

**NEC**

ND-60198-001(E)-02

Issue 2, July 2008

# **PasoWings**

## **Mobile WiMAX**

### **Sector Antenna Installation Manual**

**NEC Corporation**

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## Safety Instructions

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### Warning

- (1) Be careful not to let any metal chips or the like get in connectors. Metal chips can short-circuit connector pins, possibly causing a fire or damage. Insert connectors straight. Inserting them at a slant can short-circuit connector pins, possibly causing a fire or damage.
- (2) Do not disassemble or alter this antenna unless you are a qualified repair technician. Disassembling or altering it may cause a fire or electrical shocks.
- (3) This antenna radiates electromagnetic waves.
- (4) They are very weak and pose no safety problem. However, do not keep touching the antenna for a long time (five minutes or longer) unless you are trying to adjust its direction.

### Caution

- (1) Install this antenna in a stable, vibration-free place. Otherwise, it may drop or fall over, possibly resulting in injury.
- (2) When moving the antenna from one place to another, be careful not to drop it. Otherwise, an accident or injury may occur.
- (3) When installing the antenna, be careful not to drop it, its dust caps or tools. Otherwise, an accident may occur.
- (4) Select a sufficiently strong place when installing the antenna. If it is installed in a place not sufficiently strong, it may fall down, possibly resulting in an accident.



The mark on the electrical and electronic products only applies to the current European Union Member States.

### Document Amendment Record

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<b>Issue</b>	<b>Date</b>	<b>Remarks</b>
1	2007/ Dec	First issue
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## 1. Overview

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### 1.1 Summary

This document is installation manual for Mobile WiMAX Sector Antenna below.

2.5GHz SECTOR ANT (NWA-025035-001)

3.5GHz SECTOR ANT (NWA-025025-001)

### 1.2 Specification

(1) 2.5 GHz SECTOR ANT

Dimensions: Approximately  $\phi 78$  mm  $\times$  1155 mm (Antenna)

Weight; Approximately 2.5 kg (Antenna)

Approximately 4.5 kg (Mounting bracket kit)

Connector: N type (2 port)

Mountable pole diameter:  $\phi 48$  mm to  $\phi 120$  mm

Mechanically adjustable range: Tilt angle of  $\pm 10$  degrees

Survival wind velocity; 90 m/sec

(2) 3.5 GHz SECTOR ANT

Dimensions: Approximately  $\phi 78$  mm  $\times$  875 mm (Antenna)

Weight; Approximately 2.3 kg (Antenna)

Approximately 4.5 kg (Mounting bracket kit)

Connector: N type (2 port)

Mountable pole diameter:  $\phi 48$  mm to  $\phi 120$  mm

Mechanically adjustable range: Elevation angle of  $\pm 10$  degrees

Survival wind velocity; 90 m/sec

## 2. Appearance

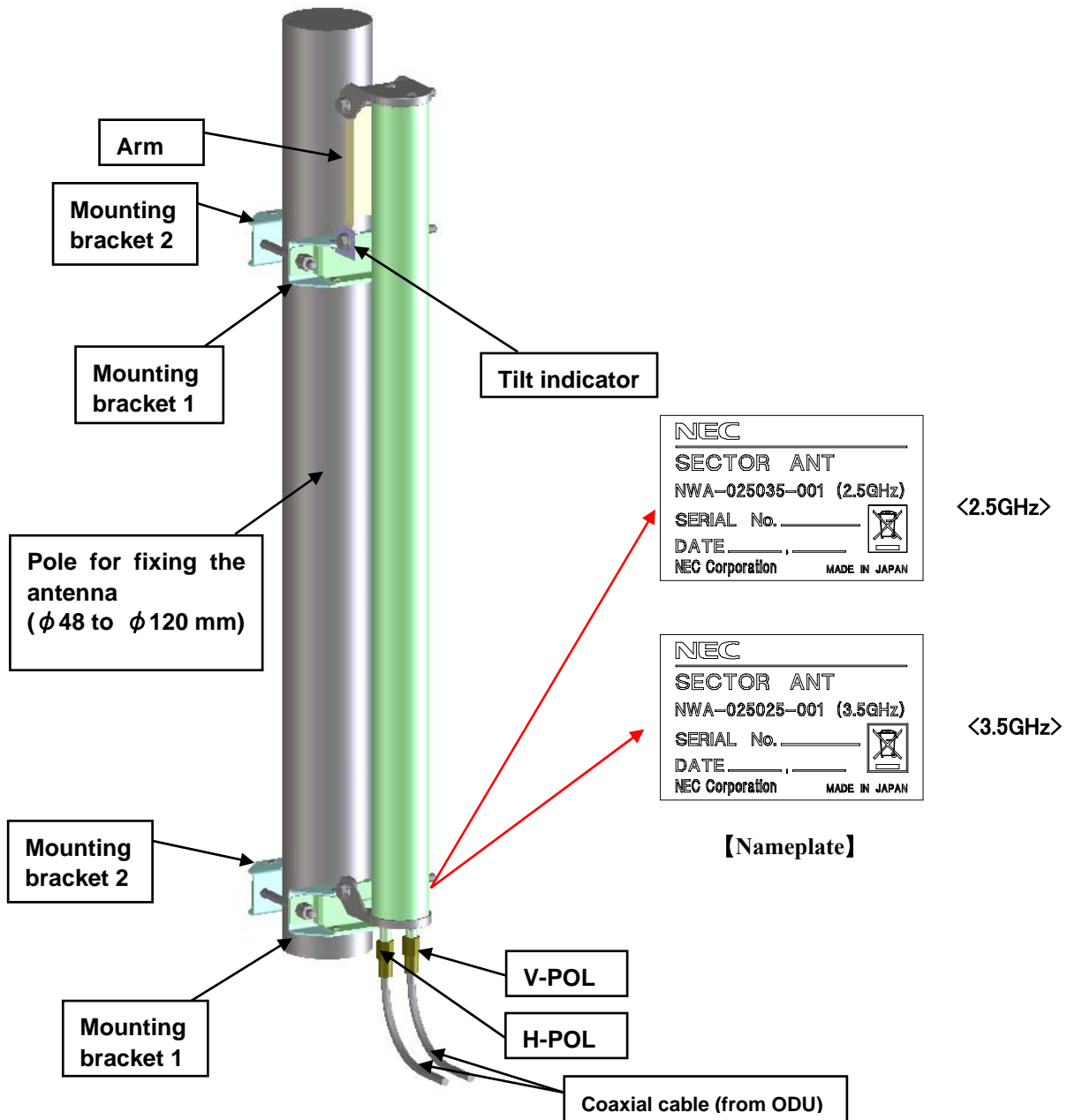


Figure 2 Antenna Appearance



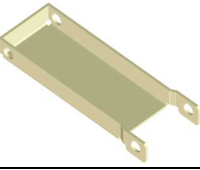
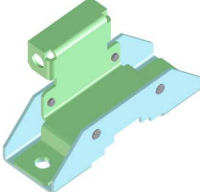
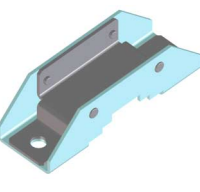
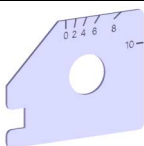
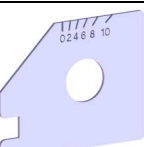
### 3. Components

Table 3 lists the components of this antenna kit.

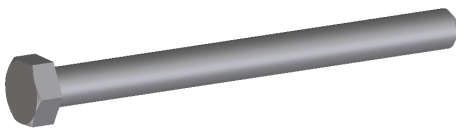


**[Caution]**

1. Before starting installation work after unpacking, check the components and their quantity with the parts list.
2. Work with care. When carrying or assembling the antenna and related components, be careful not to cause damage to them.  
Do not place any stuff on the components of the antenna kit.

**Table 3 Components**

No.	Item name (specification)	Quantity		Appearance
		2.5 GHz	3.5 GHz	
1	SECTOR ANT (NWA-025035-001)	1	0	
1	SECTOR ANT (NWA-025025-001)	0	1	
2	Arm (NWM-017377-001) *Bundled item	1	1	
3	Mounting bracket 1 (NWM-017378-001) *Bundled item	2	2	
4	Mounting bracket 2 (NWM-017379-001) *Bundled item	2	2	
5	Tilt indicator (NWM-015193-001) *Bundled item	1	0	
5	Tilt indicator (NWM-015194-001) *Bundled item	0	1	



6	M12 bolt (HEX-012004-1140) *Bundled item	7	7	
7	M12 washer (CBK-000356-010) *Bundled item	7	7	
8	M12 nut (CBK-000337-009) *Bundled item	14	14	

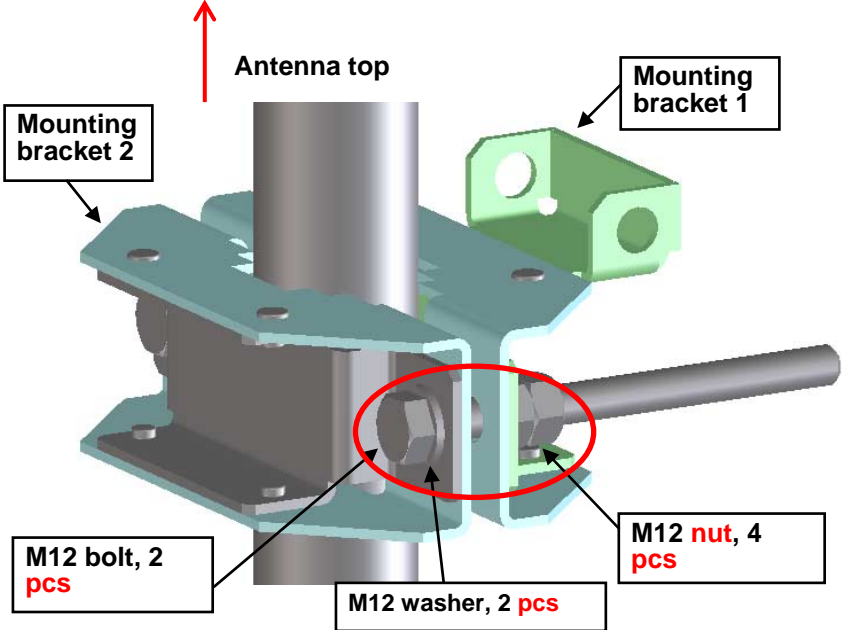
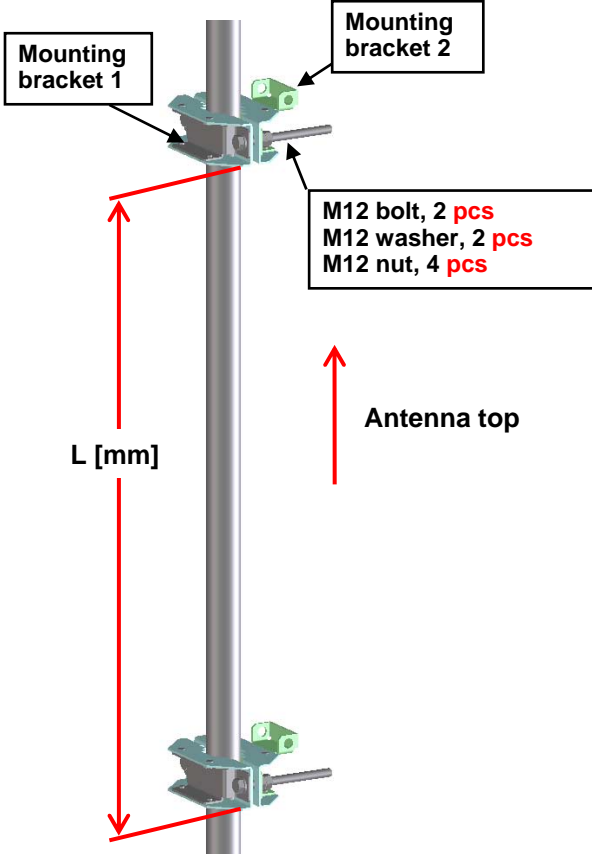
## 4. Installing the Antenna

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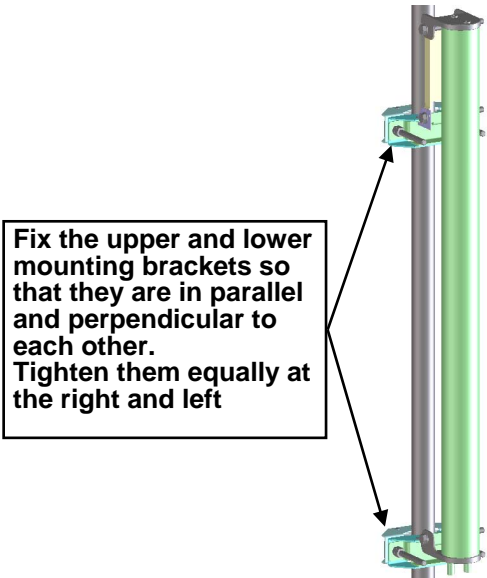
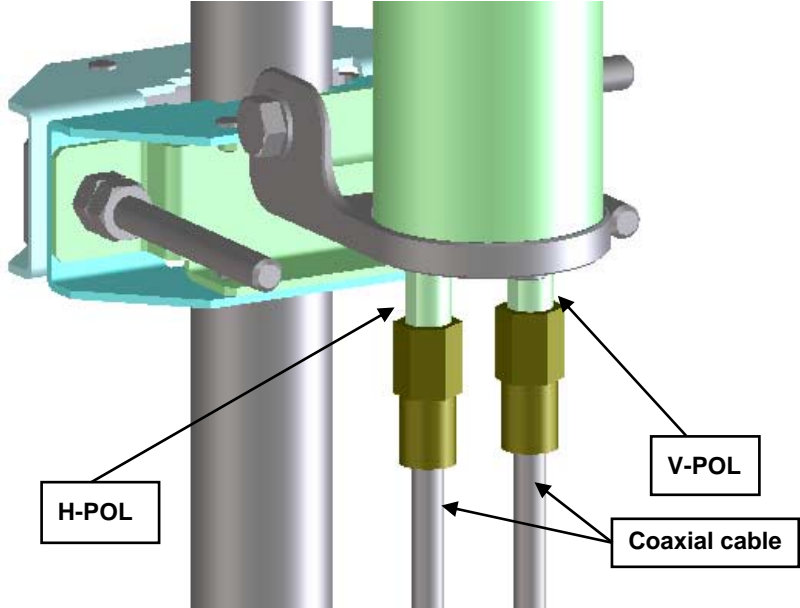
- (1) Get the tools and materials listed below ready for use.

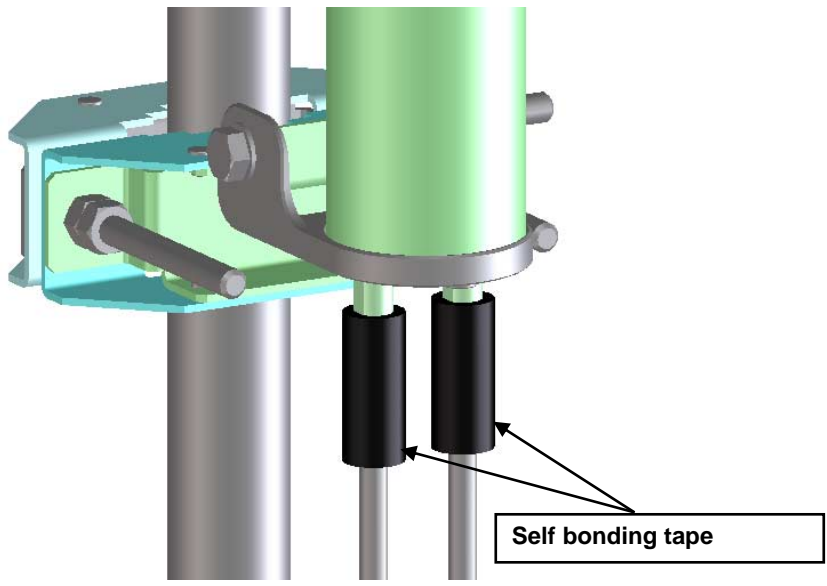
No.	Tool and material	Quantity	Remark
1	Spanner (wrench size 19 mm) and torque ratchet wrench	1	For M12 bolts
2	Torque wrench (wrench size 19 mm)	1	For M12 bolts and N-type connectors
3	Self bonding tape	1	

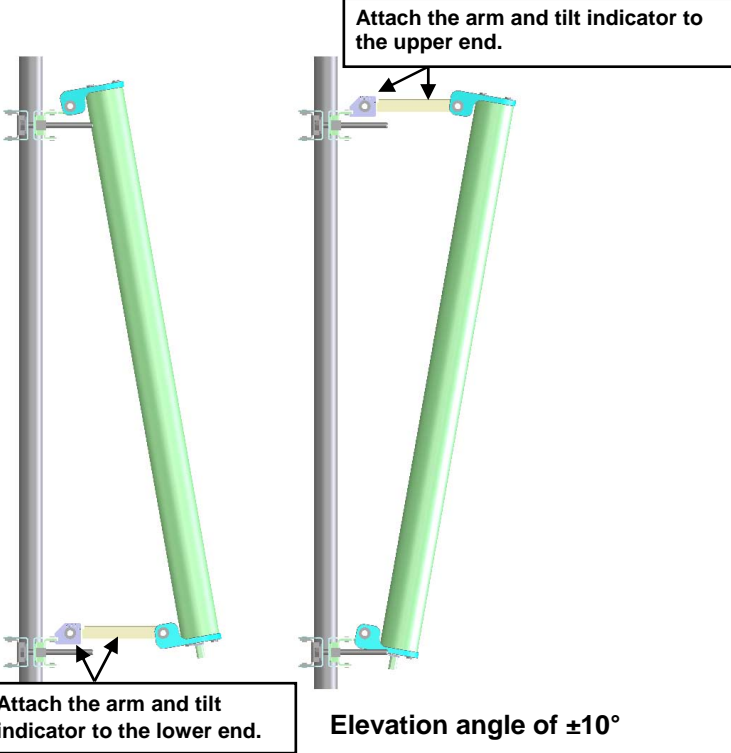
Antenna installation procedure

No.	Procedure	Summary																							
1	<p>Fix the lower mounting brackets (mounting brackets 1 and 2) to the pole so that they are in parallel and perpendicular to each other.</p> <p>Tighten them equally at the right and left.</p> <p>(Specified torque: 38N·m)</p> <p>Fix the nut with a spanner, and tighten the bolt with a torque ratchet.</p>																								
2	<p>Temporarily fix the upper mounting brackets (mounting brackets 1 and 2) to the pole so that they are in parallel and perpendicular to the lower mounting brackets.</p> <p>See the table below for the length between the upper and lower mounting brackets.</p> <table border="1" data-bbox="261 1379 576 1809"> <thead> <tr> <th rowspan="2">Tilt angle [°]</th> <th colspan="2">Length L [mm]</th> </tr> <tr> <th>2.5 GHz</th> <th>3.5 GHz</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>902</td> <td>621</td> </tr> <tr> <td>2</td> <td>905</td> <td>623</td> </tr> <tr> <td>4</td> <td>915</td> <td>628</td> </tr> <tr> <td>6</td> <td>934</td> <td>637</td> </tr> <tr> <td>8</td> <td>967</td> <td>651</td> </tr> <tr> <td>10</td> <td>1,074</td> <td>672</td> </tr> </tbody> </table>	Tilt angle [°]	Length L [mm]		2.5 GHz	3.5 GHz	0	902	621	2	905	623	4	915	628	6	934	637	8	967	651	10	1,074	672	
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<p>3</p>	<p>Temporarily fix the arm and Tilt indicator to mounting bracket 1.</p>	
<p>4</p>	<p>Temporarily fix the antenna to the pole.</p>	

<p>5</p>	<p>Fix the upper arm, tilt indicator and antenna mounting brackets so that they are parallel and perpendicular to each other. Tighten them equally at the right and left. (Specified torque: 38N·m)</p>	
<p>6</p>	<p>Attach coaxial cables to the antenna. Be sure to connect the coaxial cable for horizontal polarization to the connector labeled “H-POL” and the coaxial cable for vertical polarization to the connector labeled “V-POL”. (Specified torque: 1.8 to 2.1 N·m)</p>	

<p>7 Wrap self bonding tape around the connections as a watertight measure.</p> <p>Wrap self bonding tape around the connections as a watertight measure. When wrapping the tape, pull it so that it becomes half as wide as its original width and paste each turn of the tape in such a way that they overlap with one another by half the width. (To ensure watertightness, wrap the tape up to the root of each connector firmly.)</p> <p>Moreover, wrap PVC tape around the self bonding tape.</p> <p>If no cable is attached to a connector, wrap the connector with self bonding tape and PVC tape to make it watertight in the same manner as for connectors with a cable attached.</p>	
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<p>Additional information</p> <p>When tilting up the antenna, attach the arm and Tilt indicator to the lower end of the antenna. When tilting it down, attach the arm and Tilt indicator to the upper end.</p>	 <p>The diagram illustrates two methods for attaching the arm and tilt indicator to a green antenna mounted on a vertical pole. In the left illustration, the antenna is tilted downwards, and a callout box at the bottom indicates to 'Attach the arm and tilt indicator to the lower end.' In the right illustration, the antenna is tilted upwards, and a callout box at the top indicates to 'Attach the arm and tilt indicator to the upper end.' A shared callout at the bottom right specifies an 'Elevation angle of ±10°'.</p>
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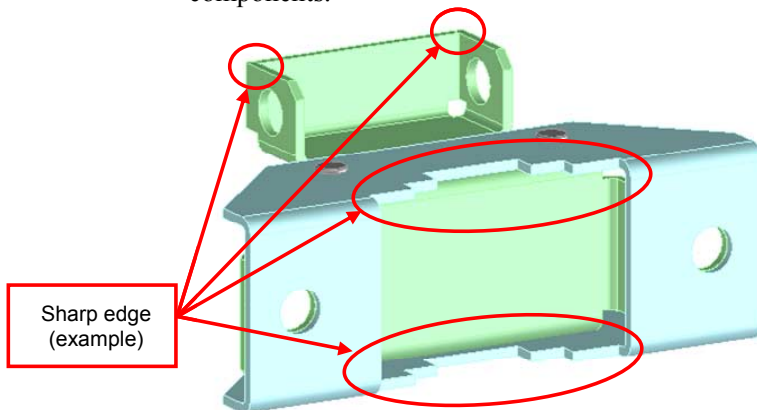
(2) Caution

Observe the following caution in order to avoid accidents.

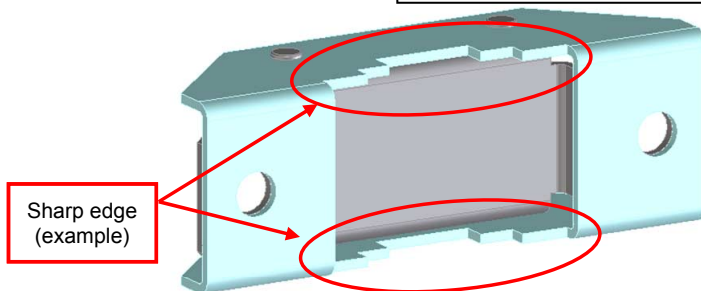
- When installing this antenna, be careful not to drop it and its components.

**Caution for Installation**

- (a) Before starting installation work after unpacking, check the components and their quantity with the parts list.
- (b) Work with care. When carrying or assembling the antenna and related components, be careful not to cause damage to them.
- (c) Handling
  - <1> Do not place any stuff on the components of the antenna kit.
  - <2> When carrying the antenna kit, be careful not cause damage to the covers and connectors.  
Do not move the antenna from one place to another with cables attached to its connectors.
  - <3> Two or more workers should be involved in the antenna installation work. When installing the antenna, work with utmost care, and use rope to keep the antenna and its components from dropping.
  - <4> When installing the antenna, be sure to observe (2), “Antenna installation procedure”.
  - <5> The component end surfaces have sharp edges. Be very careful when handling the components.



**Figure Sharp Edges on Mounting Bracket 1 (Example)**



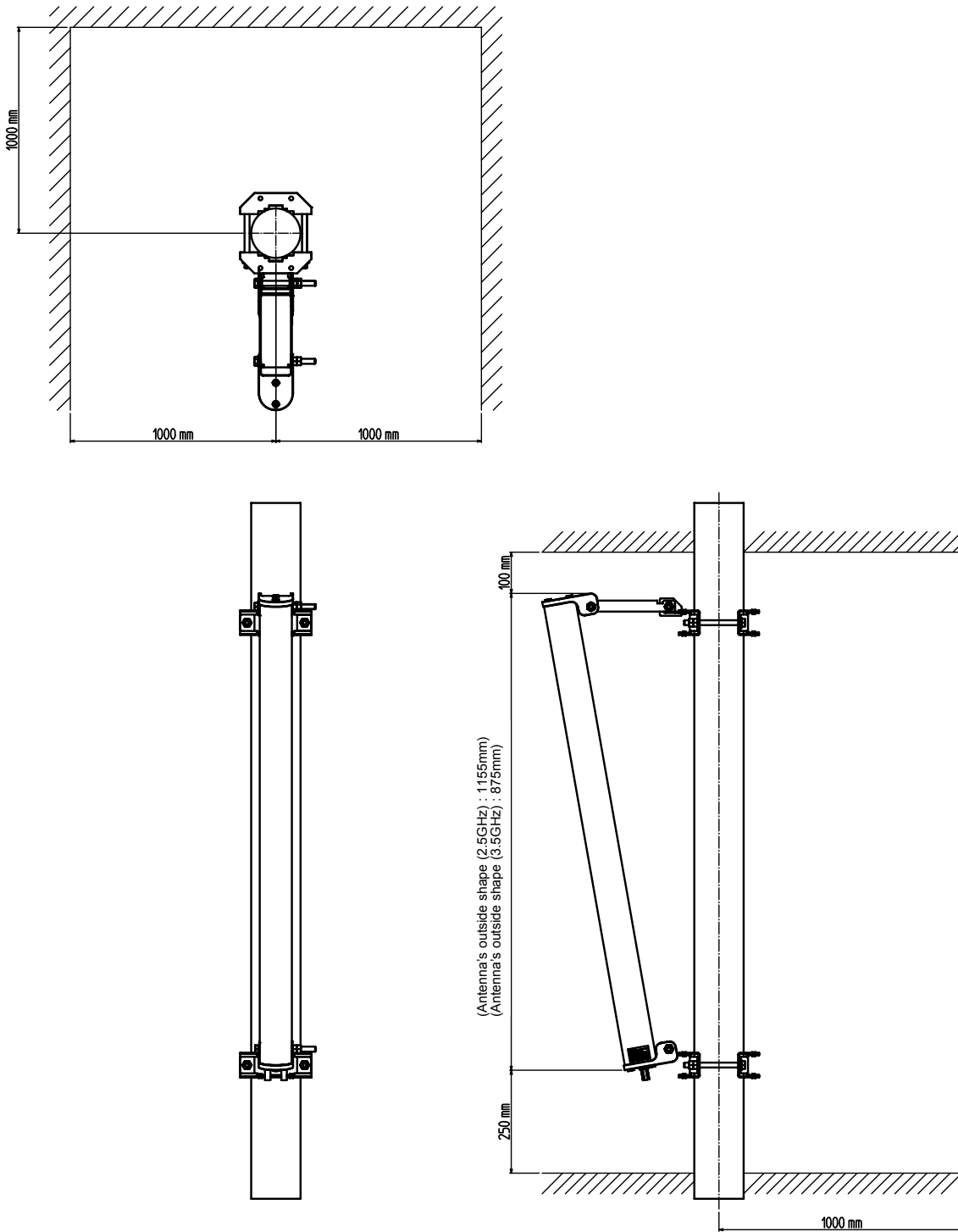
**Figure Sharp Edges on Mounting Bracket 2 (Example)**



## 5. Installation work space requirements

To install the antenna, provide adequate space as shown below.

After installation, do not block the front side of the antenna.



**Figure Space Requirements for Antenna Installation**