

Antenna Trainer

[model : MATS-1000]

User Guide Manual



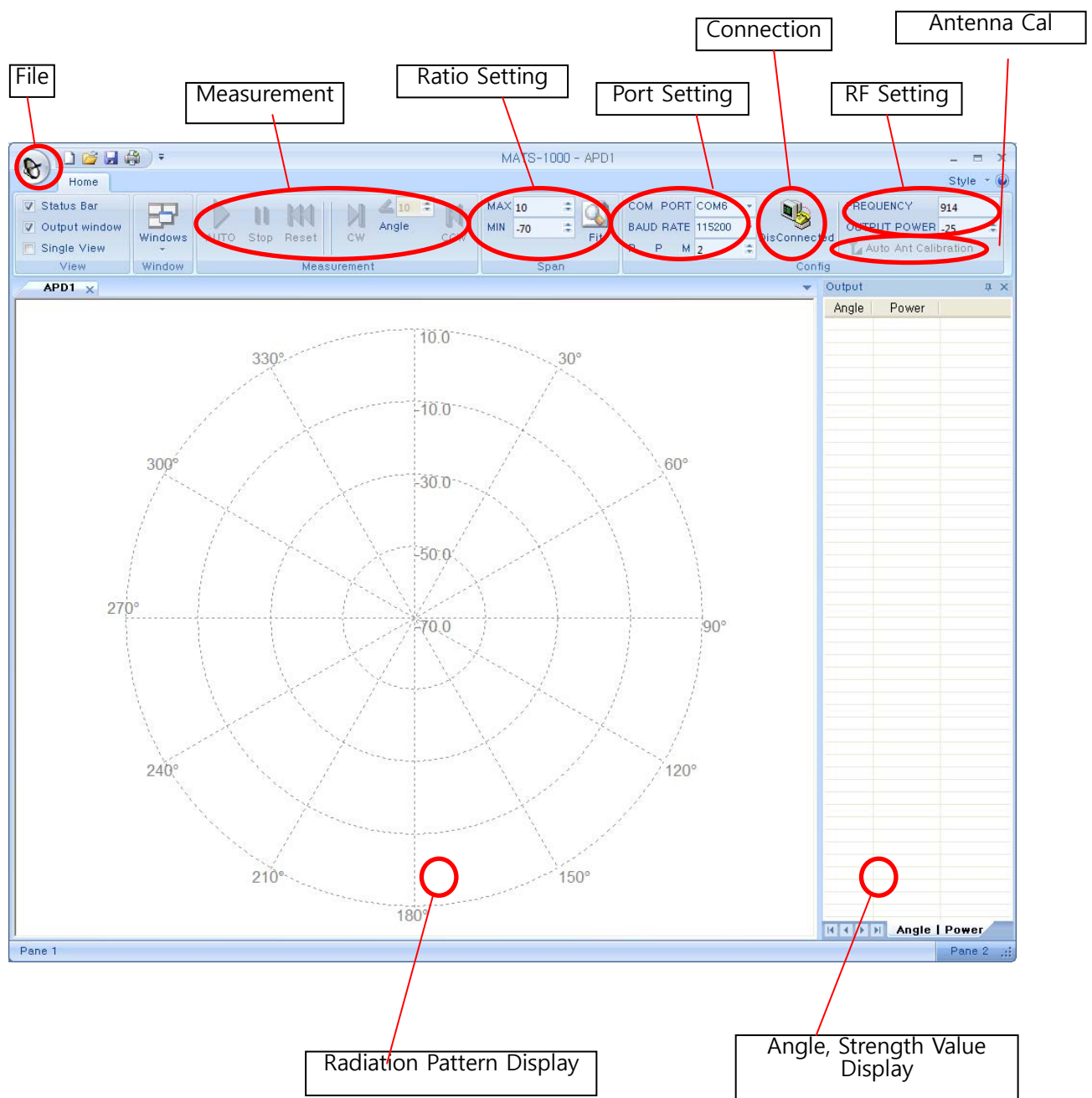
I. How to operate MATS-1000 Window Program, APMS.

1. Please click icon of "APMS".

1) click Start menu on PC, click All Programs and click Man & Tel folder. Then, APMS icon will be appeared and click "APMS" icon to browse below Window menu.



["APMS" icon for MATS-1000 Software program]



2. Quick Start

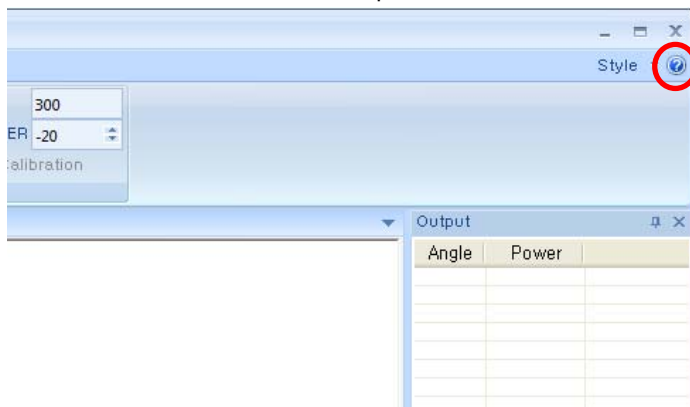
1) Connect with Main Equipment.



- Please use RS232 Cable to connect Main Equipment and Computer's RS232 Port. And please check COM port number.

2) How to check Windows App Program Version.

After running the Windows App Program, please try to find the question mark (?) from right corner of the screen on the top line and click this icon.



Then, below menu will be appeared.



3) Device Setting Window.

- Please set COM port which is connected to Main equipment.
- Baud Rate should be 115200.



[Setting Window Menu]

4) RF Setting.

- typewrite the frequency band which user want to measure.
- the available frequency band is from 300~3000MHz and 5000~6000MHz.
- Output Power Value range is -25~5dBm, and put the desired value.



[RF Setting menu]

5) Connection.

- Click connection button to make a connection. Clicking again will be disconnected.



[Equipment Connected and Disconnected]

* If completed to this stages without error, the measure is ready.

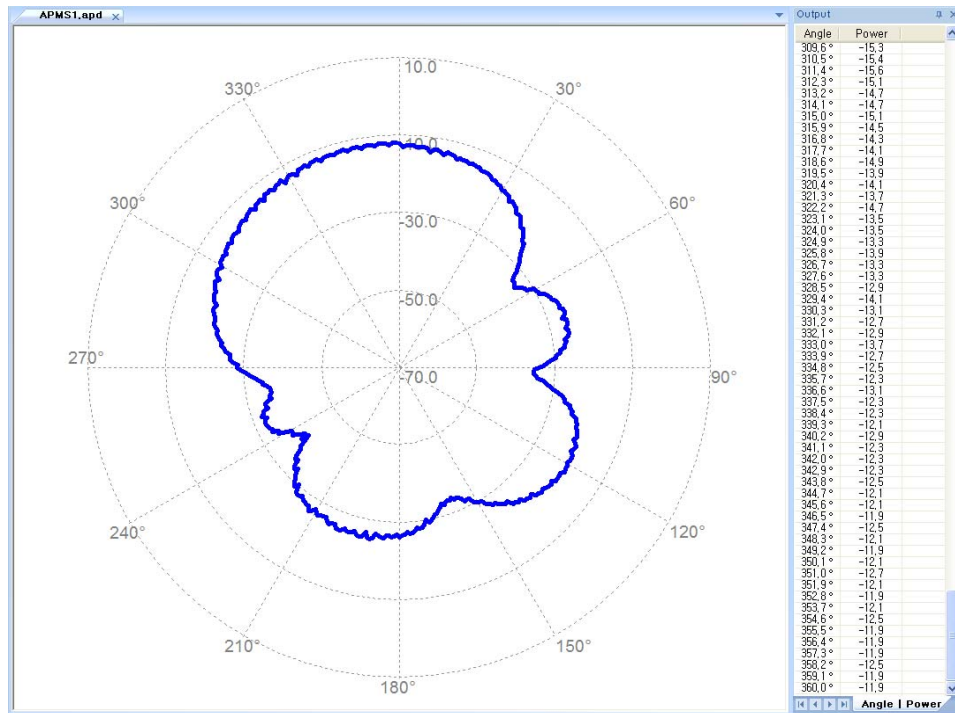
3. Measurement and Control

 Auto Ant Calibration if press "Auto Ant Calibration" button, the equipped Antenna rotate 15° to right & left direction. And seek the maximum received signal.



if press "AUTO" button, measurement started and Angle value and the measured Power Strength is displayed on Window menu.

*** After completing the measurement, please make the system initialized by clicking Reset button.**



If click Reset button, Antenna rotate to the opposite direction from initial rotation direction.

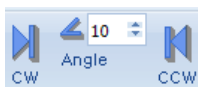


When click Disconnected or Connected button, the value which moved for the measuring is initialized.

Disconnected and Connected button is used when Antenna cable is twisted in the process of Antenna rotation.



If click Stop button, the operation of **Measurement/RESET** is stopped.



Antenna rotates to clockwise direction by the value of Angle, or to counter-clockwise direction.

Data is recorded based upon the input angle value.



If click CW button, Antenna rotates to Clockwise direction and data is measured and recorded up to input value to Angle menu.

***If the measurement completed, the system should be initialized by using reset button.**



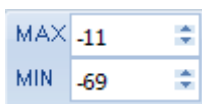
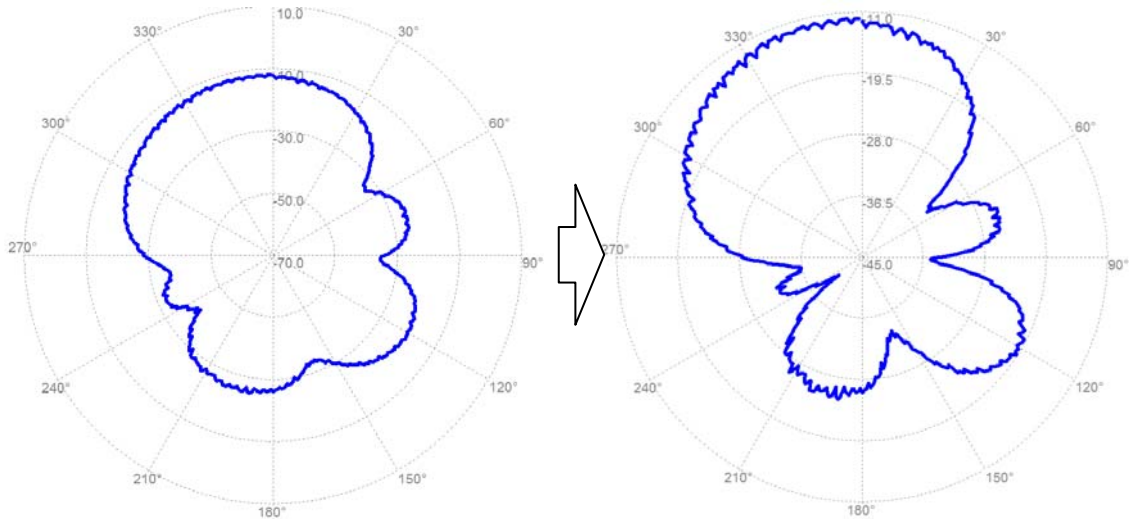
If click CCW button, Antenna rotates to counter-clockwise direction as much as the input value and measure the data.

***If the measurement completed, the system should be initialized by using reset button.**

4. Show Graph Scale Setting, and Automatic Scaling



After the measurement completed, and if the graph scale which shows like below GUI screen do not match with the grid, please click Fit button. Then the graph scale is automatically adjusted as below photos.

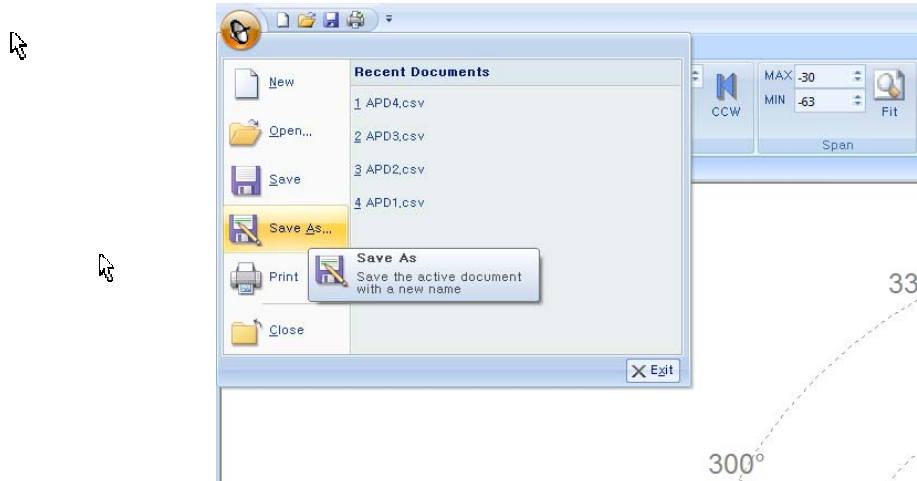


By adjusting Min/Max value, the scale of graph which user wants can be displayed.

5. File Save.

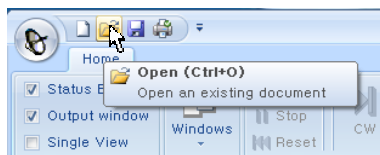


After click File button, user can save the measured data by clicking Save button, or Save As Button.



* The file is saved by CSV format, the file is opened from Window Office Excel.

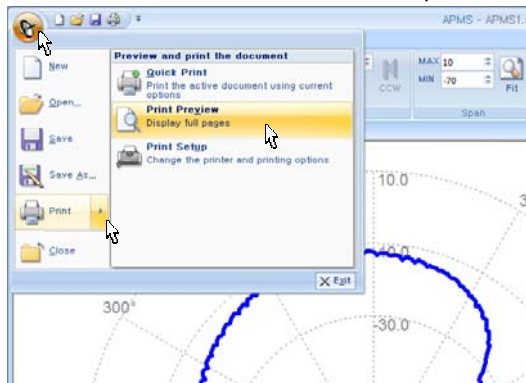
6. File Open



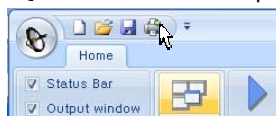
After click Open button, select the desired file and open the file.

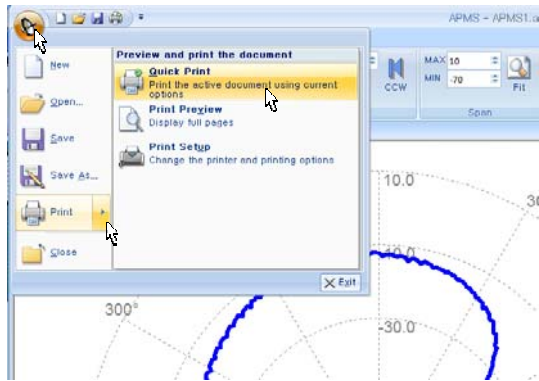
7. Print

1) Print Preview Function : User can preview the contents which will be printed.



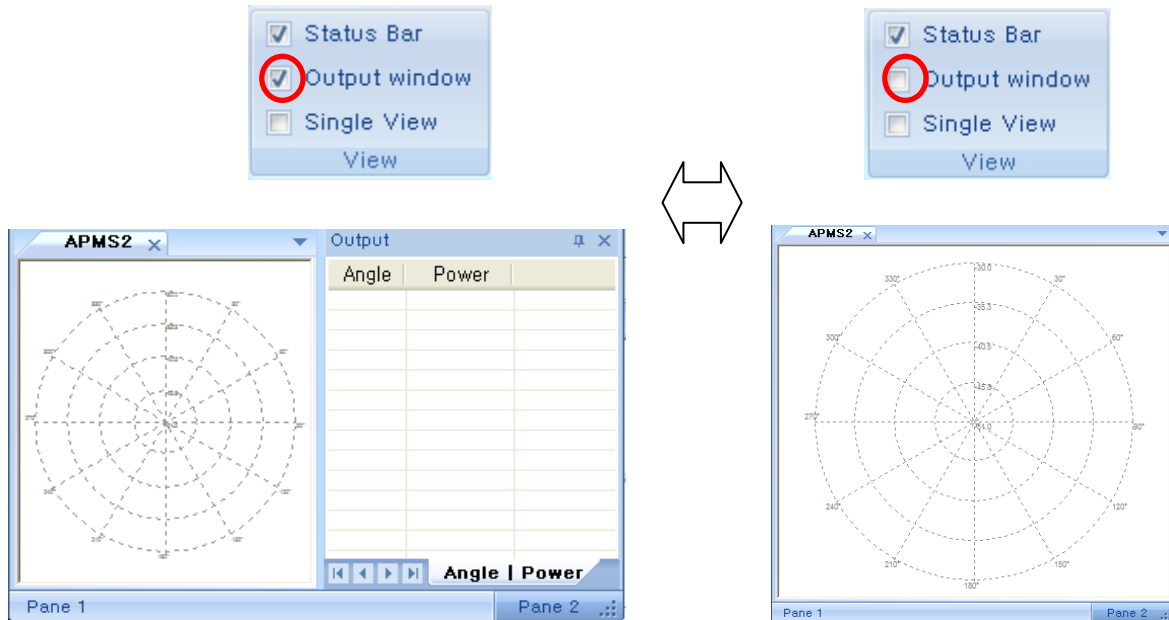
2) Quick Print : the printer prints the graph.





8. Output window Hide, Show

If release "Output Window" from checkbox menu, Output window menu is disappeared. And on the contrary if click "Output Window" from checkbox menu the output menu is displayed again.

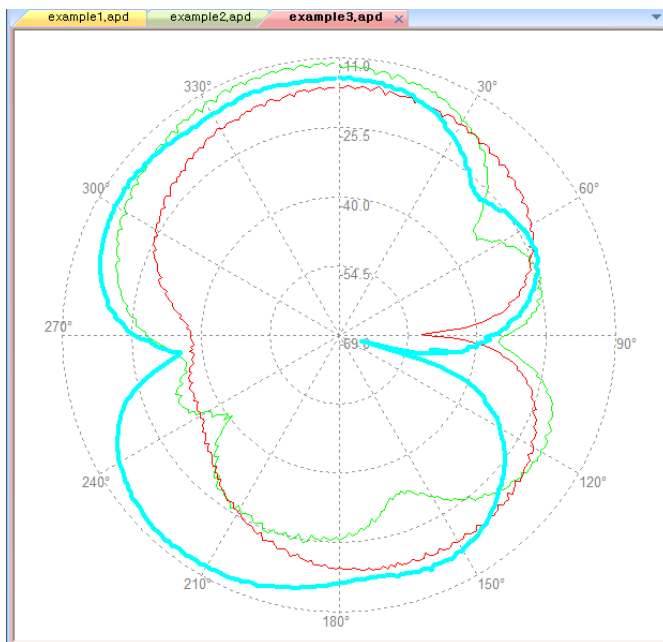


9. View files

1) View comparison of multiple files.



When "Single View" menu released.



All opened files is shown at the same time.

Each graph is represented by a different color.

The graph of the currently selected file is displayed in bold lines than different file's graph.

2) View of only one file



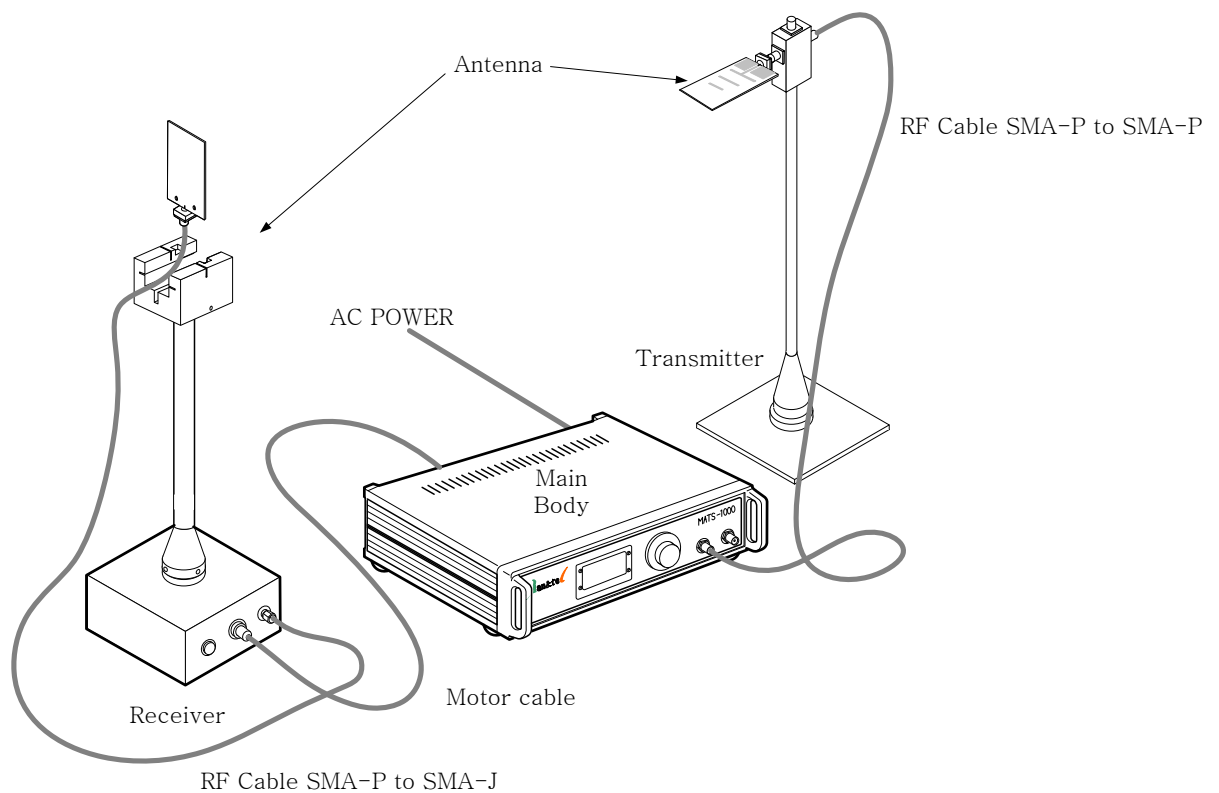
If click "Single View" from checkbox menu, the selected file's graph among the opened files is displayed.

II. MATS-1000 Antenna Installation

** the image of Main equipment was drawn referring to WATS2002 Antenna system., and the Antenna Installation Method is same as WATS-2002 system.*

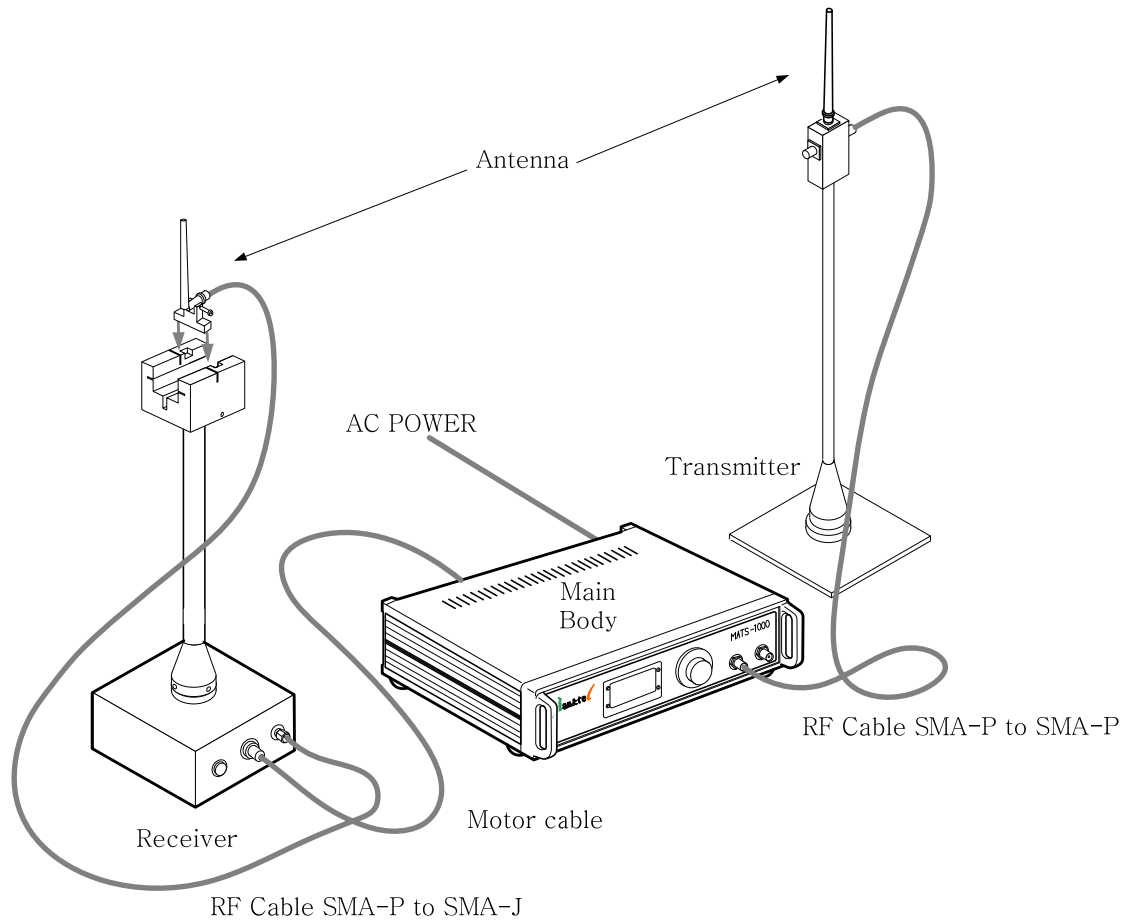
1. Dipole Antenna

1) Installation for E-Plane Dipole Antenna Pattern measurement.



[Half wavelength Dipole Antenna Pattern measuring system configuration]

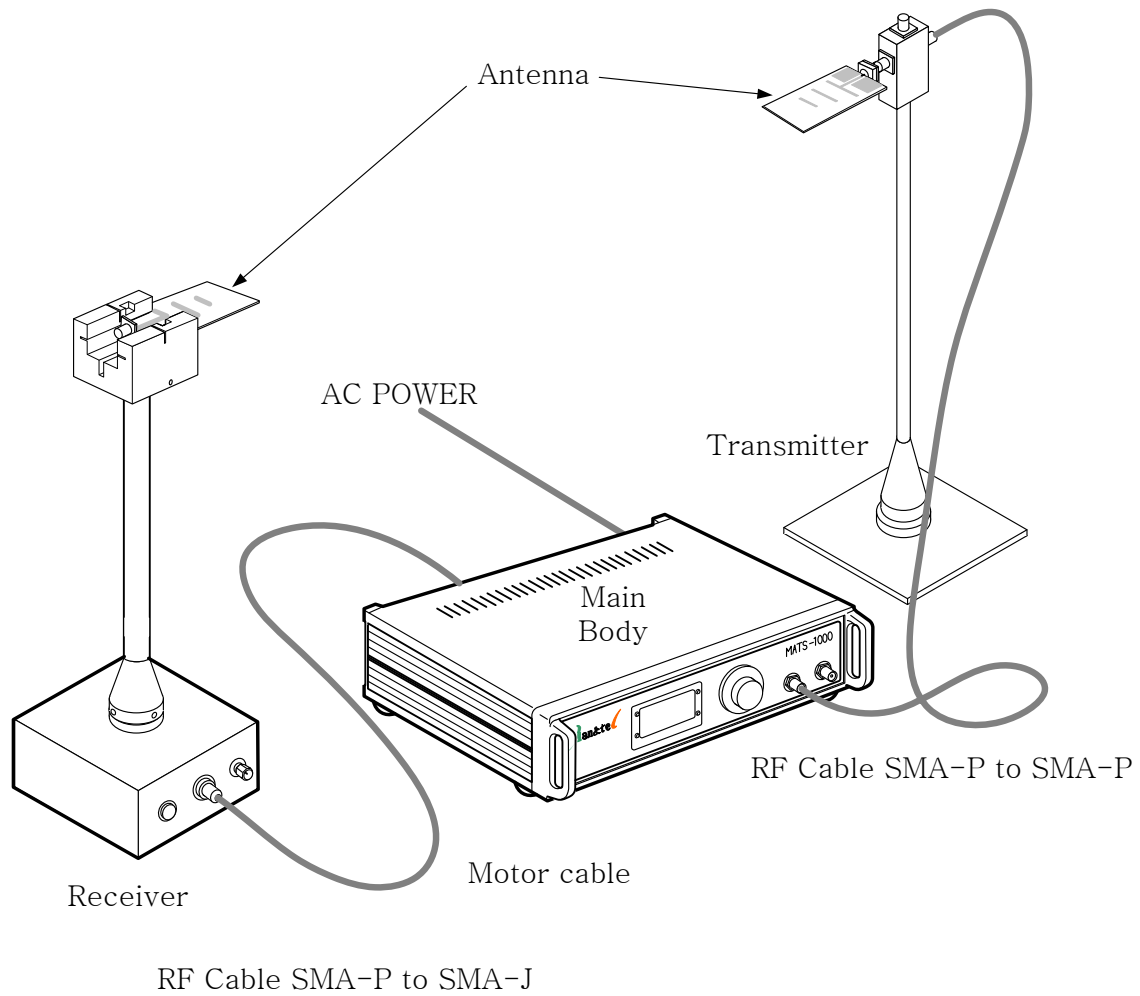
2) Installation for H-Plane Dipole Antenna Pattern measurement.



[H-Plane Dipole Antenna Pattern measuring system configuration]

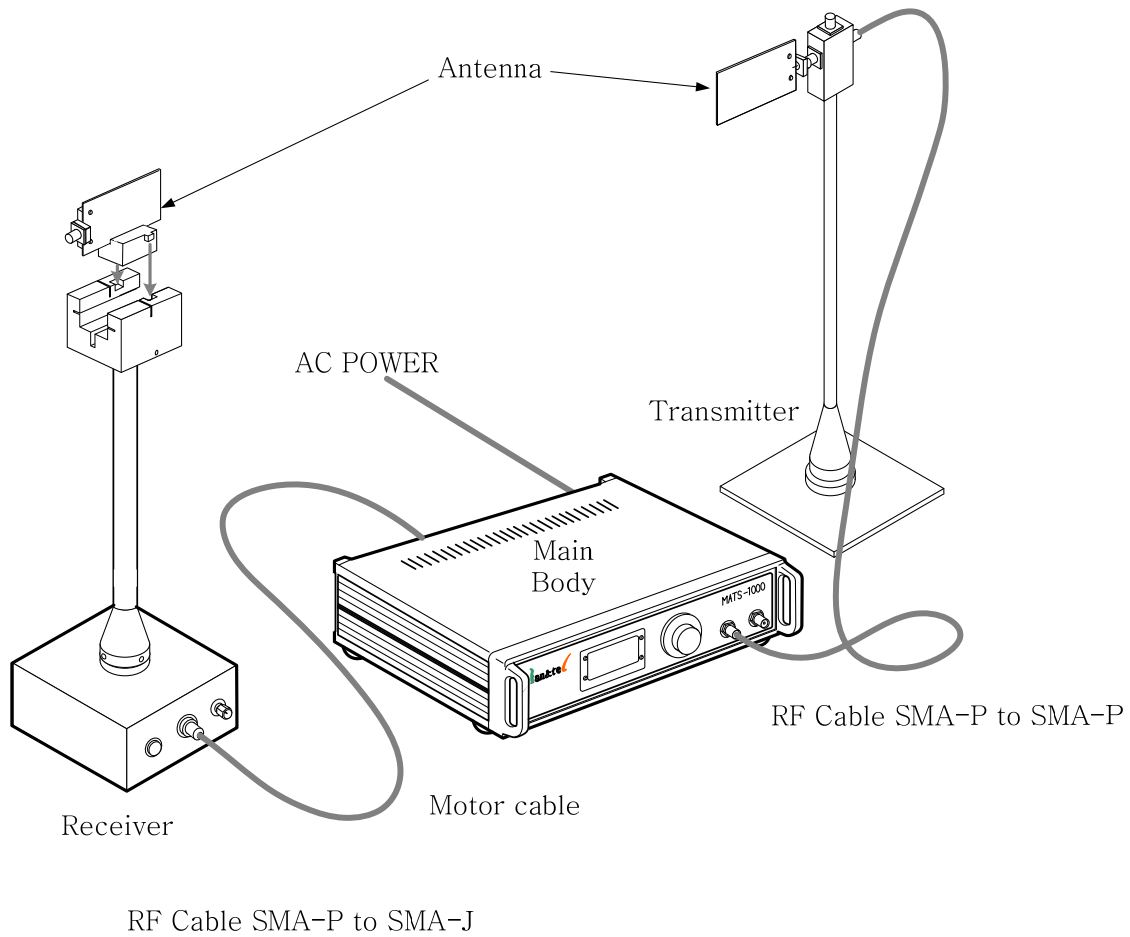
2. Yagi Antenna

1) Installation for E-Plane Yagi Antenna Pattern Measurement.



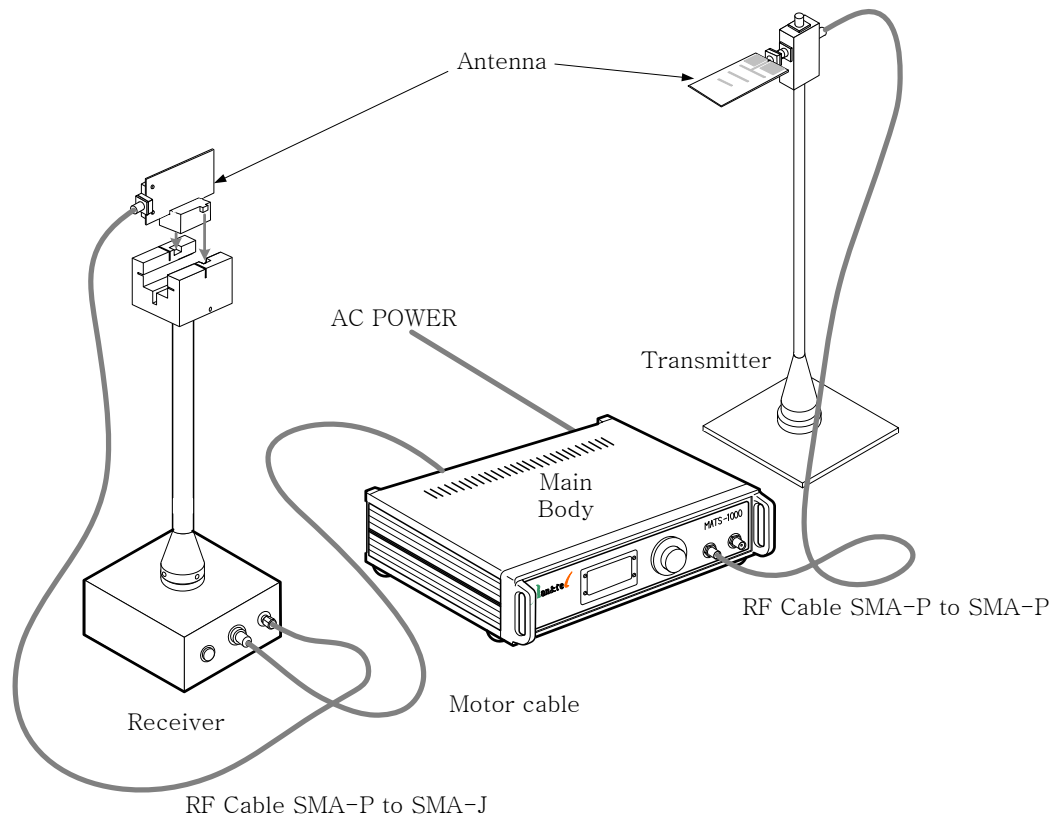
[Yagi Antenna Pattern measuring system configuration]

2) Installation for H-Plane Yagi Antenna Pattern measurement.



[H-Plane Yagi Antenna Pattern measuring system configuration]

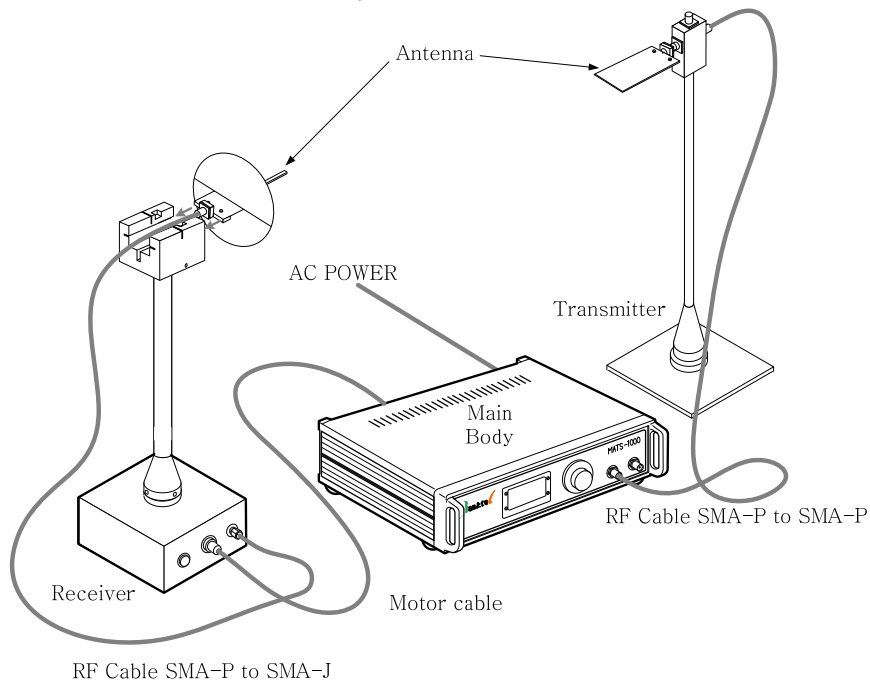
3) Antenna Installation in a Horizontal and vertical mode.



[Pattern measuring system configuration for Horizontal and vertical Antenna Installation mode]

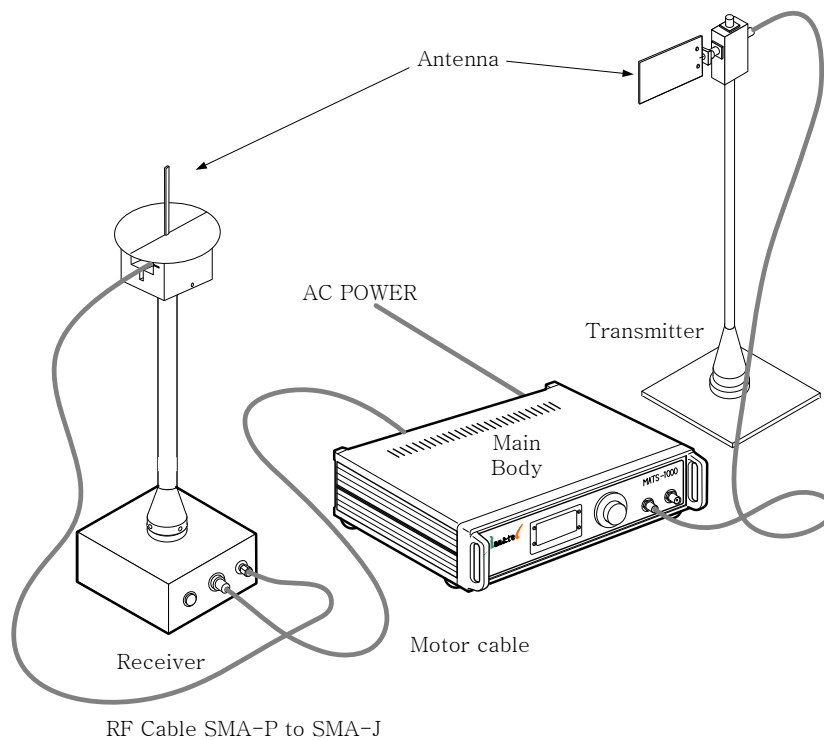
3. Monopole Antenna

1) Installation for E-Plane Monopole Antenna Pattern Measurement.



[Monopole Antenna Pattern Measuring System Configuration]

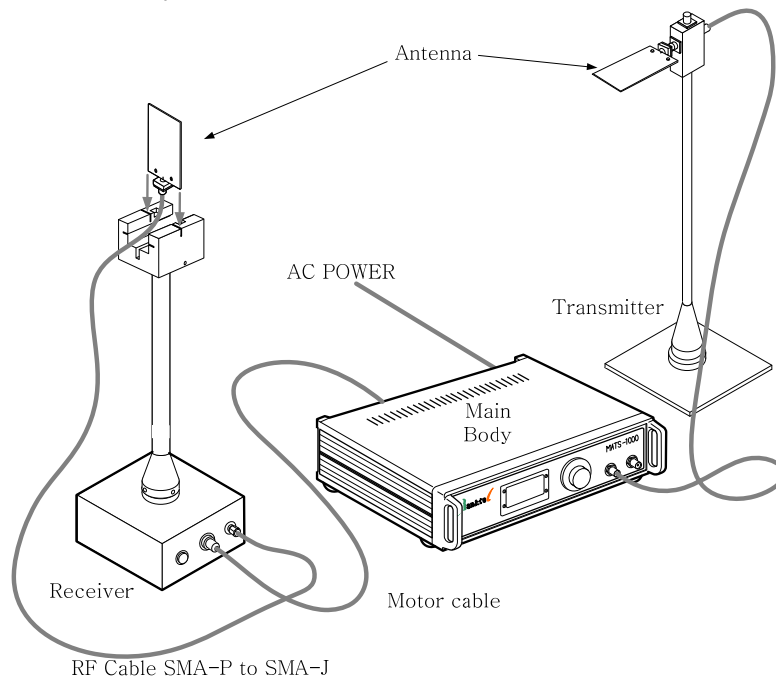
2) Installation for H-Plane Monopole Antenna Pattern Measurement.



[H-Plane Monopole Antenna measuring system configuration]

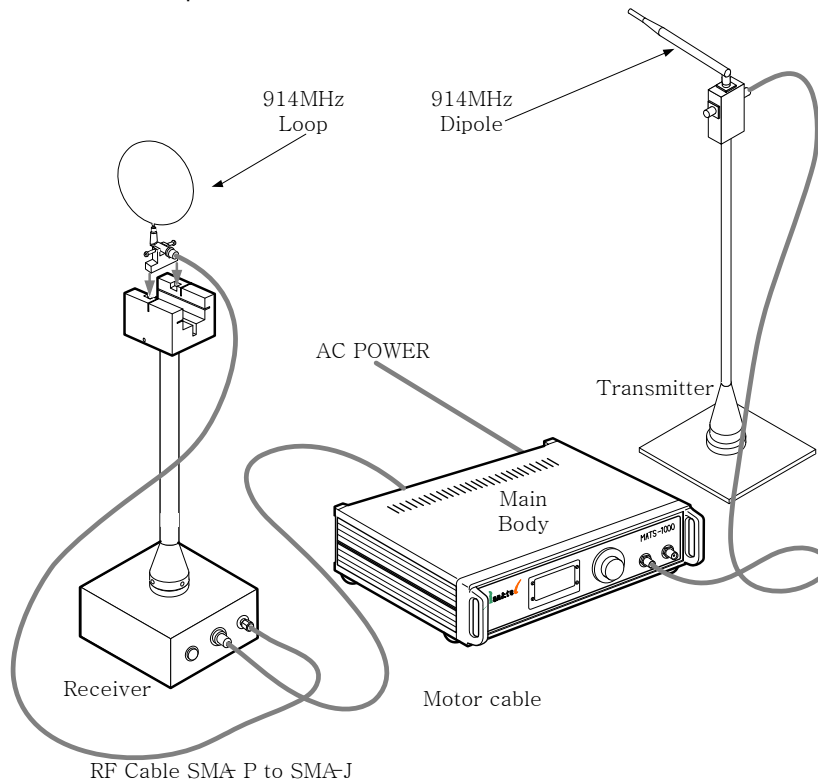
4. Loop Antenna

1) Installation for E-Plane Loop Antenna Pattern Measurement.



[PCB type, Loop Antenna Pattern measuring system configuration]

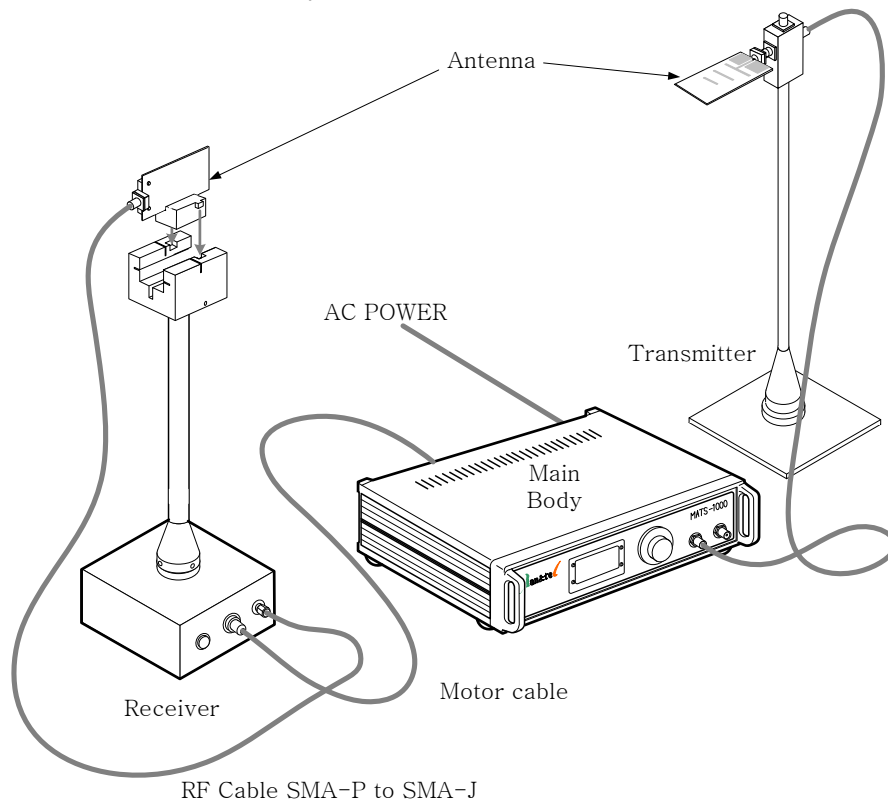
2) Installation for H-Plane Loop Antenna Pattern Measurement.



[H(x,y) Plane Pattern measuring system configuration]

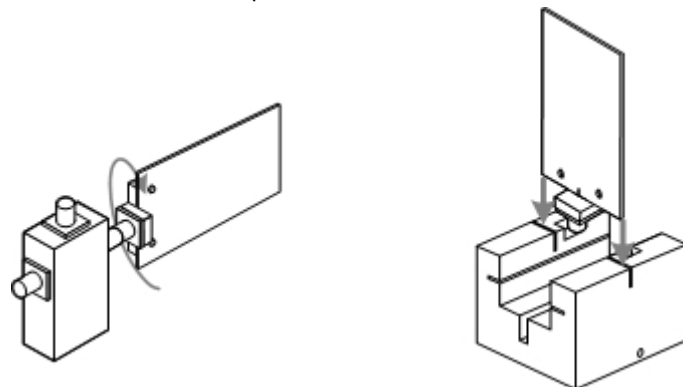
4. Ceramic Chip Antenna

1) Installation for xz-Plane Ceramic Chip Antenna Pattern measurement.



[xz-Plane Ceramic Chip Antenna Pattern measuring system configuration]

2) Installation for xy-Plane(1) Ceramic Chip Antenna Pattern measurement.

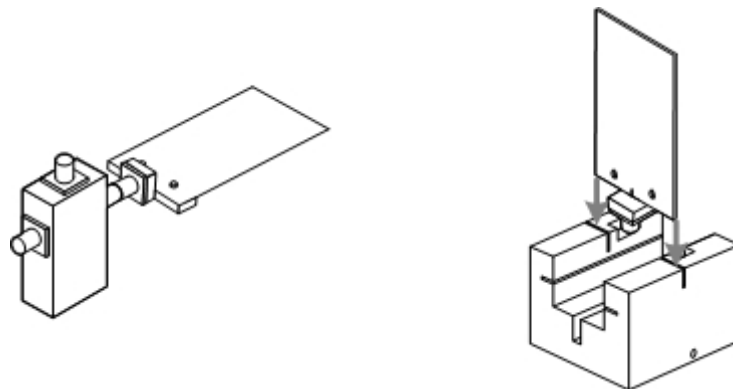


a) Transmitter Antenna

b) Receiver Antenna

[xy-Plane(1) measuring system configuration]

3) Installation for xy-Plane(2) Ceramic Chip Antenna Pattern measurement.



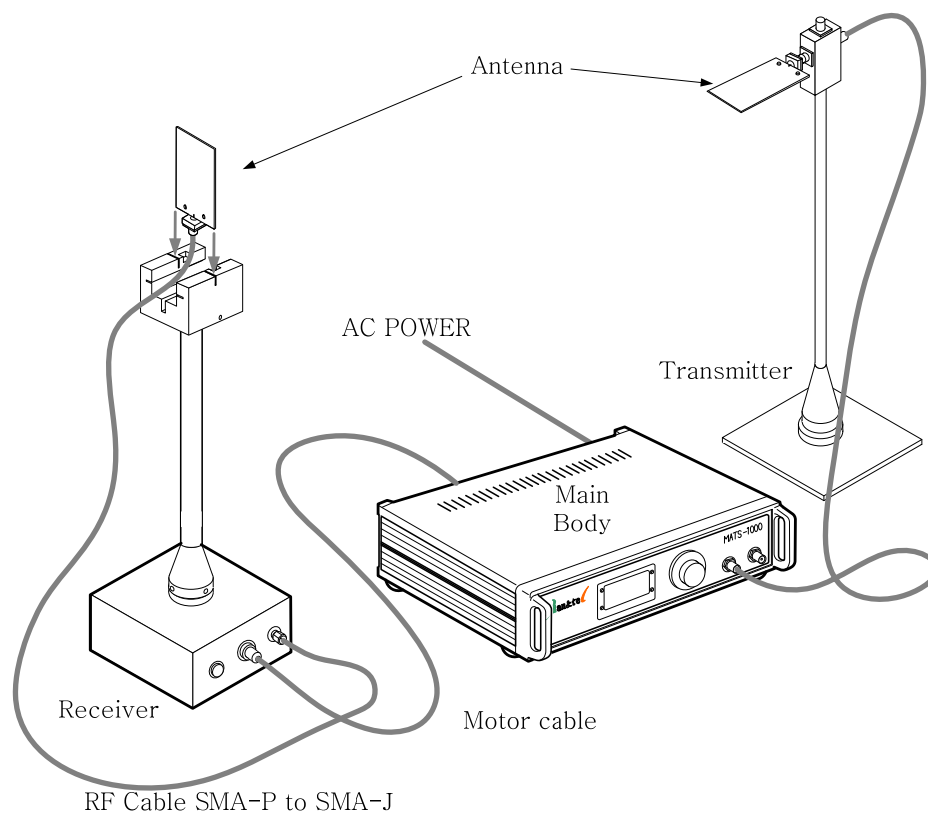
a) Transmitter Antenna

b) Receiver Antenna

[xy-Plane(2) measuring system configuration]

5. Inverted F Antenna

1) Installation for Inverted F Antenna Pattern measurement.

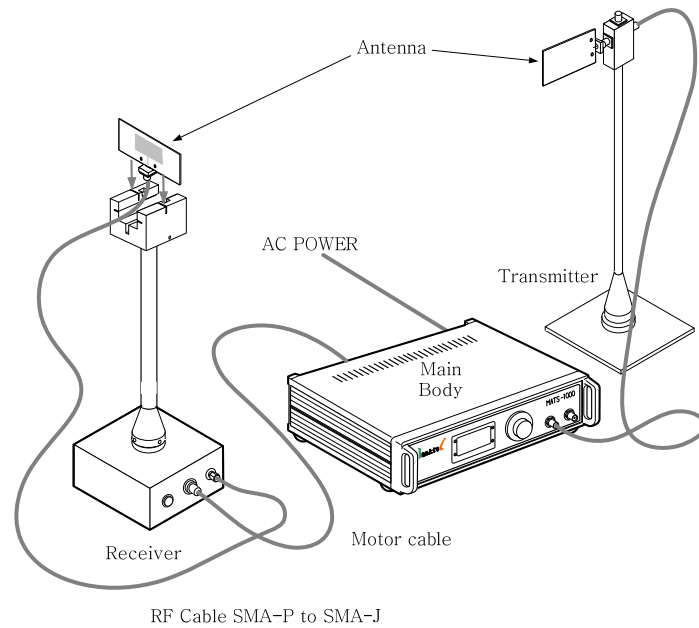


RF Cable SMA-P to SMA-J

[Inverted F Antenna Pattern system configuration]

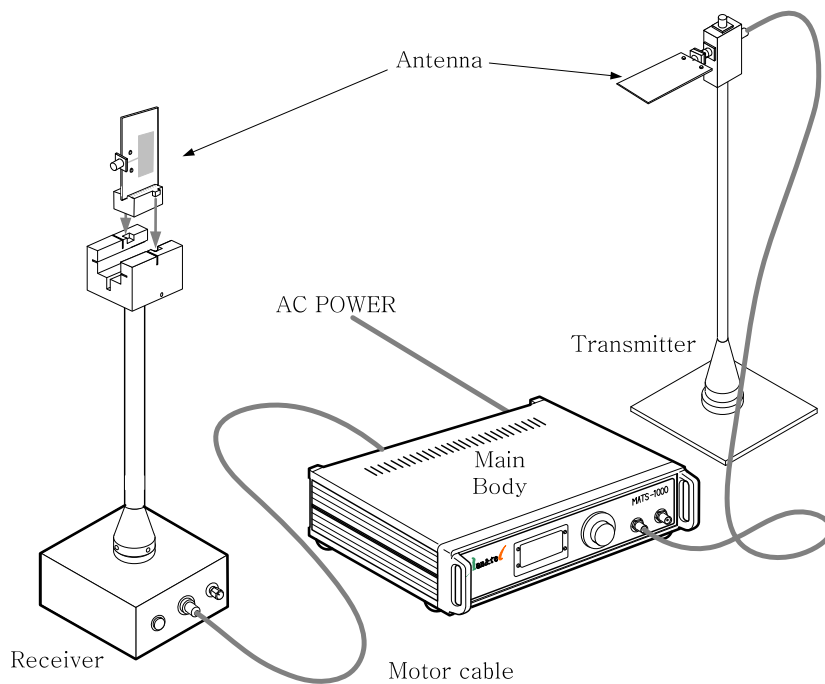
6. Patch Antenna

1) Installation for H-Plane Patch Antenna Pattern measurement.



[H-Plane Patch Antenna Pattern measuring system configuration]

2) Installation for E-Plane Patch Antenna Pattern measurement

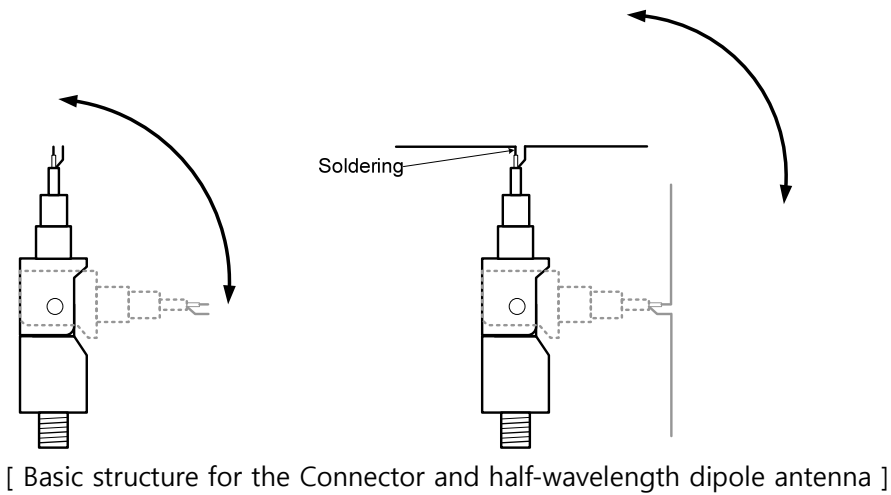


RF Cable SMA-P to SMA-J

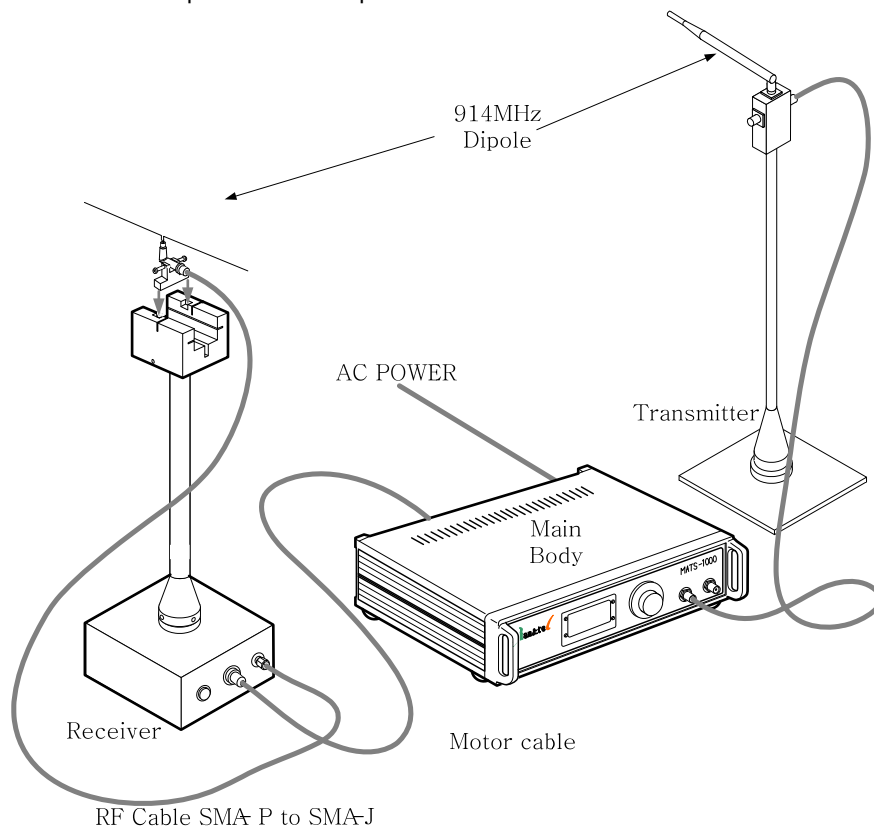
[E-Plane Patch Antenna Pattern measuring system configuration]

7. Dipole and Yagi Antenna for manufacturing practice

7-1 Dipole Antenna

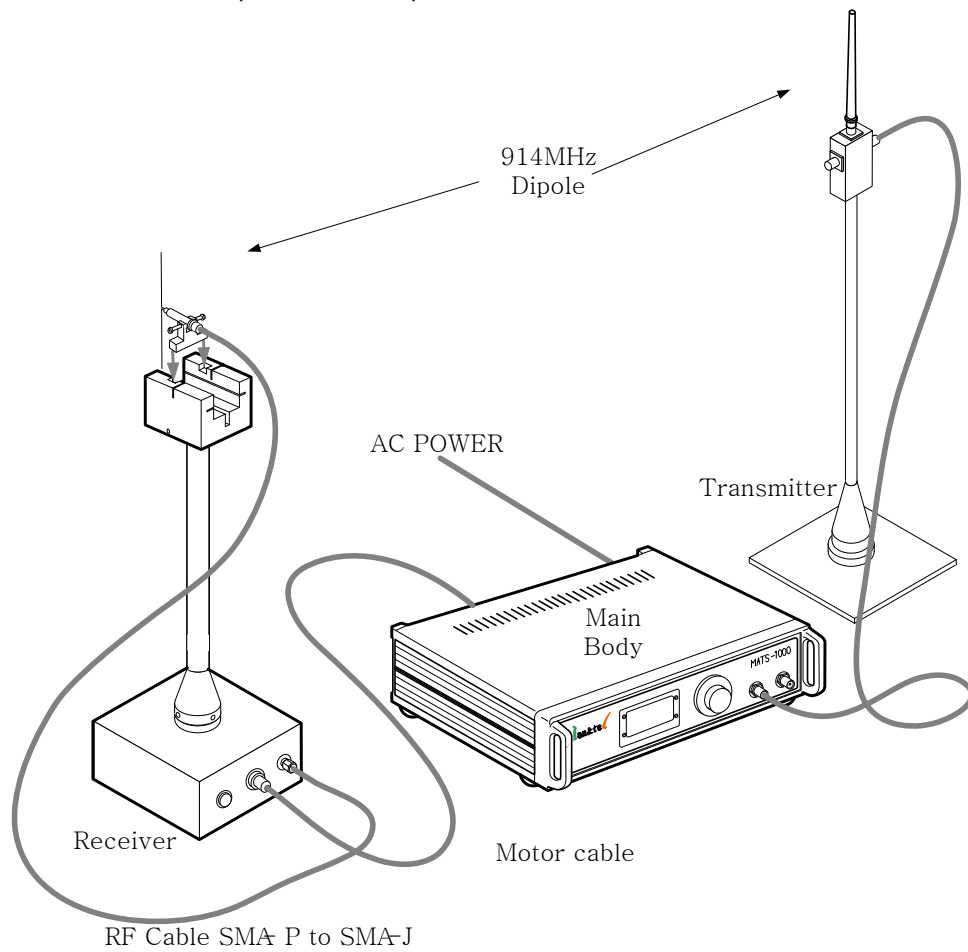


1) Installation for E-Plane Dipole Antenna pattern measurement.



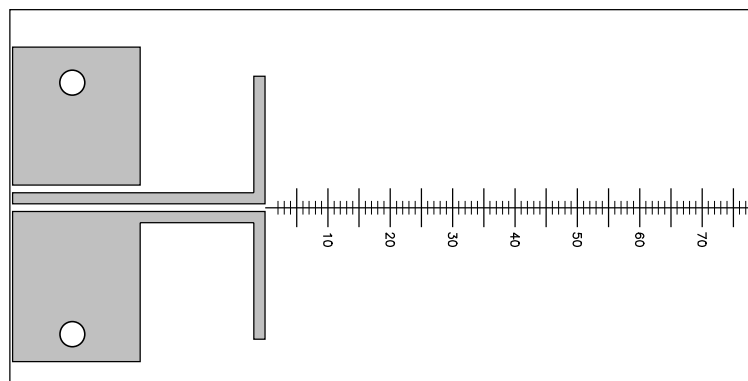
[For manufacturing practice, E-Plane Dipole Antenna pattern measuring system configuration]

2) Installation for H-Plane Dipole Antenna pattern measurement.

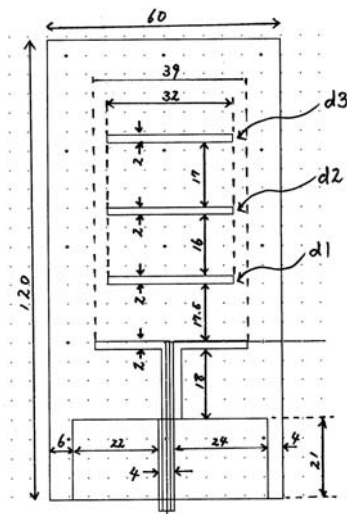


[For manufacturing practice, H-Plane Dipole Antenna Pattern measuring system configuration]

7-2 Yagi Antenna for manufacturing practice.

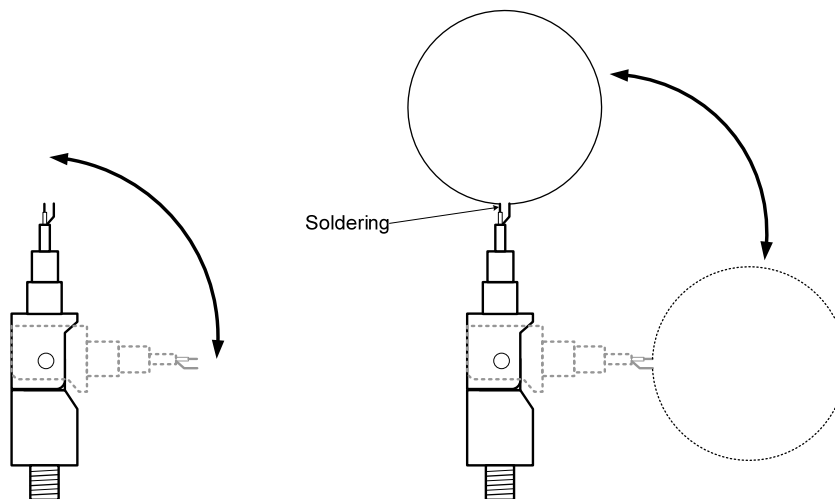


[Basic design structure for Yagi Antenna Substrate]

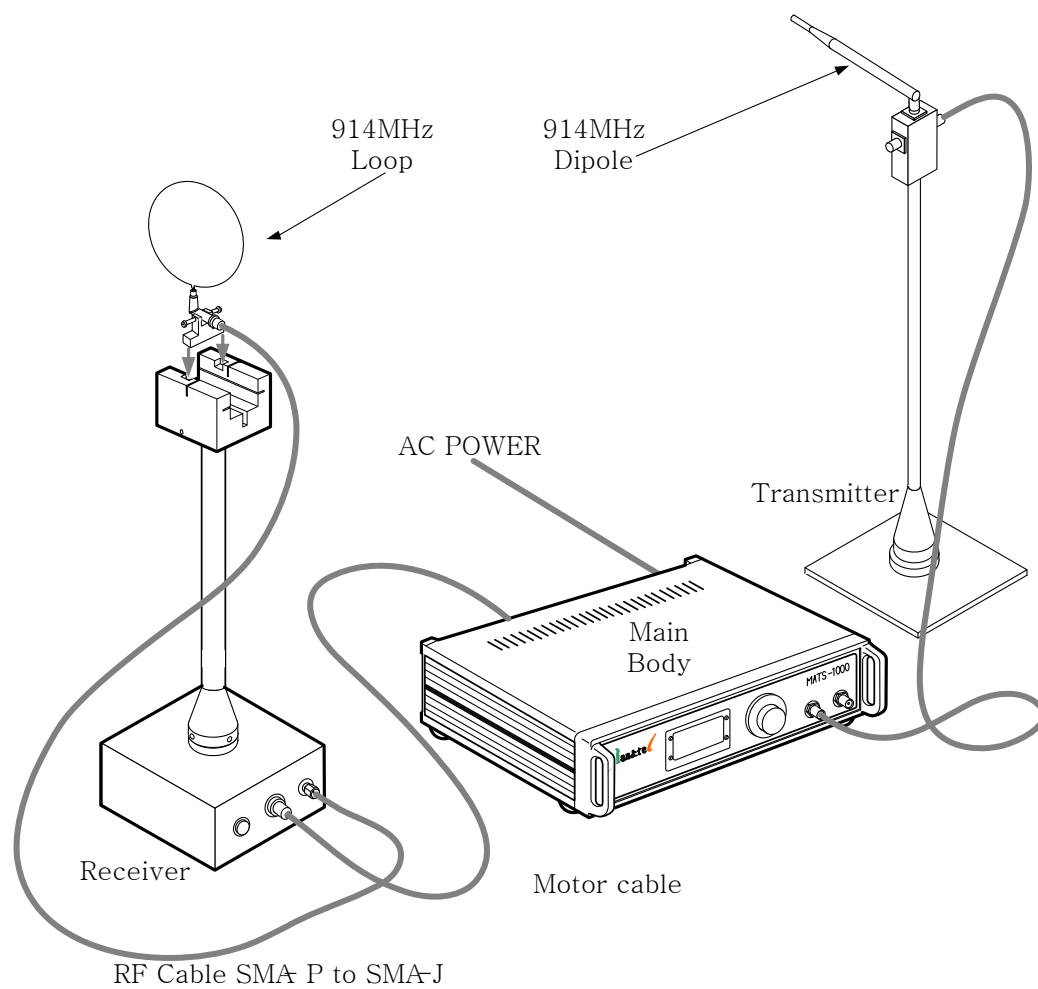


*. Here, d1, d2,d3 represent the induction machine. The unit is mm.
 [Drawing for manufacturing Yagi Antenna]

8. Loop Antenna for manufacturing practice.



[Connector for manufacturing Loop Antenna]



[H(x,y)-Plane Loop Antenna pattern measuring system configuration]