INSTRUCTION MANUAL MS-12C90

TABLE OF CONTENTS:

Revision History:

Date	Description	Rev by	Rev nos
25-Sep-23	Include RET Controller Display	Ray	1
10-Nov-23	Add RET Replacement / Installation Caution Point	Ray	2
13-May-24	Add RET Display Information & Reference	Ray	3

1.00 BEAMS & CONNECTORS:

1.10 Plan View Resultant Beam Direction

Plan View Resultant Beam Directions
Frequency: 3700 – 4200 MHz

1.20 Plan View Connector Layout
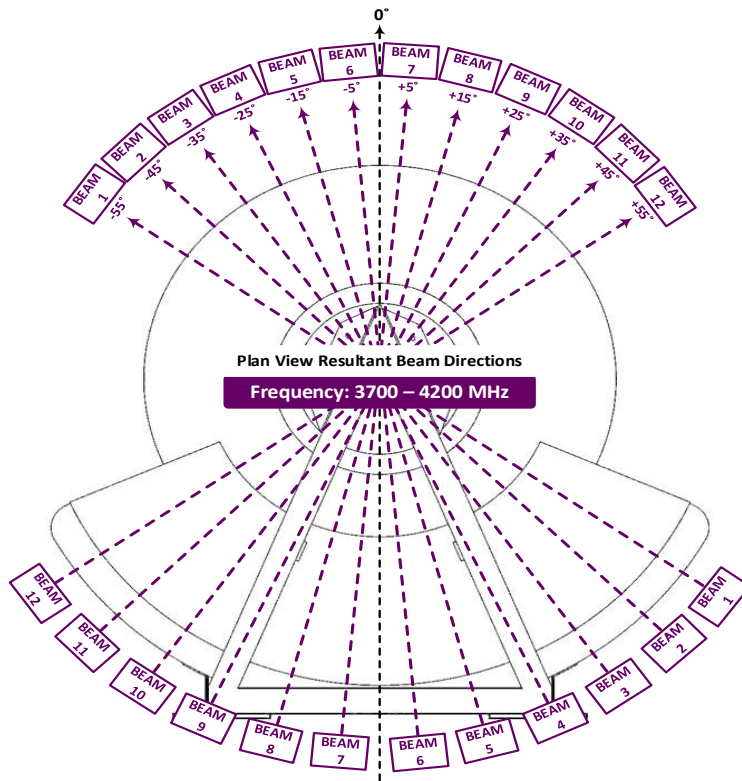
MS-12C90
PLAN VIEW CONNECTOR LAYOUT
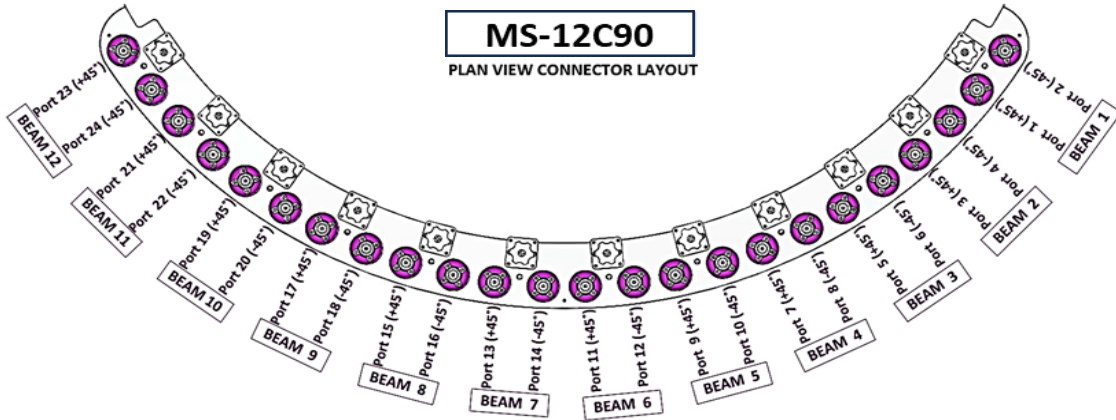
1.30 Connector Ports Table

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

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

2.00 BEAM PATTERN

2.10 Horizontal Beam Pattern

BEAM 1 BEAM 2 BEAM 3 BEAM 4 BEAM 5 BEAM 6 BEAM 7 BEAM 8 BEAM 9 BEAM 10 BEAM 11 BEAM 12

Frequency: 3700 - 4200 MHz
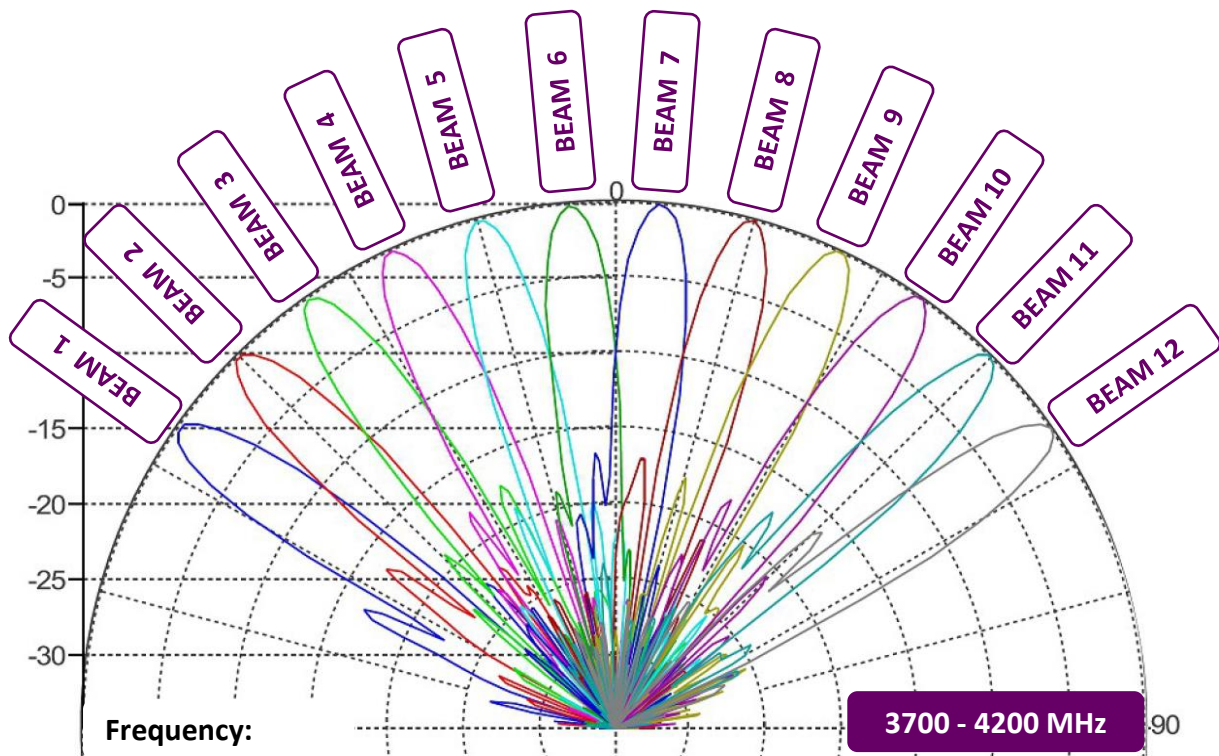
2.20 Vertical Beam Pattern

Frequency:

Top

Rear Front

Bottom

0°

15°

3700 - 4200 MHz
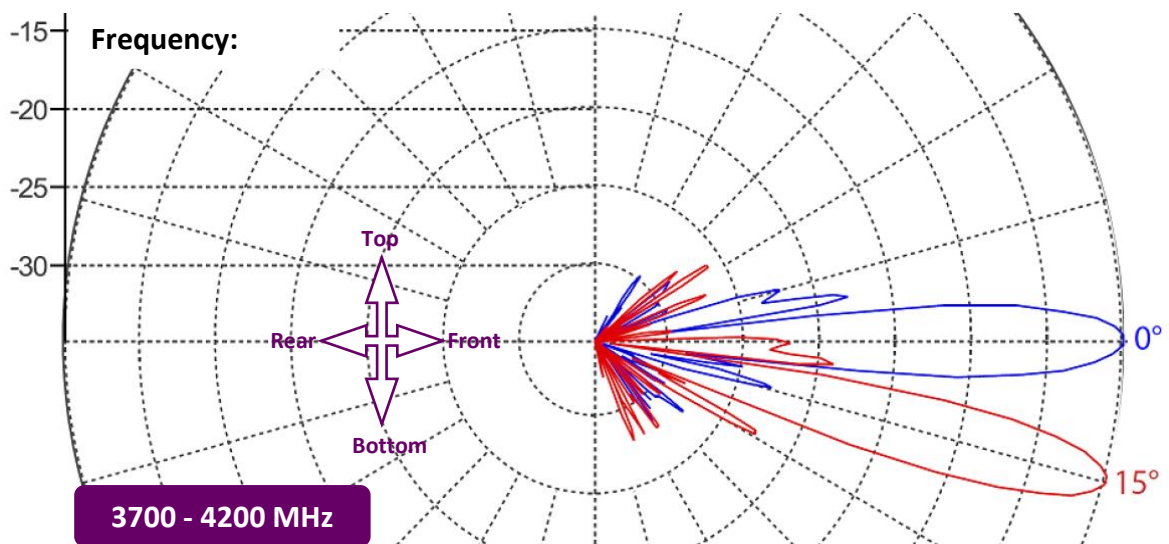
3.00 MANUAL TILT ADJUSTMENT

Step 1:
Tilt Stopper Loosening

Step 2:
Adjusting the Tilt

Step 3:
Tilt Stopper Tightening

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
By hand turning OR use screw driver
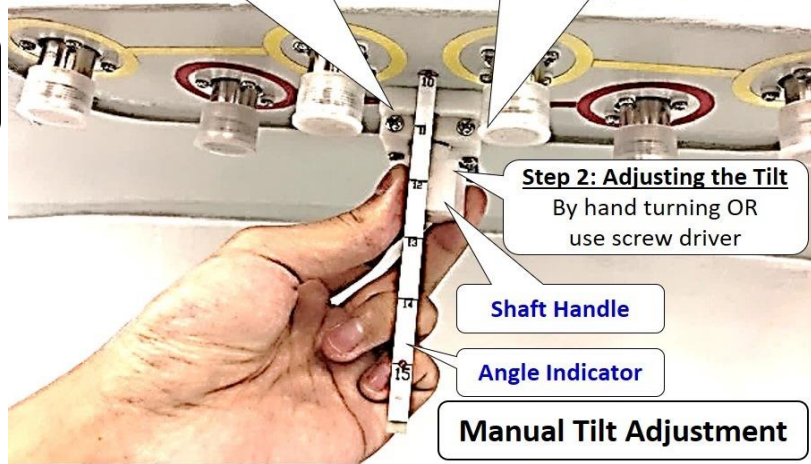
Shaft Handle

Angle Indicator

Manual Tilt Adjustment

4.00 "S" RET ACTUATOR INSTALLATIONS/REPLACEMNT PROCESS (Optional)

4.10 "S" RET Actuator Materials & Tools

RET Attachment Interface Kits

Silicon Gasket

RET Cover

Use M3 Hex Key

Hex Screw
(M4 x 10mm)

RET Attachment Interface

RET Attachment Interface (Sub-Assy)

Hex Adaptor

Screw Driver

Hex Adaptor
L=22.5mm Internal 8Ø mm)

Metal Screw
(M3 x 12mm)

Shaft Stopper

Tighten Screw
(M4 x 20mm)

Fixing Screw
(M4 x 15mm)

Shaft Stopper

Shaft Handle

Leadscrew
Shaft Handle

M2 Hex Key

Hex Set Screw
(M3 x 6mm)

"S" RET Actuator

Female Output

Male Input
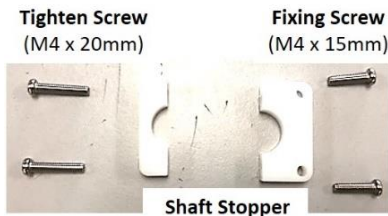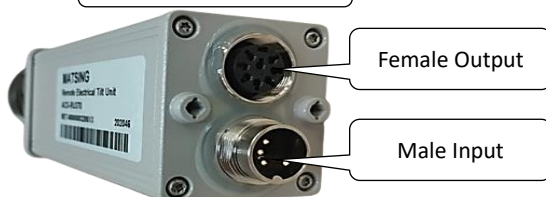
RET AISG Daisy Chain Cable

4.20 Installation / Replacement Process (Reverse Process for Uninstallation)

Step 1: Uninstall the shaft stopper
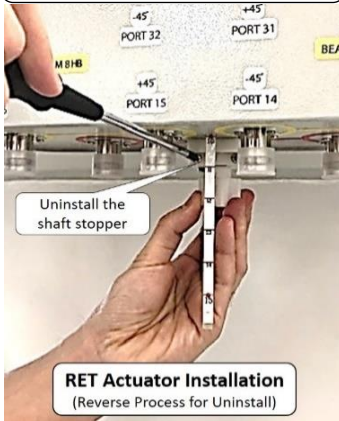
Step 2: Uninstall the shaft Handle

Step 3: Install the Hex adaptor and screw it on

Step 4: Install the RET attachment interface
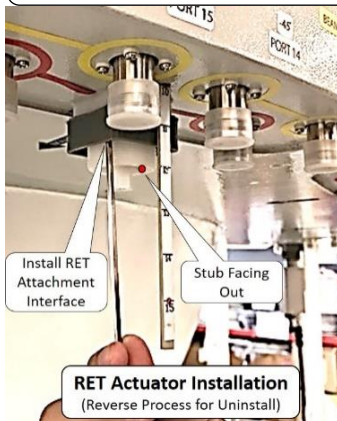
Step 5: RET Actuator stub gap facing out

Step 6: RET Tighten to attachment interface

Step 7: Screw and tighten RET cable

ADVICE:
*** Replace the AISG Daisy Chain Cable if is faulty.*
*** Same caution apply*

⛔ **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.
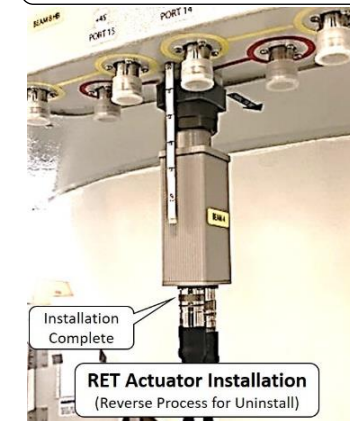
Repeat the same process for other actuator installation.

5.00 "S" RET ACTUATOR CONNECTION & OPERATIONS
5.10 "S" RET Actuator Installation/Connection (2 Group of 6 Motors)

Group 2

Group 1

AISG Daisy Chain Cable

AISG Daisy Chain Cable

External Output (Female)

External Input (Male)
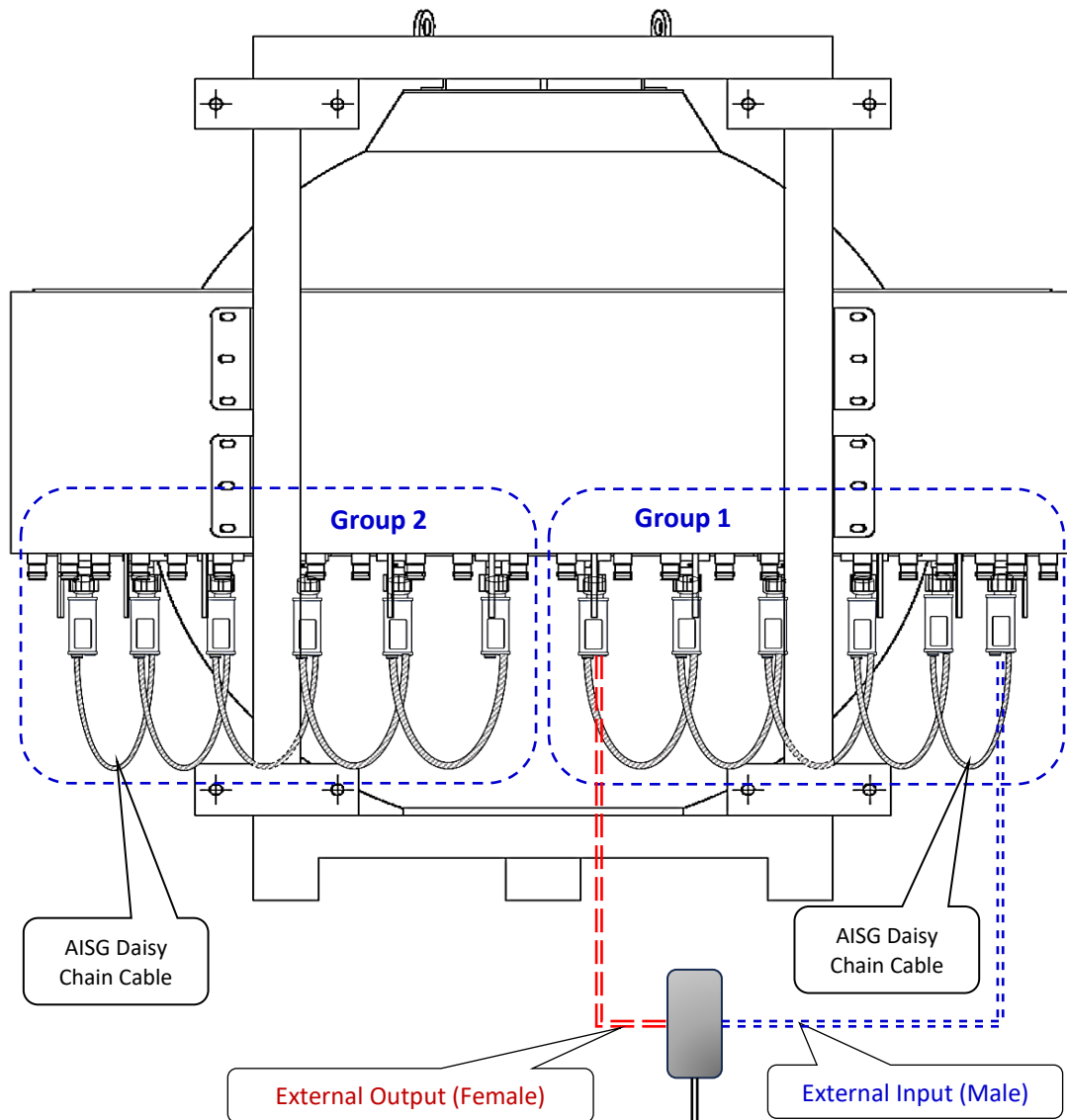
Amphenol AISG Laptop Application

*** *Repeat Same Process For Group 2 Testing*

5.20 Model & S/N Reference From Label (Example of Antenna Unit s/n 043)

MATSING®
LENS TECHNOLOGY ENABLED

Model No. : MS-12C90
Serial No. : MS-12C90-0043
Frequency: 3700 – 4200 MHz

Add 4 Zero(0) in front if the serial no's
If is shorter than 8 digits

Reminder: If Information Has Been Edited, Remember to Perform "Radio Hard Reset" for Changes to take Place

5.30 Display Information & Reference (Group 1)

File   Help

Group 1 Display

ALD List

| NO	HDLC	Vendor	Serial Number	Product Number	H/W Version	S/W Version	3GPP	Device	AISG	Connect	Link
1	1	MS	12C90-00000043B01	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
2	2	MS	12C90-00000043B02	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
3	3	MS	12C90-00000043B03	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
4	4	MS	12C90-00000043B04	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
5	5	MS	12C90-00000043B05	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
6	6	MS	12C90-00000043B06	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link

12C90-00000043B01 } Display: Beam 1 (Reference as RET 01)
12C90-00000043B02 } Display: Beam 2 (Reference as RET 02)
12C90-00000043B03 } Display: Beam 3 (Reference as RET 03)
12C90-00000043B04 } Display: Beam 4 (Reference as RET 04)
12C90-00000043B05 } Display: Beam 5 (Reference as RET 05)
12C90-00000043B06 } Display: Beam 6 (Reference as RET 06)

Model   s/no. (8 Digits)

5.40 Beam Nos & Port Nos Display (Group 1)

RET ID : MS12C90-00000043B01

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 1	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 1 (Refer as RET 01)

RET 01 Info: R1 (CB1,P1,2)

BEAM 1	
PORT 1	PORT 2
(+45°)	(-45°)

RET ID : MS12C90-00000043B02

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 2	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 2 (Refer as RET 02)

RET 02 Info: R2 (CB2,P3,4)

BEAM 2	
PORT 3	PORT 4
(+45°)	(-45°)

RET ID : MS12C90-00000043B03

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 3	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 3 (Refer as RET 03)   *RET 03 Info:* R3 (CB3,P5,6)

BEAM 3	
PORT 5	PORT 6
(+45°)	(-45°)

RET ID : MS12C90-00000043B04

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 4	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 4 (Refer as RET 04)   *RET 04 Info:* R4 (CB4,P7,8)

BEAM 4	
PORT 7	PORT 8
(+45°)	(-45°)

RET ID : MS12C90-00000043B05

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 5	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 5 (Refer as RET 05)   *RET 05 Info:* R5 (CB5,P9,10)

BEAM 5	
PORT 9	PORT 10
(+45°)	(-45°)

RET ID : MS12C90-00000043B06

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status
1/1	Beam 6	MS-12C90	MS12C900000000043	10.0	Normal

Display: Beam 6 (Refer as RET 06)   *RET 06 Info:* R6 (CB6,P11,12)

BEAM 6	
PORT 11	PORT 12
(+45°)	(-45°)

5.50 Display Information & Reference (Group 2)

File   Help

Group 2 Display

ALD List

NO	HDLC	Vendor	Serial Number	Product Number	H/W Version	S/W Version	3GPP	Device	AISG	Connect	Link
1	1	MS	12C90-00000043B07	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
2	2	MS	12C90-00000043B08	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
3	3	MS	12C90-00000043B09	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
4	4	MS	12C90-00000043B10	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
5	5	MS	12C90-00000043B11	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link
6	6	MS	12C90-00000043B12	ACS-RU370	1.00	5.12	6	Single RET	2	Connect	Link

12C90-00000043B07 **Display: Beam 7 (Reference as RET 07)**
12C90-00000043B08 **Display: Beam 8 (Reference as RET 08)**
12C90-00000043B09 **Display: Beam 9 (Reference as RET 09)**
12C90-00000043B10 **Display: Beam 10 (Reference as RET 10)**
12C90-00000043B11 **Display: Beam 11 (Reference as RET 11)**
12C90-00000043B12 **Display: Beam 12 (Reference as RET 12)**

Model   **s/no. (8 Digits)**

5.60 Beam Nos & Port Nos Display (Group 2)

RET ID : MS12C90-00000043B07

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 7	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 7 (Refer as RET 07)

RET 07 Info: R7 (CB7,P13,14)

BEAM 7	
PORT 13	PORT 14
(+45°)	(-45°)

RET ID : MS12C90-00000043B08

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 8	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 8 (Refer as RET 08)

RET 08 Info: R8 (CB8,P15,16)

BEAM 8	
PORT 15	PORT 16
(+45°)	(-45°)

RET ID : MS12C90-00000043B09

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 9	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 9 (Refer as RET 09)

RET 09 Info: R9 (CB9,P17,18)

BEAM 9	
PORT 17	PORT 18
(+45°)	(-45°)

RET ID : MS12C90-00000043B10

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 10	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 10 (Refer as RET 10)

RET 10 Info: R10 (CB10,P19,20)

BEAM 10	
PORT 19	PORT 20
(+45°)	(-45°)

RET ID : MS12C90-00000043B11

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 11	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 11 (Refer as RET 11)

RET 11 Info: R11 (CB11,P21,22)

BEAM 11	
PORT 21	PORT 22
(+45°)	(-45°)

RET ID : MS12C90-00000043B12

RET Status and Control
Antenna Information List

NO	Sector ID	Ant Model	Ant Serial	Current Tilt	Status	
1/1	Beam 12	MS-12C90	MS12C900000000043	10.0	Normal	

Display: Beam 12 (Refer as RET 12)

*RET 12 Info:* R12 (CB12,P23,24)

BEAM 12	
PORT 23	PORT 24
(+45°)	(-45°)

6.00 TRANSPORTATION / INSTALLATION

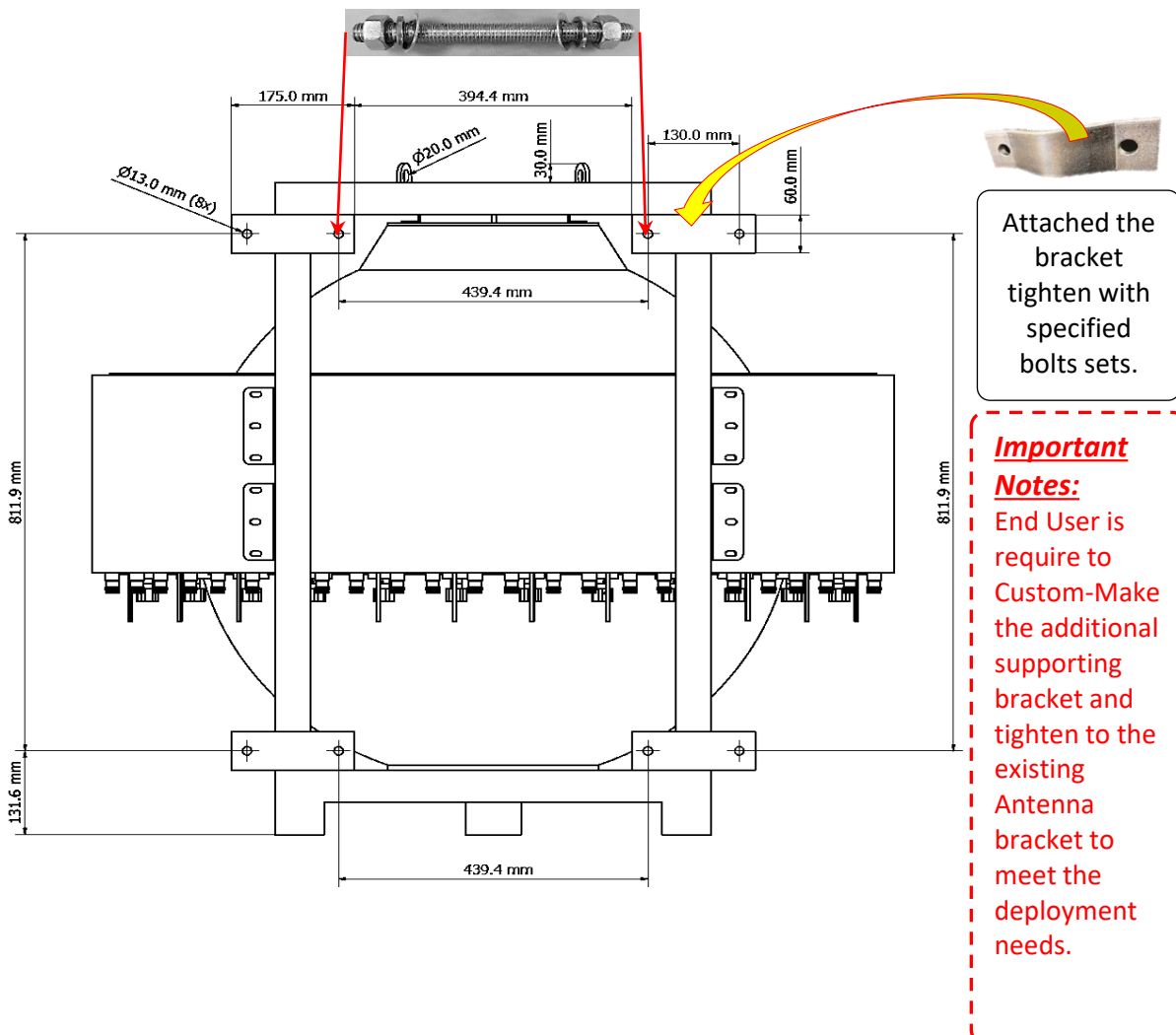### 6.10 Transportation (From Point to Point)

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)
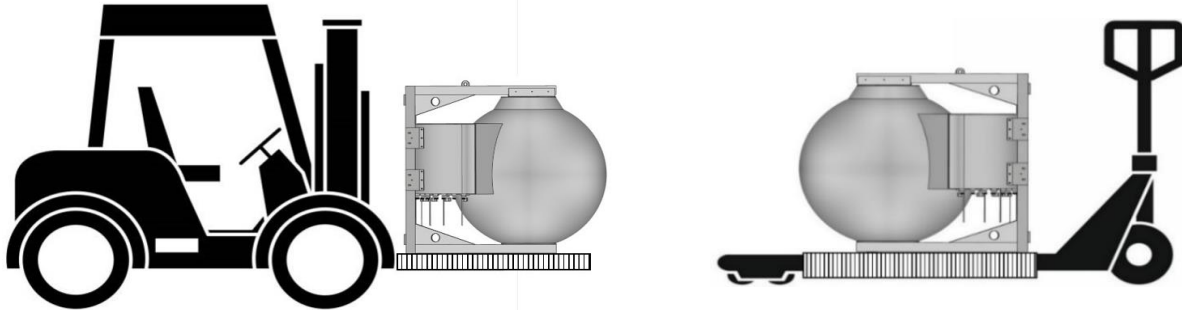
6.20 Bracket Mounting

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.

6.30 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.)

6.31 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.
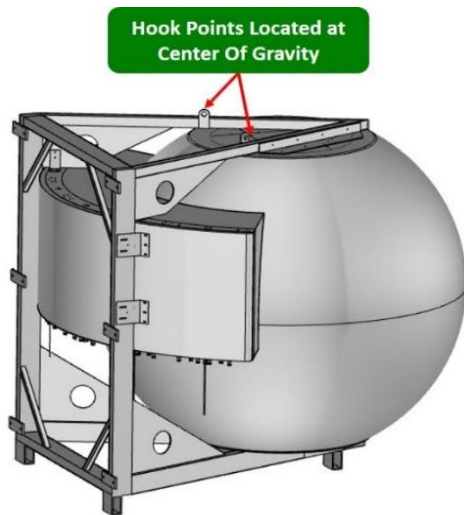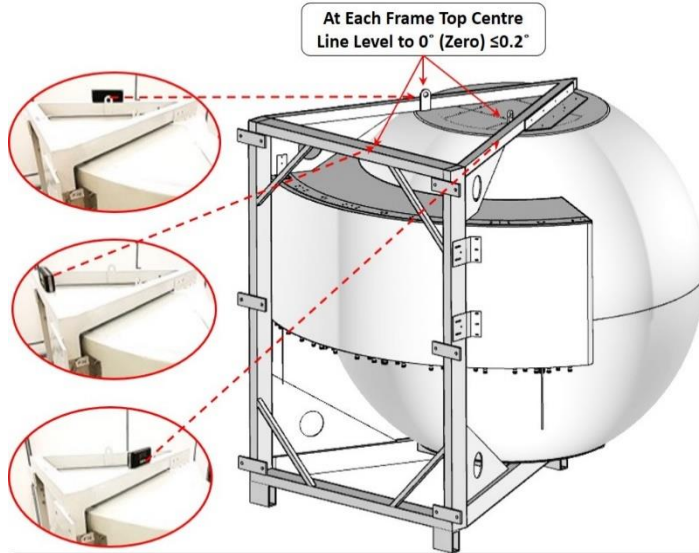
6.40 Antenna Installation

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.

6.41 Antenna Levelling

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

At Each Frame Top Centre
Line Level to 0˚ (Zero) ≤0.2˚

ANTENNA LEVELING ADJUSTMENT (AFTER INSTALLATION)

6.42 Digital Level Gauge Calibration

Calibrate to ZERO Level

0.00˚

6.43 Adjustment Requirement

Level with ≤0.2˚= ACCEPTED

0.00˚

0.10˚

ANTENNA LEVELING ACCEPTED

Level with ≥0.3˚= NEED ADJUST

0.30˚

0.50˚

REQUIRE ADJUSTMENT