NoiseKen

INSTRUCTION MANUAL

TEM horn antenna

MODEL THA-380M60G

NOISE LABORATORY CO., LTD.

Edition 1.01
AEY00105-00E-0

NOTICE

- The contents of this instruction manual (the “Manual”) are subject to change without prior notice.

- No part of the Manual may be reproduced or distributed, in any form or by any means, without the authorization of Noise Laboratory Co., Ltd. (the “Company”).

- The contents of the Manual have been thoroughly examined. However, if you find any problems, misprints, or missing information, please feel free to contact our sales agent who you purchased our product from.

- The Company assumes no responsibility for any loss or damage resulting from improper usage, failure to follow the Manual, or any repair or modifications of this product undertaken by a third party other than the Company or the agent authorized by the Company.

- The Company assumes no responsibility for any loss or damage resulting from remodeling or conversion solely undertaken by the user.

- Please note that the Company cannot be held responsible for any consequences arising from the use of this product.

1. IMPORTANT SAFETY PRECAUTIONS

The "Important Safety Precautions" explain rules that must be followed to prevent any risk of harm or injury to the user of the instrument or to other people.

- **The instrument may only be used by trained EMC technicians (electrical technicians)**
  Failure to follow this rule risks death or serious injury.

- **The instrument may not be used by people fitted with electronic medical devices such as pacemakers and such people may not enter the testing site while the instrument is operating**
  The medical device may malfunction since the instrument emits more electromagnetic wave than the regulated value.

- **To prevent people from being exposed to radio waves, use the product according to the protection guidelines defined by ICNIRP.**
  Do not hold the product directly with your hands.

- **Do not use the instrument for any purposes other than the EMC testing purposes described in this instruction manual**.
  The instrument is not supposed to be used in manufacturing process of a factory. Take an appropriate measure, such as installing the product in anechoic chamber or shielded room, against electromagnetic noise.

- **The instrument may not be used in a location where fire is prohibited or there is a risk of explosion**

Before setting up the test site, connecting the equipment, or starting testing, please read the Chapter entitled "Basic Safety Precautions for the Safe Use of the Simulator" which contains additional safety advice.

※When using the product, follow the regulations on radio waves in your country/area.

2. APPLICATION FORM FOR INSTRUCTION MANUAL

To: Noise Laboratory Co., Ltd. via sales agent

We place an order for an instruction manual.

Model Name	THA-380M60G
Serial No.	

Applicant Address _____

_____

_____

_____

Company Name _____

Department _____

Contact Person _____

Phone No. _____

FAX No. _____

Cut Line

Cut off this page "**PURCHASE ORDER FOR INSTRUCTION MANUAL**" from this volume and **keep it for future use with care.**

When an INSTRUCTION MANUAL is required, fill in the above Application Form and mail or fax it to your nearest sales agent of Noise Laboratory or Noise Laboratory.

Cut Line

The address, company name, individual's name, and other personal information (henceforth referred to as "personal information") entered in the application form will only be used for the purpose of sending the Instruction Manual and will not be shown or passed to any third party without a valid reason.

Noise Laboratory Co., Ltd. will manage customer's personal information in an appropriate manner.

3. TABLE OF CONTENTS

4. INTRODUCTION

We thank you very much for your purchase of the TEM horn antenna Model: THA-380M60G. It is recommended that the contents of this manual be thoroughly understood and used as a ready reference for operation.

- This Instruction Manual was prepared so that any person who can observe the prescribed instruction method and operating precautions may safely handle and fully utilize this THA-380M60G.

- Keep this Instruction Manual by your side or other proper location so that it may be readily available when using the THA-380M60G.

- The product accepts the following maximum input power in each of the frequency ranges shown below.

  380 MHz ～ 750 MHz・・・・ 180 W MAX
  750 MHz ～ 1.7 GHz・・・・ 100 W MAX
  1.7 GHz ～ 6.0 GHz・・・・ 65 W MAX

§Features

① : THA-380M60G is conforming to IEC 61000-4-39 Ed.1.

② : Wide frequency range from 380 MHz to 6.0 GHz .

③ : It has a wide electric field uniform property, and the maximum point of the near electric field distribution at each frequency is at the center.

- This product has been commercialized through joint research with the National Institute of Information and Communications Technology (NICT).

  This product uses the intellectual property rights of NICT.

5. BASIC SAFETY PRECAUTIONS

Safety Warning Signs and Their Meanings

Indicates Warning.
Failure to follow this safety information can lead to a **potentially hazardous situation** resulting in **death** or **serious injury**.

Indicates Caution.
Failure to follow this safety information can lead to a **potentially hazardous situation** resulting in a **minor injury** or **moderate damage**.

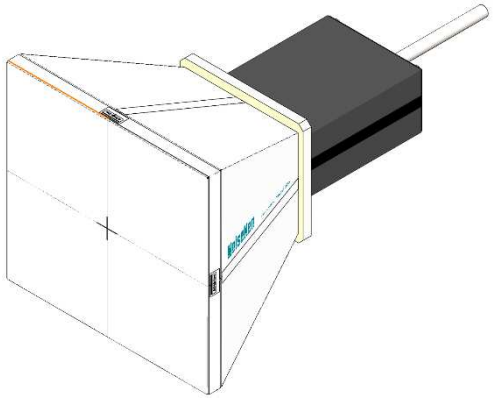
Basic Safety Precautions

1. Do not use this unit in areas where open flames are prohibited or areas having an explosive atmosphere. Electrical discharges can occur during use, which can cause these atmospheres to ignite. (Precaution regarding personal safety and environment)
2. Do not allow people with pacemakers or other electronic medical devices to operate this unit and to enter the testing area while this unit is operating. Failure to observe this can result in malfunctions in the electronic medical device and endanger personal safety. (Precaution regarding personal safety and operation)
3. To prevent people from being exposed to radio waves, use the product according to the protection guidelines defined by ICNIRP. Do not hold the product directly with your hands. (Precaution regarding personal safety, operation, and environment)
4. Noise Laboratory and our affiliated dealers are not liable for any injuries or equipment damage due to improper operation of this unit or for any resulting incidental damages. (Precaution regarding personal safety, operation, environment, and connection)
5. When operating this unit, do not leave the equipment unmonitored. Before leaving this unit, be sure to turn off test equipment power and terminate testing.
   If you fail to observe this, you could endanger people in the surrounding area and testing equipment. (Precaution regarding personal safety, operation, and environment)

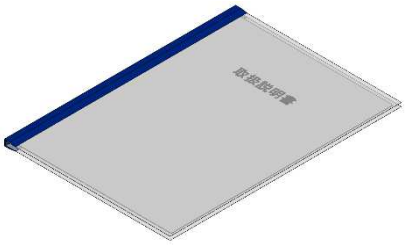
6. Do not use or store in environments with extremely hot or cold temperatures. If you cannot maintain a suitable operating environment (temperature: 15°C to 35°C, humidity: 25% to 75%), the unit can be damaged and result in impaired performance. (Precaution regarding environment)
7. In the event that condensation forms, be sure that the unit is fully dried before starting operation. Failure to observe this can damage the unit and result in impaired performance. (Precaution regarding environment)

8. Avoid using the unit in locations with high humidity or exposed to large amounts of dust. Failure to observe this can damage the unit and result in impaired performance. (Precaution regarding environment)
9. Any required repairs, maintenance, and internal adjustment for this unit must be performed only by service engineers authorized by Noise Laboratory. Failure to observe this can result in impaired performance.
10. Do not wipe the unit with thinner, alcohol, or other solvents. If the unit is dirty, wipe with a cloth dipped in neutral detergent after it is fully wrung out. Wiping with a solvent can damage the unit surface.
11. Do not give a strong impact or force because it may be deformed or damaged.
12. Ensure that the product is used according to the specifications. Otherwise, the product may burn. Do not use the product for longer time than specified. Do not input power higher than the maximum input power specified.

6. PRODUCT COMPONENTS



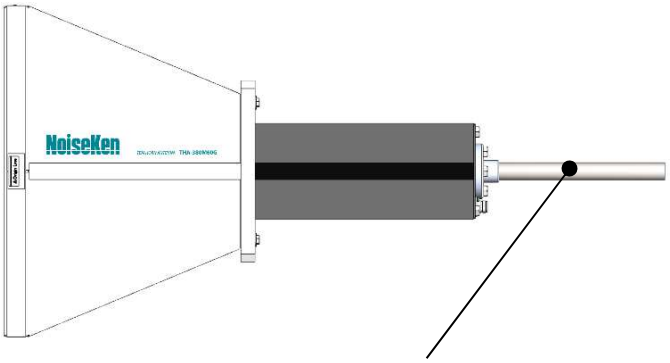
Main Unit (THA-380M60G)



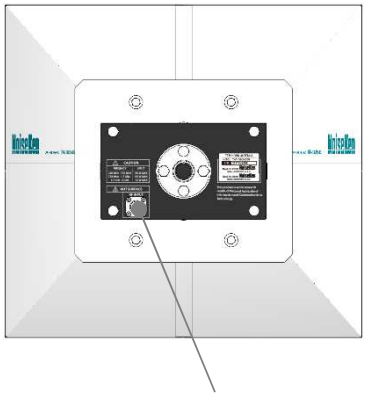
Instruction Manual (this document)

7. APPEARANCE AND FUNCTION OF EACH PART

7-1. Appearance of the Main Unit

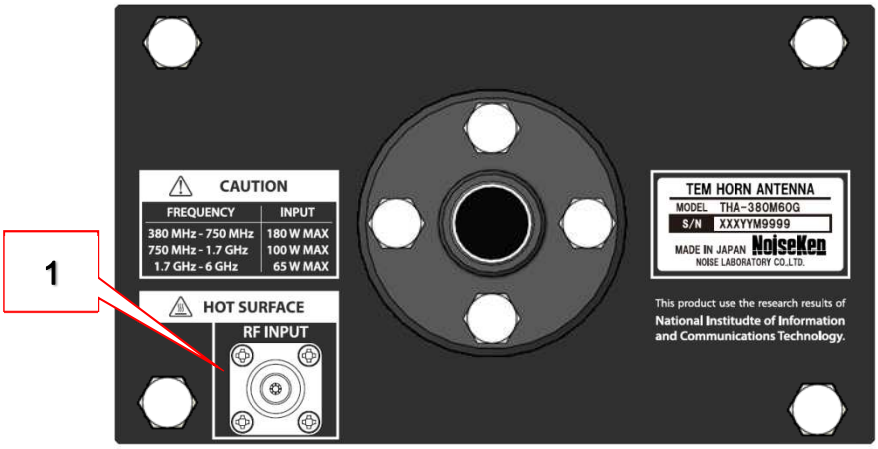


φ22 Antenna support pole



Antenna rear panel

7-2. Antenna rear panel



1. **INPUT Connector【RF INPUT】**
   Use by connecting a high frequency power amplifier to the RF INPUT.
   Input connector is N connector (female).
   Power can be input up to 180 W from 380 MHz to less than 750 MHz, 100 W from 750 MHz to less than 1.7 GHz, and 65 W from 1.7 GHz to 6 GHz.

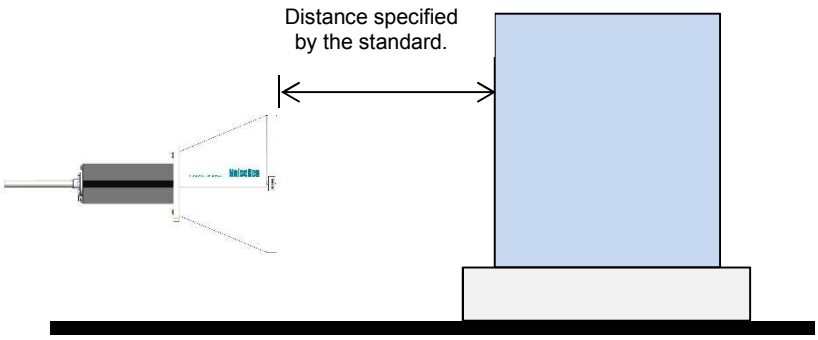
⚠ Ensure that the product is used according to the specifications. Otherwise, the product may burn or the characteristics of it may be affected.

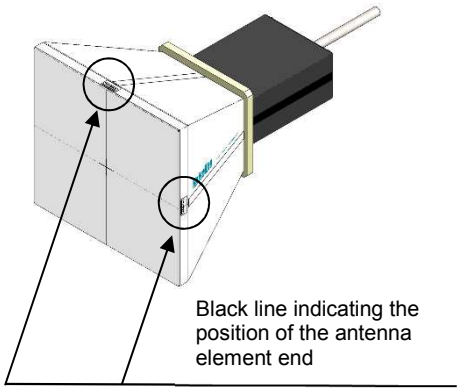
⚠ If a large amount of power is continuously applied for a long time, the input connector may generate heat.
Pay extra care not to suffer a burn due to high temperatures.

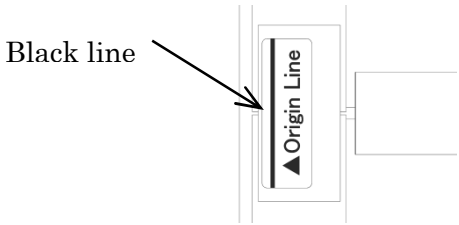
8. OPERATION

Connect the coaxial cable to the RF INPUT (N connector) of this product.
The center of the cross in front of the TEM horn antenna is the maximum point of the near electric field distribution.
Refer to 9-3. Electric field distribution characteristics and check the uniform area of 0 to -4 dB before use.
(The second line from the inside of the electric field distribution map is the -4 dB line.)

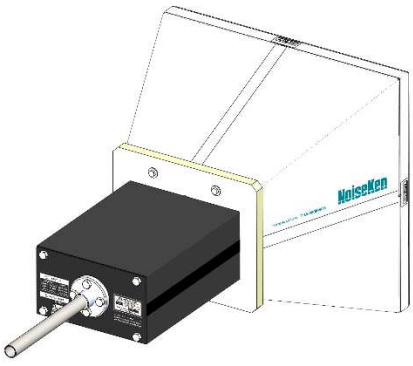
According to the IEC61000-4-39 standard, the TEM horn antenna is tested from the end of the antenna element to the surface of the EUT at the distance specified by the standard.
The end of the antenna element of this product is located at the black line on the left, right, and top of the front cover. Use the distance from that line to the EUT surface as specified by the standard.
Also, for vertical polarization and horizontal polarization, rotate the antenna as shown below.



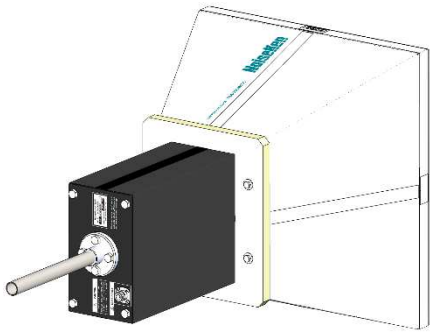




Vertical polarization

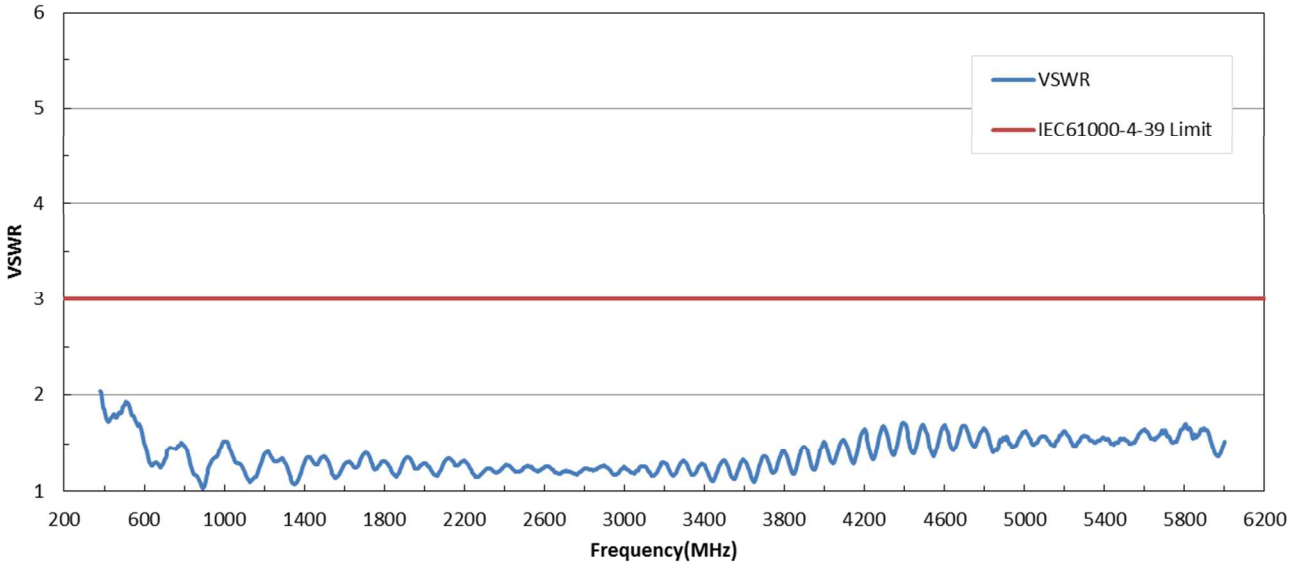


Horizontal polarization

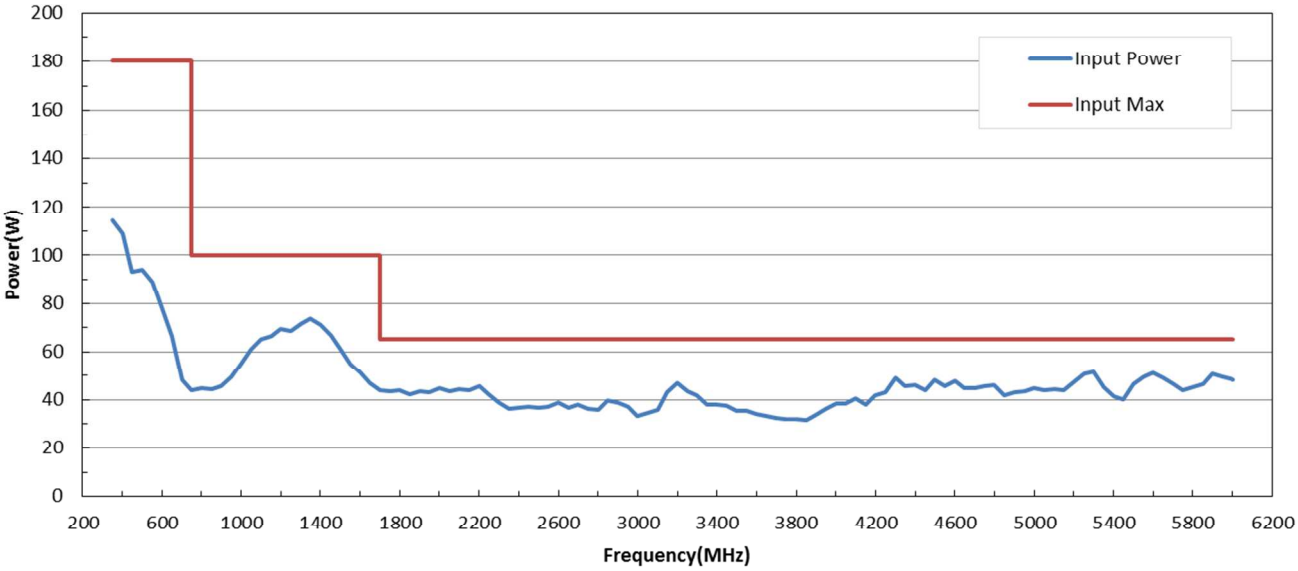


9. CHARACTERISTIC DATA

9-1. VSWR (typ.)



9-2. Input Power for 300V/m at 0.1m (typ.)

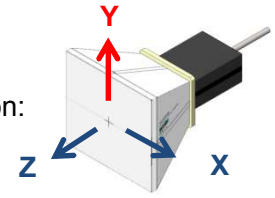


9-3. Electric field distribution characteristics at 0.1m (typical)

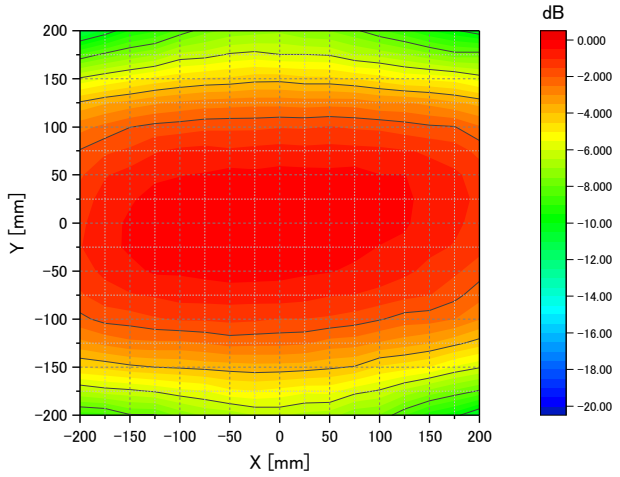
It is an electric field distribution map of each frequency at a distance of 0.1 m from the antenna element.

The electric field distribution map in the figure is for vertically polarization. The contour lines in the figure are drawn every -2dB.

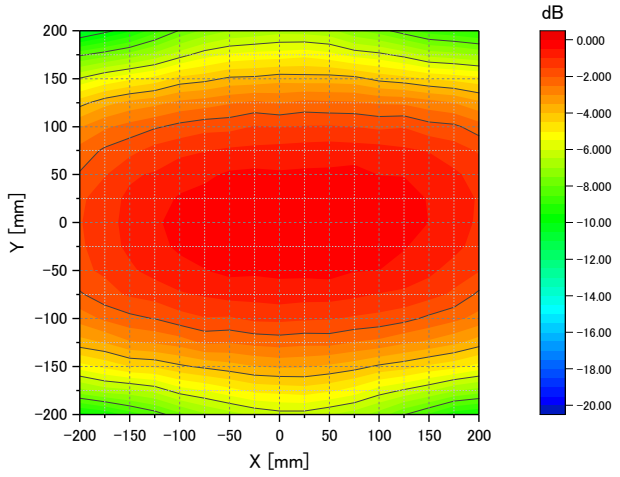
Electric field direction:



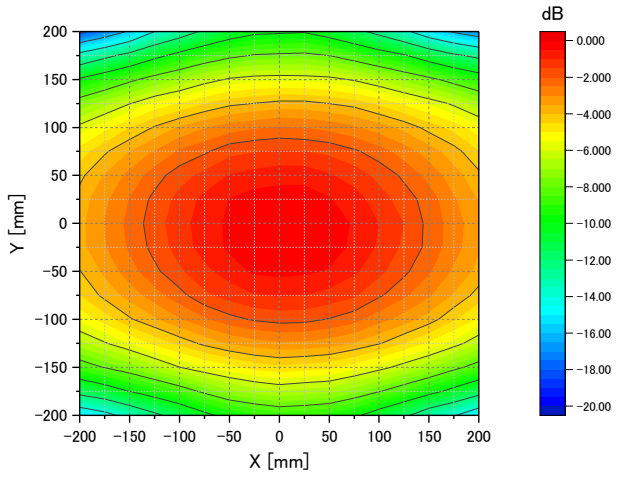
385 MHz



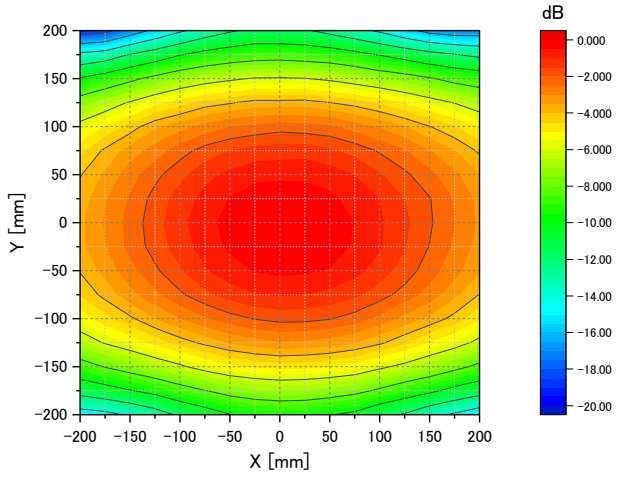
450 MHz



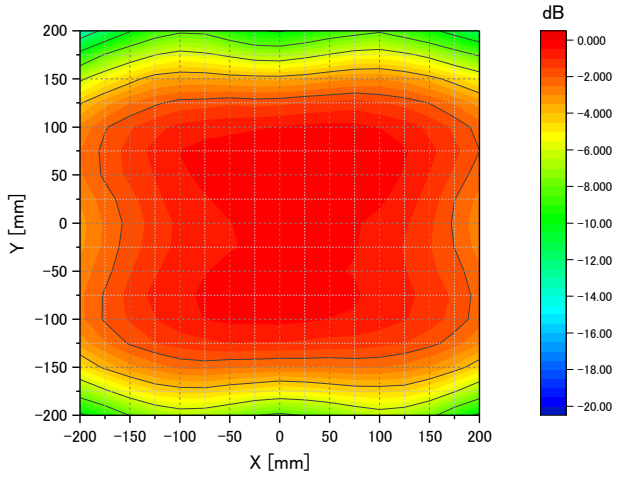
745 MHz



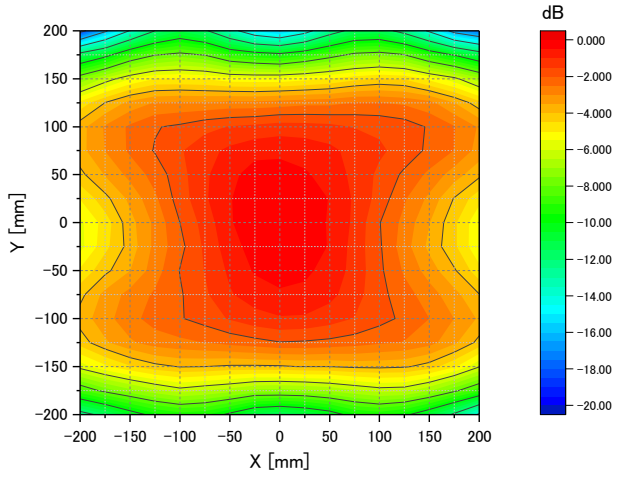
870 MHz



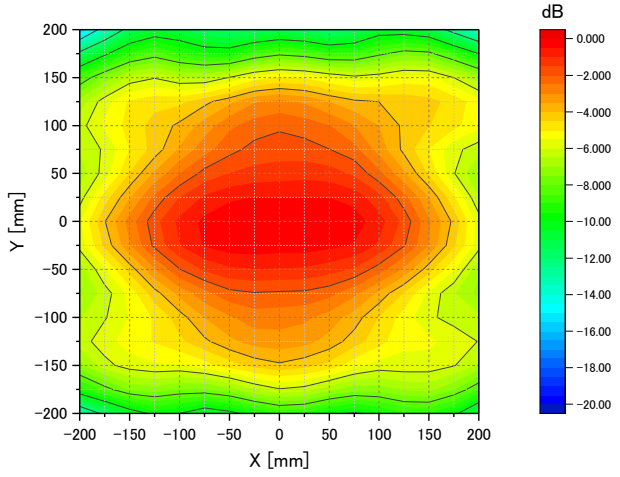
1455 MHz



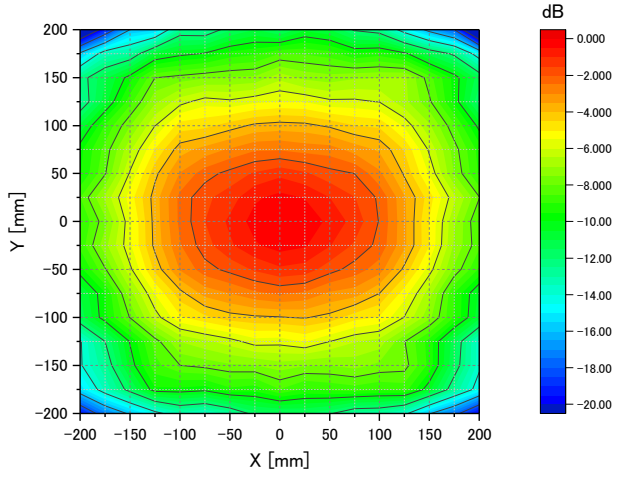
1845 MHz



2450 MHz

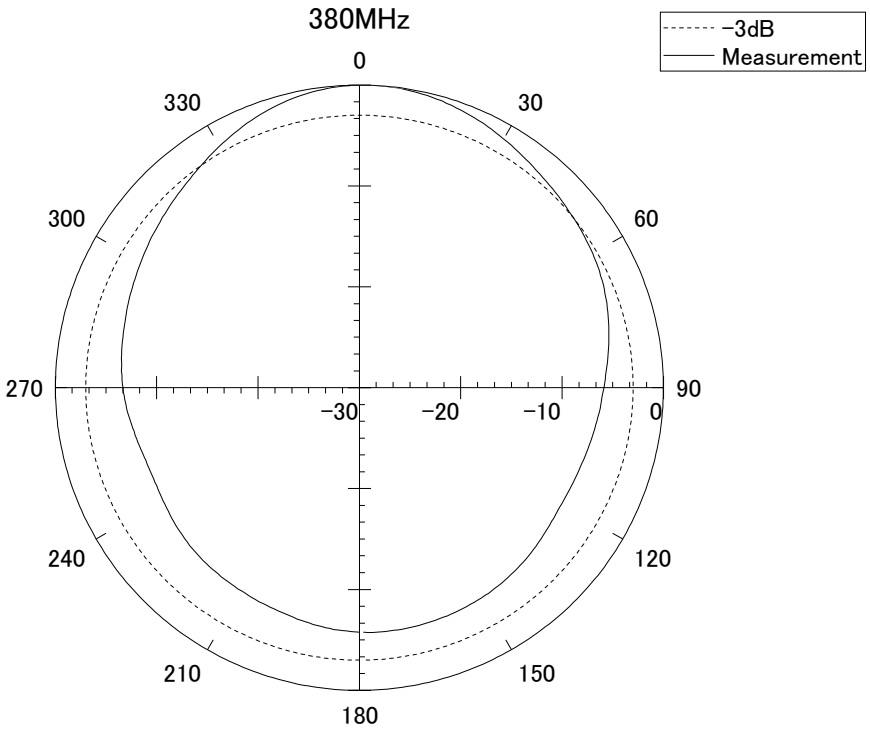


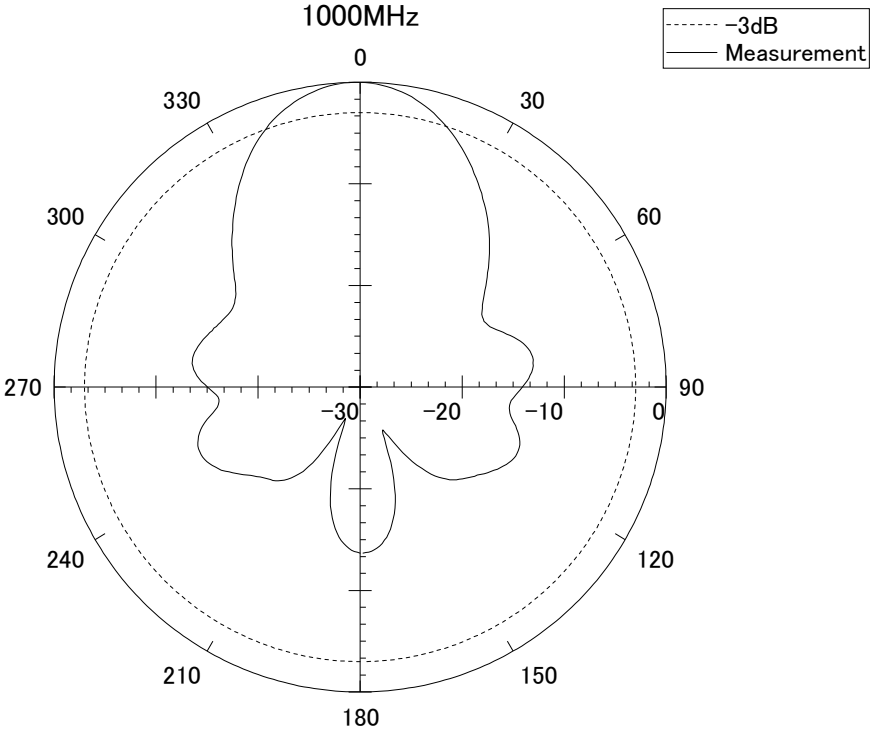
5500 MHz

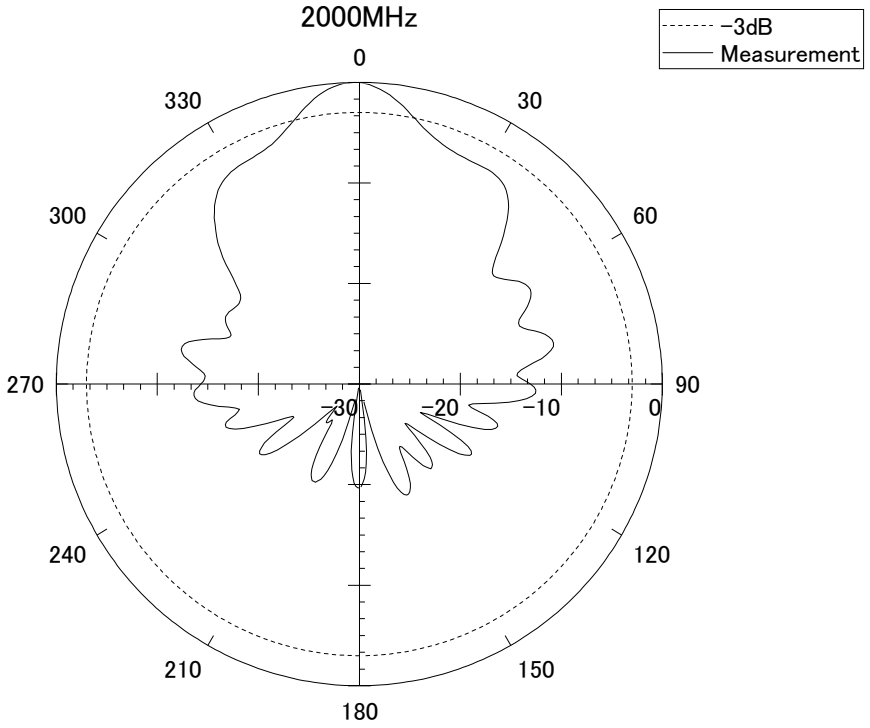


9-4. Antenna Radiation Pattern (typ.)

E-Plane






2000MHz
-3dB
Measurement
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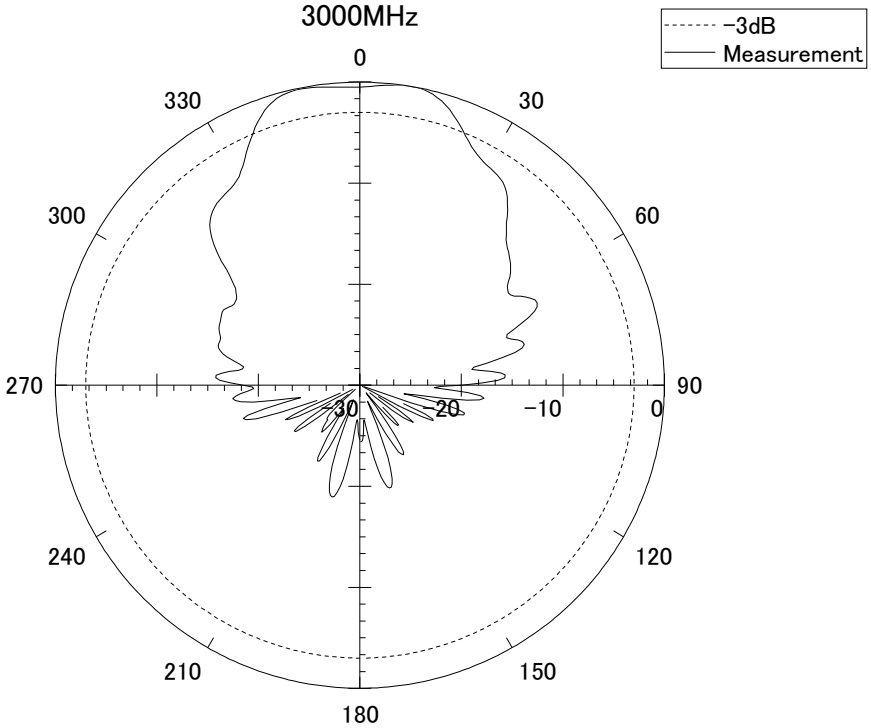
3000MHz
-3dB
Measurement
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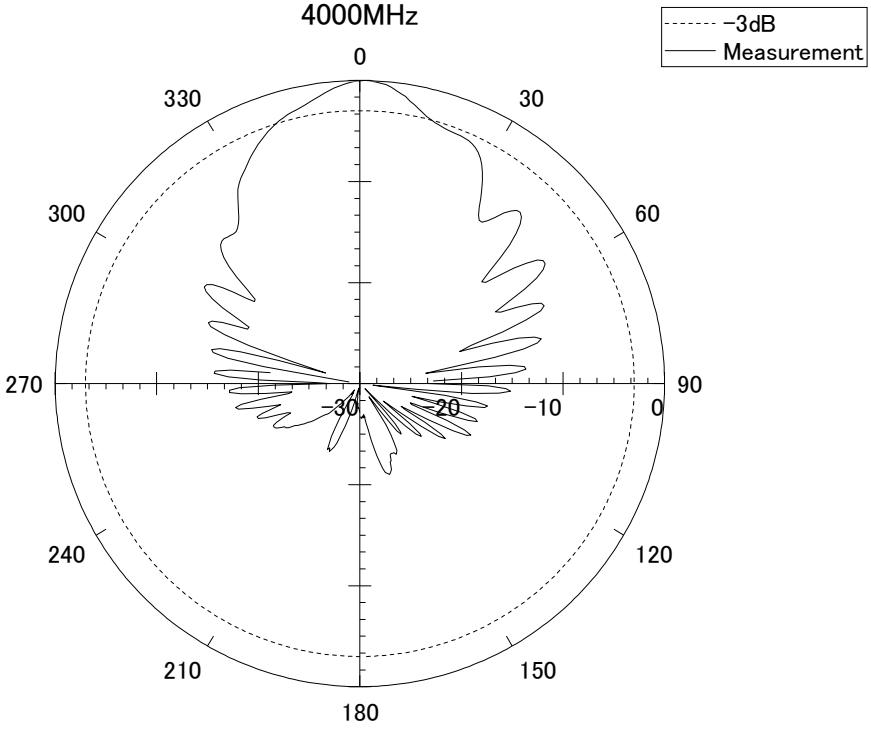
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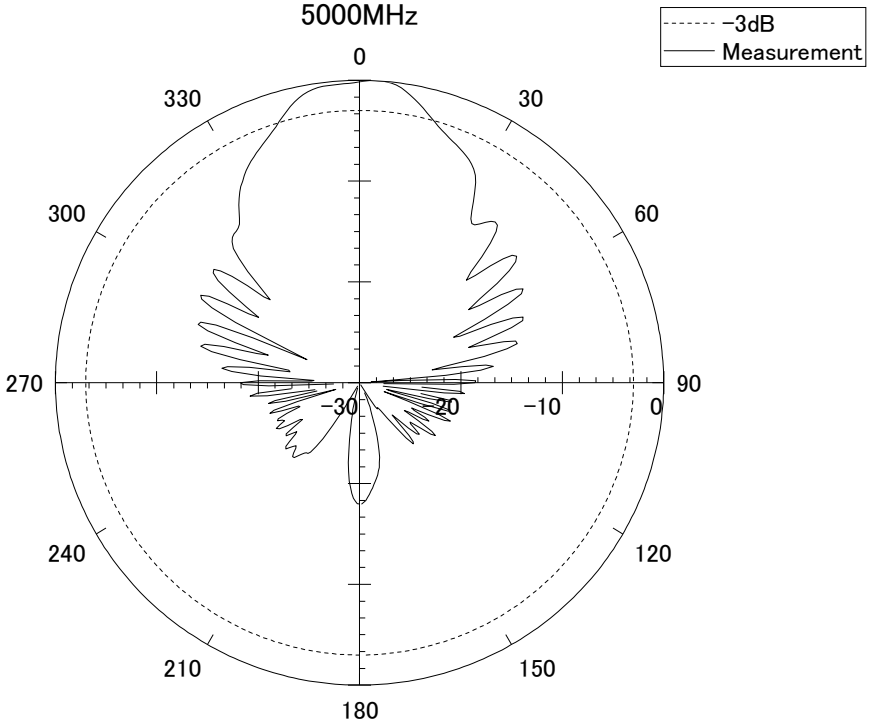
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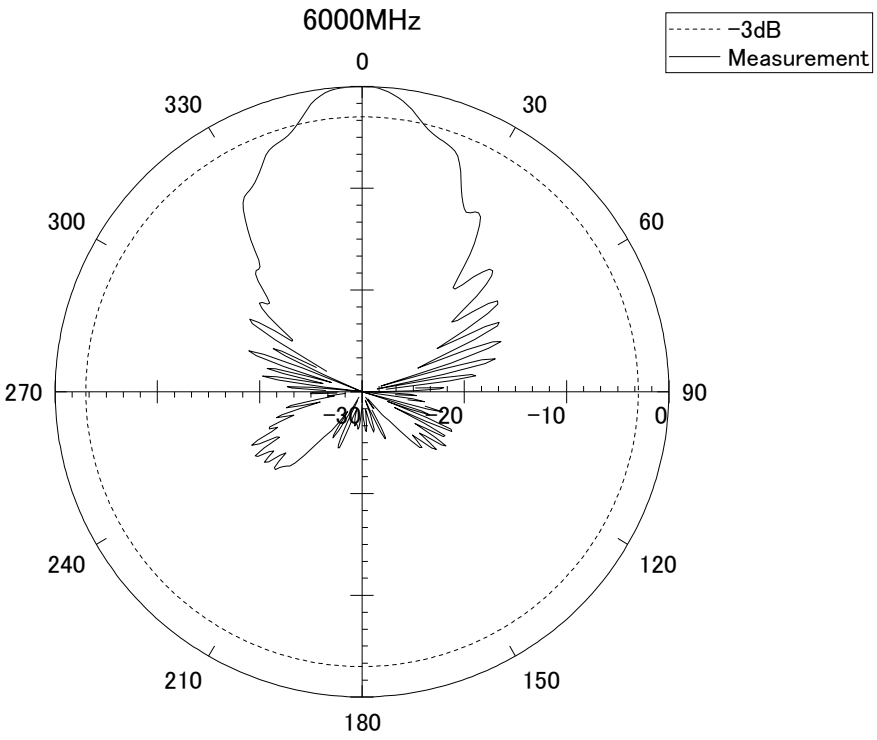
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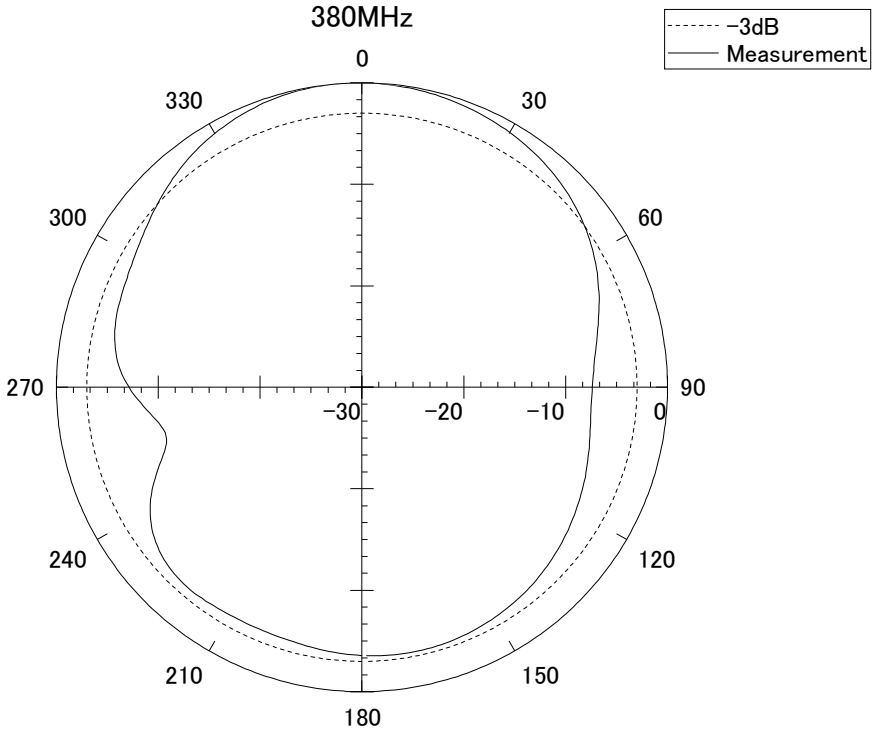
H-Plane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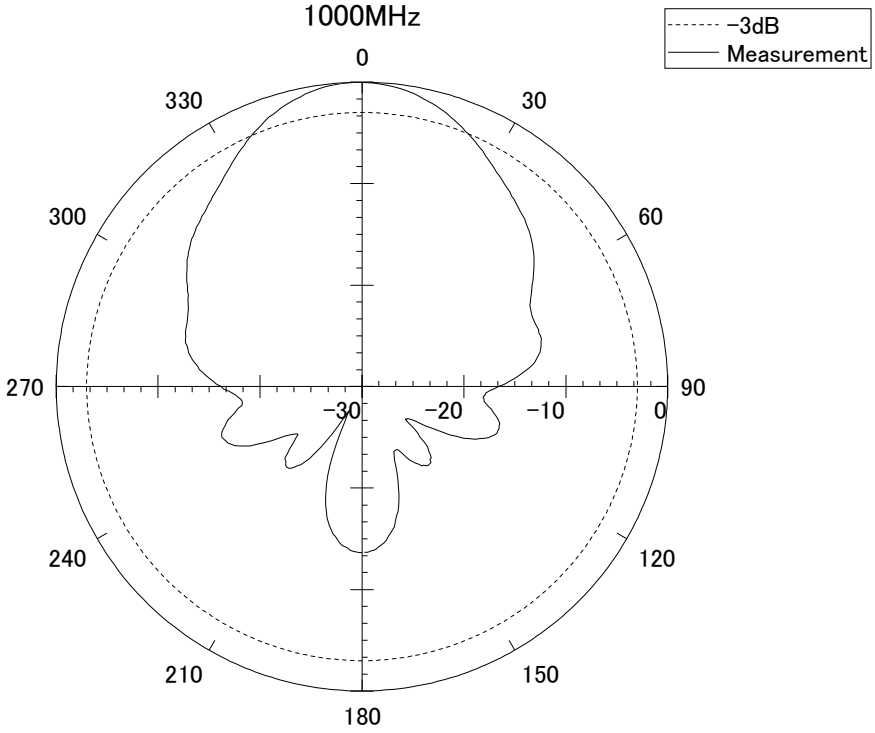
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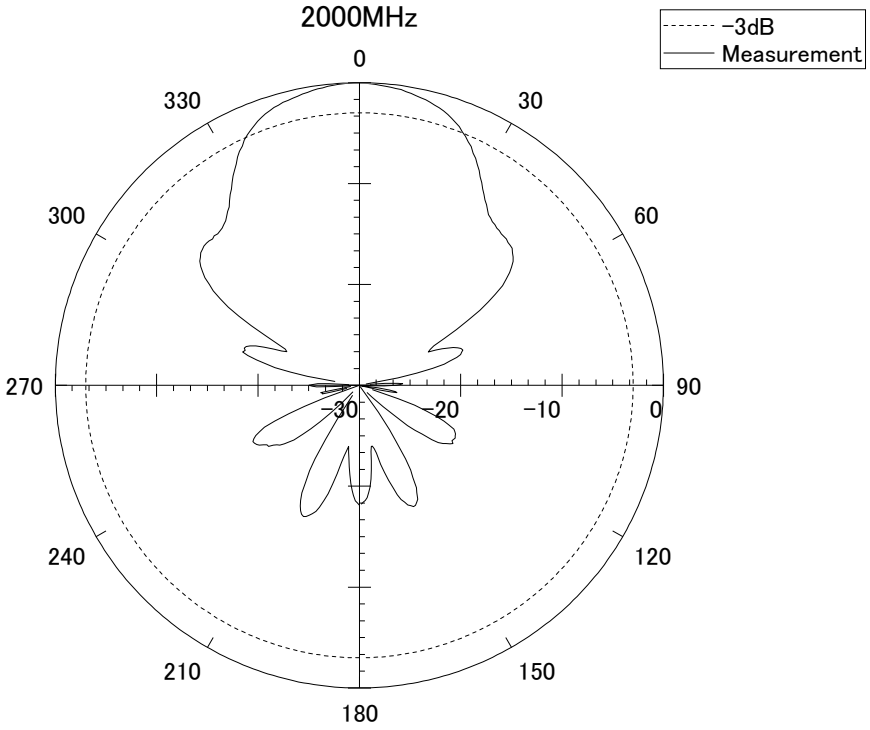
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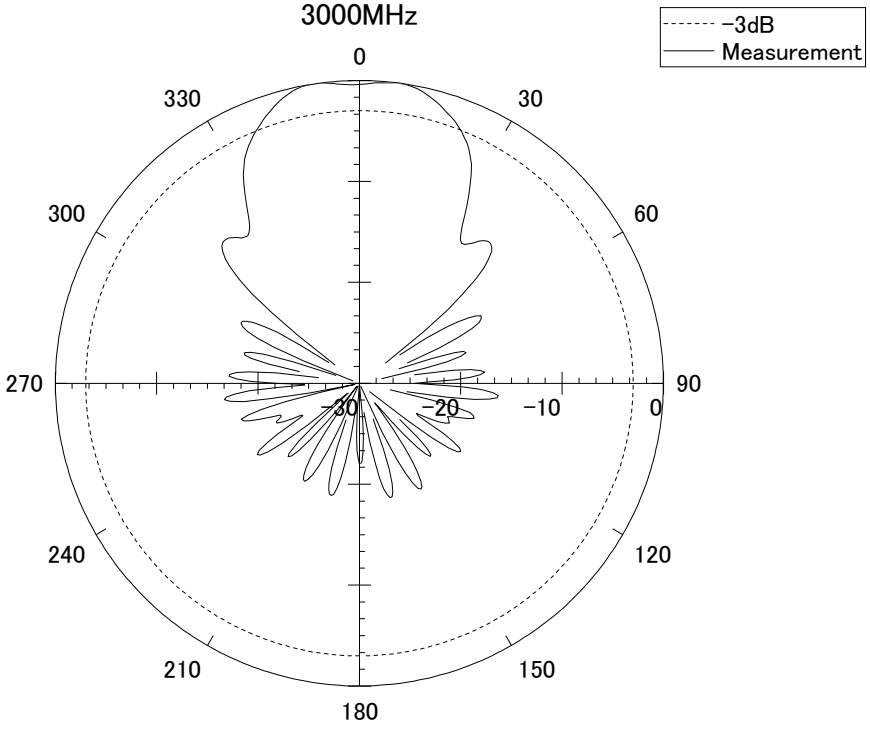
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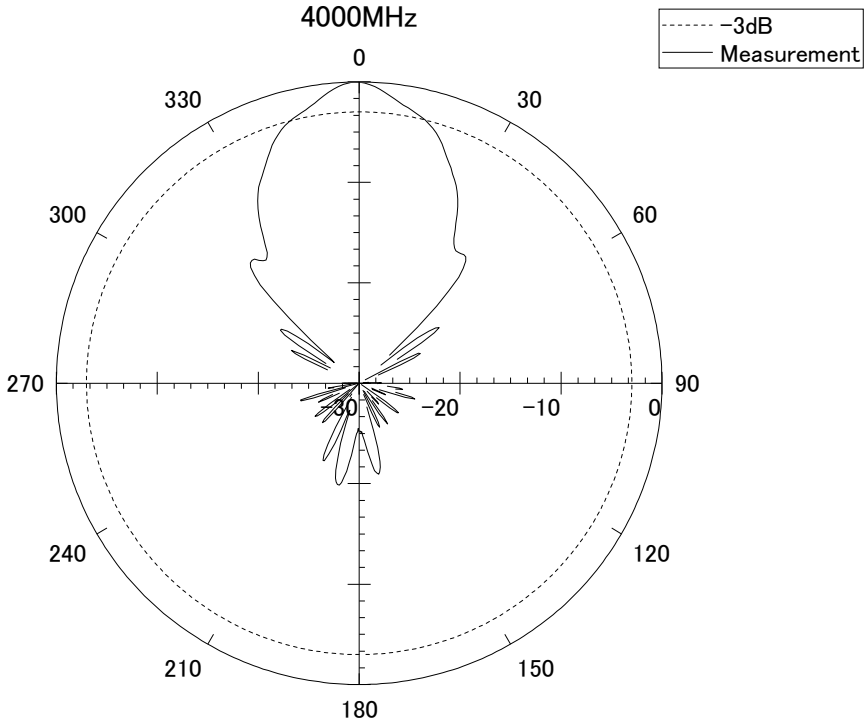
4000MHz
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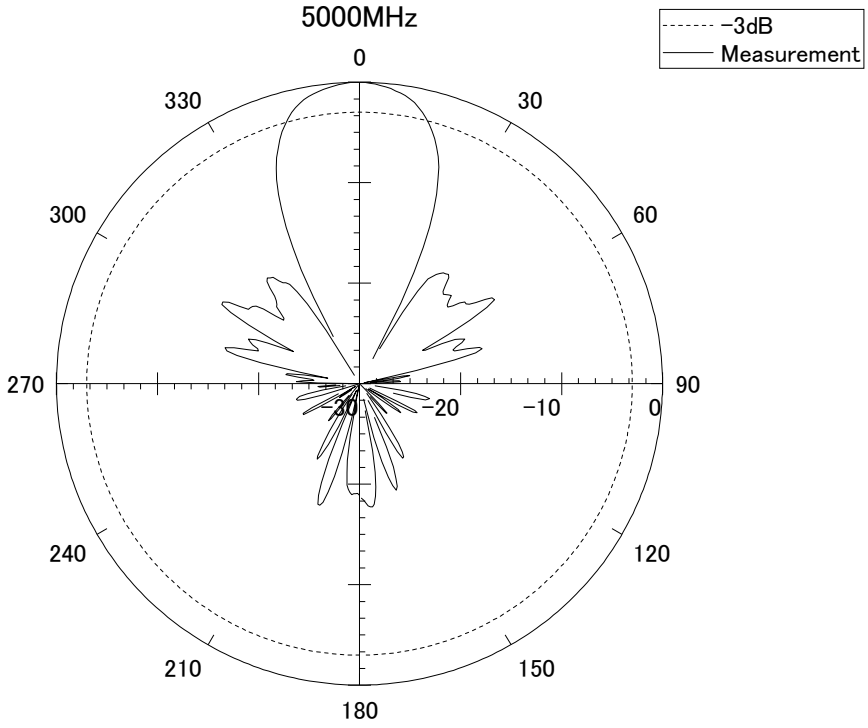
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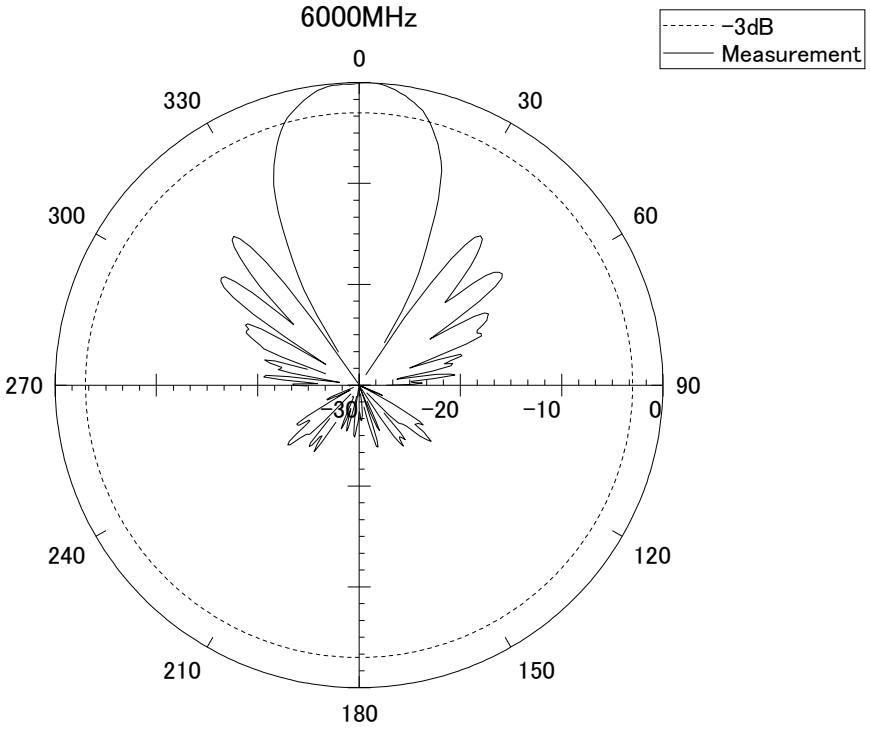
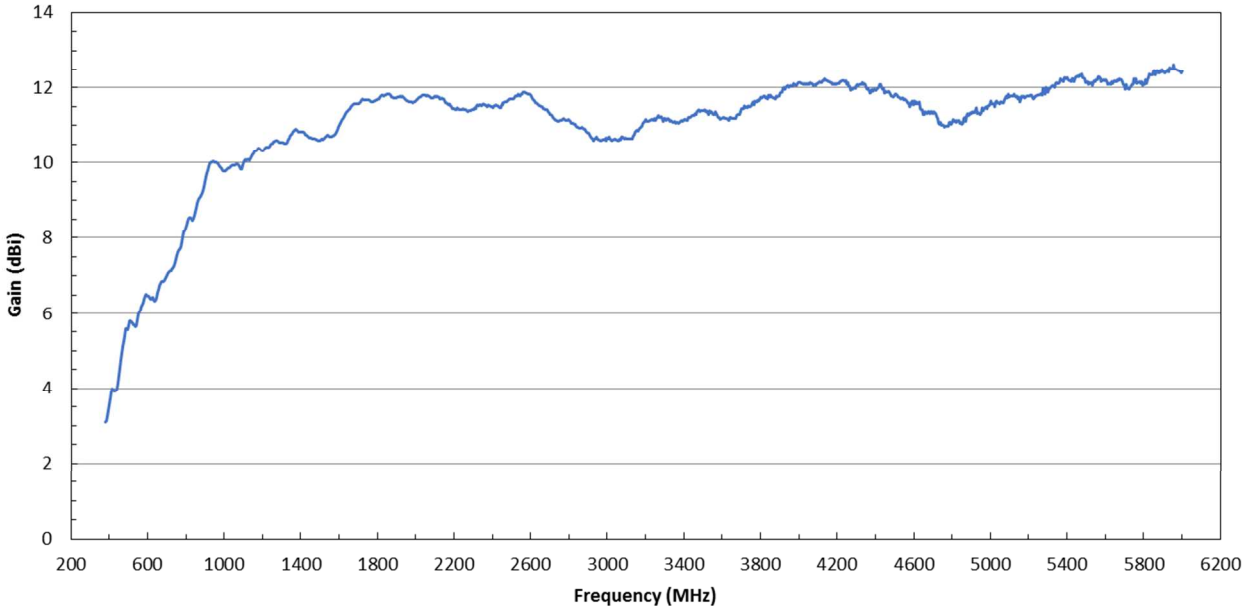


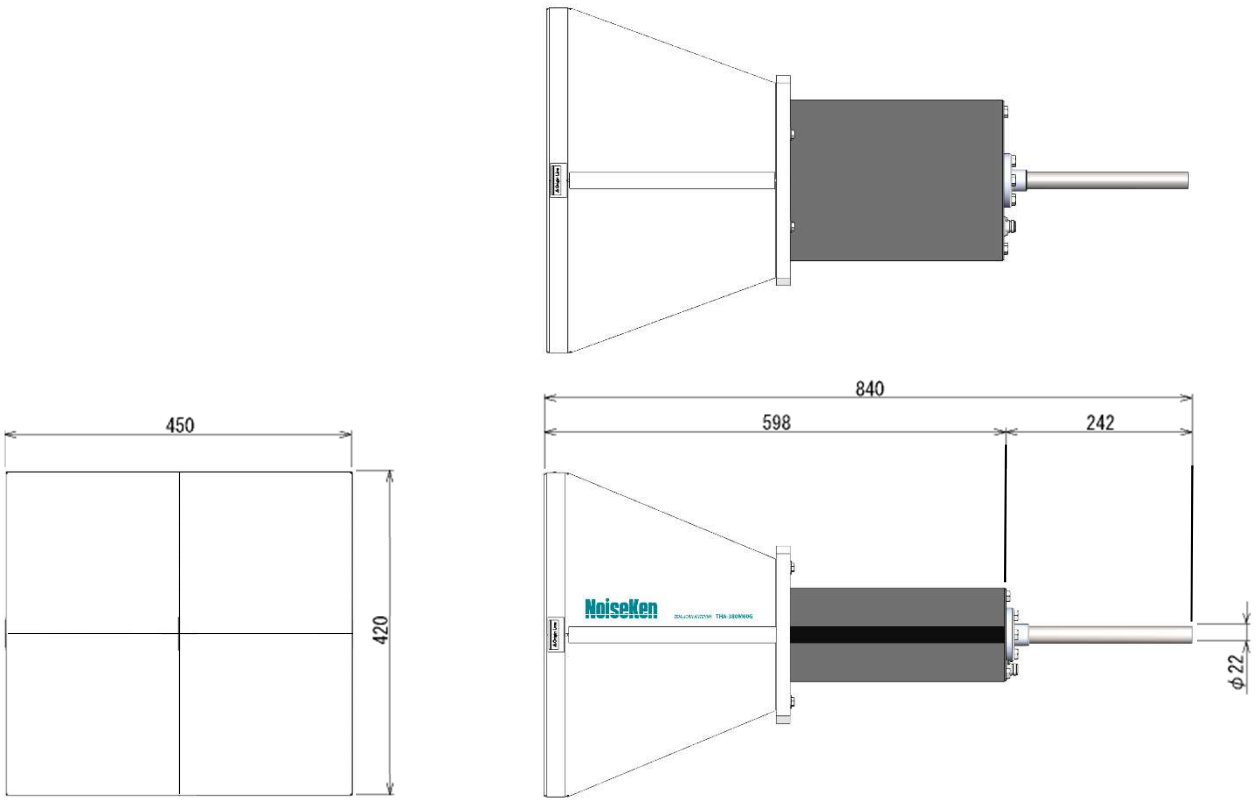
9-5. Antenna Gain (typ.)



10. SPECIFICATIONS

Item	Spec./Performance
Application	IEC 61000-4-39
Frequency range	380 MHz ～ 6.0 GHz
VSWR	3.0 or less
Power input	380 MHz ～ 750 MHz : 180 W MAX 750 MHz ～ 1.7 GHz : 100 W MAX 1.7 GHz ～ 6.0 GHz : 65 W MAX
Gain	Refer to 9-2. Input Power for 300V/m at 0.1m (typ.)
Electric field uniform area	Refer to 9-3. Electric field distribution characteristics at 0.1m (typical)
Input impedance	50 Ω(typ)
Connector	N(J)
Operating temperature range	15 ℃～35 ℃
Operating humidity range	25 ℃～75 %
Dimensions	See diagram below
Weight	Approx. 3.2 kg

●Dimensions



Unit : mm

11. WARRANTY

Servicing terms

The following terms are applicable to servicing by Noise Laboratory Co., Ltd., (hereafter referred to as the Company) provided to maintain the intended performance of its products.

1. Scope
   The following terms shall apply only to products made by the Company.
   If the user or unauthorized service person should open the cover or case of the product which cannot be allowed to open, this warranty prescription becomes ineffective.

2. Technical servicing fee
   In the event of a failure of a product within the warranty period (see warranty section), the Company will repair a product without charge. After the warranty expires, repairs will be billed at a nominal cost.

3. Ownership of replacement parts
   Any faulty parts replaced in the course of repair services shall belong to the Company. In the case when repairs are billed to the customer, replaced faulty parts will be retained by the Company unless other arrangements are made.

4. Limited liability
   In the event that damages resulting from servicing by the Company are intentional or caused by negligence, the Company will pay the cost but at the purchase value of the relevant product maximum. But, notwithstanding the foregoing, the Company shall not be responsible for any incidental or consequential damages of any nature, including without limitation thereof loss of would-be profit or compensation demanded from a third party.

5. Incorrect parts, missing parts, and damage
   In the event that the Company's product purchased by the customer has incorrect parts, missing parts, or is damaged, such that the product is not able to be used, the Company accepts no liability for any losses incurred by the customer that relate to lost earnings, commercial losses, other secondary losses, special losses, or indirect or punitive losses. Nor is any liability accepted for any losses resulting from a responsibility of the customer to compensate any third party.

6. Refusal to provide repair services
   The company may not accept a repair order in the following cases:
   - More than 5 years have passed since the product discontinued
   - More than 8 years have passed after delivery
   - Required component for servicing already discontinued and no alternative is available.
   - Product changed, repaired or remodeled without obtaining a prior permission from the Company.
   - Product severely damaged to the extent it has lost its original form

Limited Warranty

Noise Laboratory Co., Ltd. (hereafter referred to as the Company) warrants its products to be free from defects in materials and workmanship under normal use and service for a period of one year from date of delivery. In the event of failure of a product covered by this warranty, the Company will repair the product or may, at its option, replace it in lieu of repair without charge.

Notwithstanding the foregoing, the Company shall not be responsible for any incidental or consequential damages of any nature, including without limitation thereof loss of would-be profit or compensation demanded from a third party. This warranty is valid only in Japan.

1. Scope
   This warranty shall only apply to products made by the Company.

2. Period
   One year from date of delivery.
   The warranty may be valid in 6 months after servicing if the same failure on the same component has repeated.

3. Exclusions
   The followings are exclusions from this warranty:

   - ✧ Consumable parts (including mercury relay, HV relay, coaxial cable, coaxial connector, automatic switch, and contactor)
   - ✧ Failure caused by misuse, neglect, accident or abnormal conditions of operation
   - ✧ Failure caused by remodeling on the user side without prior permission from the Company
   - ✧ Failure caused by servicing by unauthorized personnel by the Company
   - ✧ Failure due to fore majeure including but not limited to, acts of God, fire, war, riot, rebellion and others
   - ✧ Failure due to shock or drop in or after transit
   - ✧ Failure due to operation in environment being out of ambient specifications.
   - ✧ A unit shipped to overseas

12. MAINTENANCE

1. When repair, maintenance or internal adjustment of the unit is required, a qualified service engineer takes charge of such work.
2. Maintenance on the user side is restricted to the outside cleaning and functional check of the unit.
3. When checking or replacing the fuse, turn off the switch of the unit and disconnect the plug socket beforehand.
4. When cleaning the unit, turn off the switch of this unit and the connected equipment and disconnect the plug socket beforehand.
5. Avoid using chemicals for cleaning. Otherwise, the coating of the unit may peel off or the sight glass may be broken.
6. Do not open the cover of this unit.

13. CONTACTING TECHNICAL SUPPORT

- If you experience a malfunction, please have available both the model and serial number of your unit and contact the nearest distributor/agent or Noise Laboratory Technical Support.
- When it is necessary to send your unit back to Noise Laboratory, fill in the repair order form completely, pack the unit in the original package or equivalent one suitable for transit, and send the package.

☐ Customer Service Center

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Printed in Japan