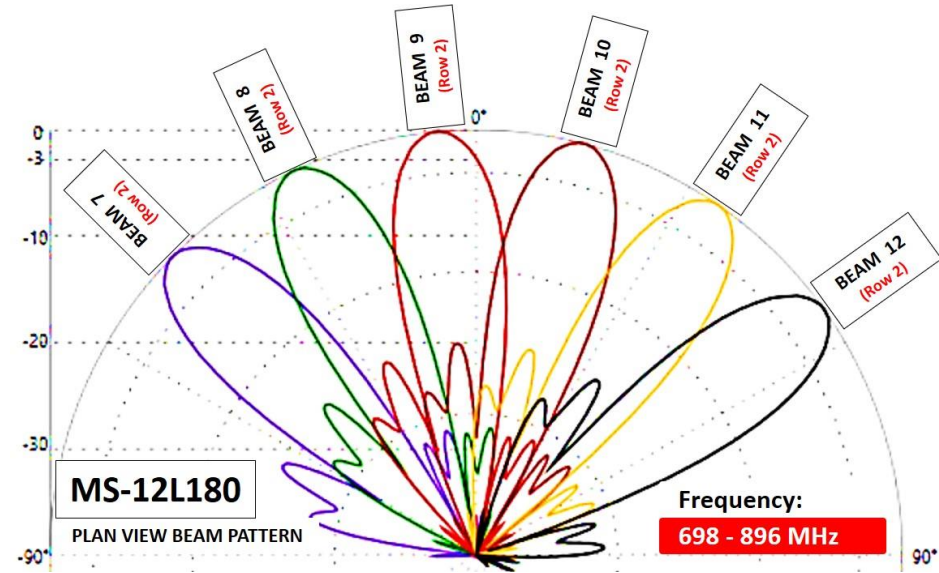
2.00 PATTERN DIAGRAM

2.10 Plan View Beam Pattern:

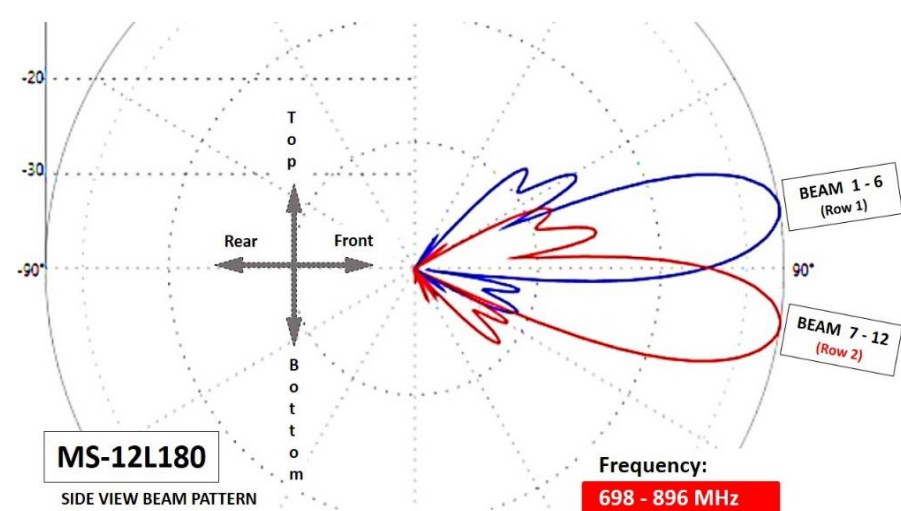
2.11 Row 1 Frequency: 698 - 896 MHz



2.12 Row 2 Frequency: 698 - 896 MHz



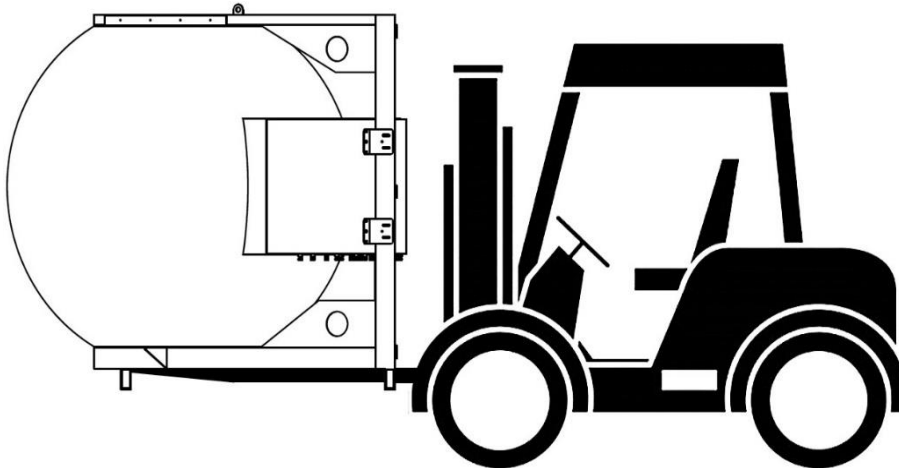
2.20 Side View Beam Pattern:



3.00 TRANSPORTATION / INSTALLATION

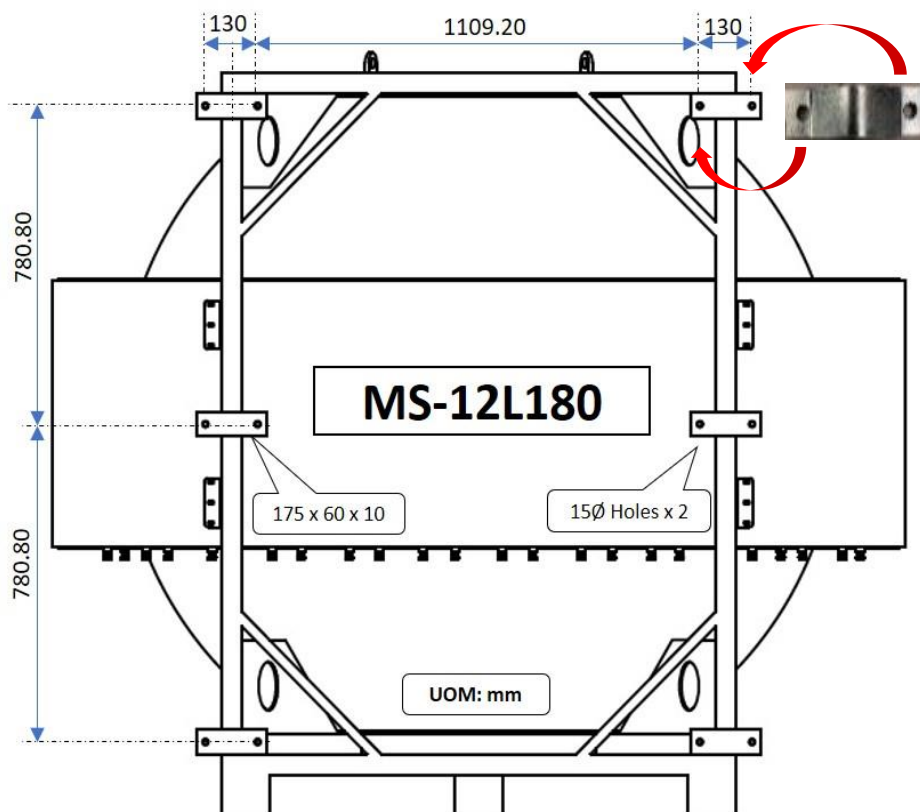
3.10 Transportation (From Point to Point)

Strictly comply to the local authority and regulatory on Workplace Safety and Health Control and Measure when moving and transporting of large or heavy equipment. Appropriate material handling machine should be used. **(Risk Assessment applies for Forklift or Pallet Truck Lifting)**



3.20 Bracket Mounting

Lens Size (Model)	Bracket Qty (pc)	Bolt & Nuts Size	Bolts Set (pc)
MS-XXX180 Lens	6	M14 x 15cm	12
MS-XXXX 60,90,120 Lens	4	M12 x 15cm	8



Tighten to the pole with Bolt & Nuts Sets

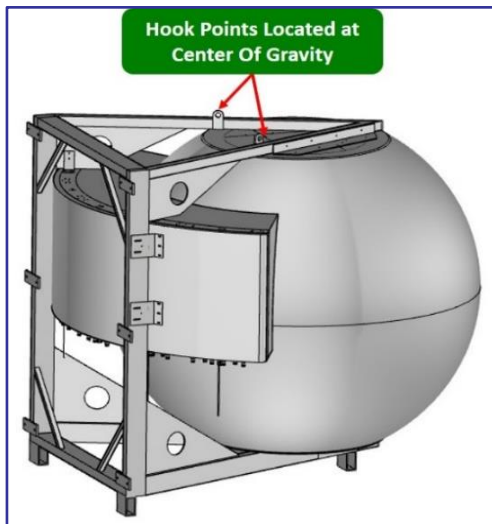
Important Notes:
End User is required to CUSTOM-MAKE the additional supporting bracket and tighten it to the existing Antenna bracket to meet the deployment needs.

3.30 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.

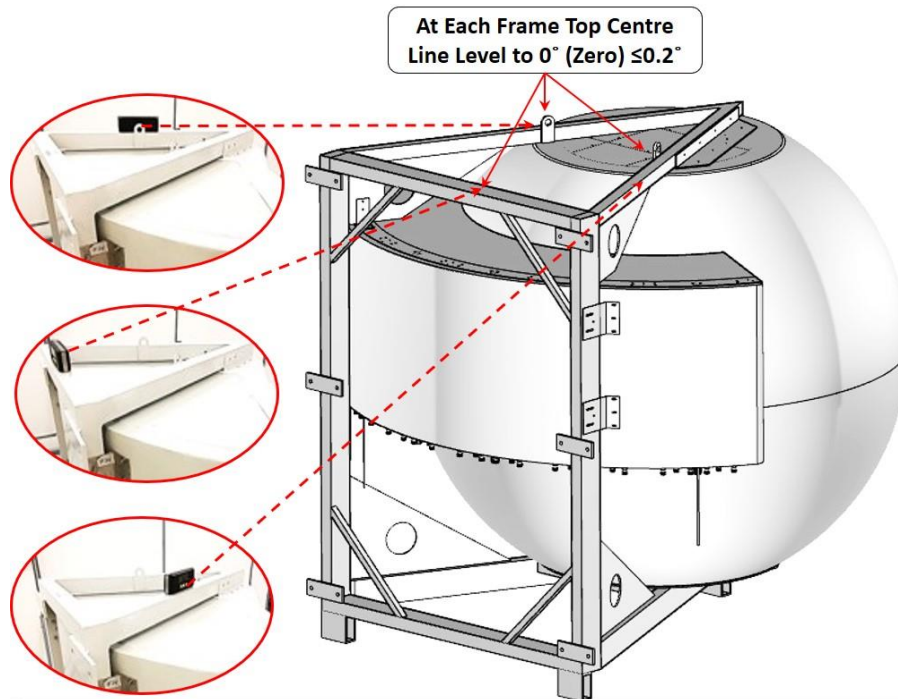


3.40 Antenna Installation

With reference to **Item 3.2 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)

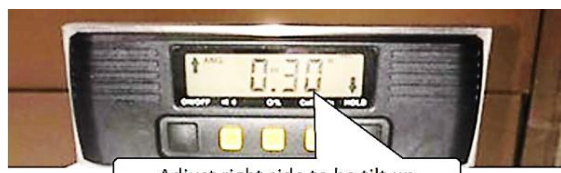
3.42 Digital Level Gauge Calibration



3.43 Adjustment Requirement



ANTENNA LEVELING ACCEPTED



REQUIRE ADJUSTMENT