

# Far-field Antenna Range Configuration Worksheet

Customer: \_\_\_\_\_  
Location: \_\_\_\_\_  
Customer contact: \_\_\_\_\_  
Telephone: \_\_\_\_\_ e-mail: \_\_\_\_\_  
Agilent Field Engineer: \_\_\_\_\_ Office: \_\_\_\_\_  
Telephone: \_\_\_\_\_ e-mail: \_\_\_\_\_  
Agilent Systems Engineer: \_\_\_\_\_ Office: \_\_\_\_\_  
Telephone: \_\_\_\_\_ e-mail: \_\_\_\_\_  
Date: \_\_\_\_\_

## How to use this worksheet

This worksheet is intended to be a guide for discussions between local Agilent Field Engineers, and a potential customer about their near-field antenna measurement system needs. This worksheet asks the questions an Agilent Systems Engineer would need to know to design a customized antenna measurement system to meet a customer's unique requirements.

Please fill out this form as completely as possible, and also describe any unique features of the antenna location of the near-field system, or additional requirements not covered in this worksheet. A sketch of the proposed or existing location and layout is always very helpful.

With the information provided in this worksheet, an Agilent Antenna Systems Engineer will configure an antenna measurement system to meet the needs and requirements as specified in this worksheet. A quotation can be prepared which will include an instrumentation block diagram, a list of all the instrumentation components included in the RF sub-system, and price. Occasionally, additional discussions will be necessary between the Agilent Antenna Systems Engineer and the customer to clarify the understanding of the system requirements and configuration.

## What is the objective for this system?

- Building a new antenna range
- Upgrading an existing antenna range with new equipment
- Other:  
\_\_\_\_\_

### What is important to the customer?

It is helpful ( but not necessary) to rank the top three in order of importance

- A "turn-key" or complete measurement solution
  - Measurement automation software
  - Measurement productivity / throughput
  - Multiple-channel, multiple-frequency measurements
  - Accurate measurements
  - Upgrading old instrumentation to newer more reliable system
  - Economical price due to budget constraints
  - System uptime and reliability
  - On-site installation, training and support
  - Ease of use
  - Other:
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### What type of measurement facility / range?

- Outdoor antenna range
- Indoor antenna range
- Compact antenna test range (indoor facility with large metal reflector)
- Near-field antenna test system  
(mechanically scans a probe very close to the antenna)
- Uncertain; need application assistance

### Antenna Range Dimensions

( A sketch of the existing or proposed facility would be very helpful )

Distance from transmit location to receive location: \_\_\_\_\_ meters

Distance from control room (instruments) to receive location: \_\_\_\_\_ meters

Distance from control room (instruments) to transmit location: \_\_\_\_\_ meters

**What is the required frequency of operation? (in GHz)**

- 0.1- 3   2-18   18-26.5   26.5-50
- Millimeter: \_\_\_\_\_
- Other: \_\_\_\_\_

**What type of automation and control is desired?**

- Manual only
- Manual with ability to upgrade to automated at a future date
- Automated Prefer:   Personal computer   Workstation

**What type of antenna(s) are going to be measured?**

Description of the antenna(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Approximate gain (dBi):** \_\_\_\_\_

**What is the polarization of the test antennas?**

- Linear polarized antennas
- Circularly polarized antennas
- Both linear and circularly polarized antennas
- Unknown

**What are the maximum number of test channels required?**

( Usually determined by the number of test ports on the antenna )

- One   Two   Three   Four
- Other: \_\_\_\_\_

**What types of antenna patterns are required?**

- Co-polarized principle plane patterns
- Gain measurements
- Cross-polarized principle plane patterns
- Ellipticity or axial ratio patterns (for circularly polarized antennas only)
- Pulsed antenna measurements (usually active element arrays)
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Are ellipticity or axial-ratio measurements required to be performed?**

( This question is relevant only if circularly polarized antennas are being measured )

- Yes; (this will require rotating a linear source antenna)
- No
- Uncertain

**What dynamic range is desired for the antenna patterns?**

- 40 dB
- 60 dB
- Other: \_\_\_\_\_ dB

**Are there any specific requirements for accuracy?**

- Gain accuracy: \_\_\_\_\_
- Sidelobe accuracy: \_\_\_\_\_ dB at \_\_\_\_\_ dB below peak
- Crosspolarized response accuracy: \_\_\_\_\_ dB at \_\_\_\_\_ dB below peak
- Pointing accuracy: \_\_\_\_\_
- Other: \_\_\_\_\_
- The accuracy requirements are unknown

**Is amplitude and/or phase data required?**

- Amplitude only
- Amplitude and phase
- Unknown

**Is there any existing Agilent or HP equipment to be used in this facility?**

- None
- Yes (please specify):

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**Is any other manufacturers equipment to be used in this facility?**

- None
- Yes (please specify):

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**What type of positioning system is available or required?**

- The positioning system is customer supplied or existing  
Positioner model number: \_\_\_\_\_  
Power Amplifier Unit model number: \_\_\_\_\_  
Positioner Controller model number: \_\_\_\_\_  
Is an RF rotary joint available in the positioner?   Yes   No    
Unknown  
Are slip rings available in the positioner?   Yes   No   Unknown  
Is a polarization positioner at the source antenna?   Yes   No    
Unknown  
Is a rotary joint available in the source positioner?   Yes   No    
Unknown
- Positioning system is to be supplied as part of the system  
(Complete the "Antenna Range Positioner Configuration Worksheet" to further define the required positioning system.)  
What type of transmit source antenna?
  - Customer supplied or existing Approximate gain (dBi): \_\_\_\_\_
  - To be supplied as part of the system Frequency of operation (GHz): \_\_\_\_\_  
If an outdoor range, is a weatherproof enclosure available for the microwave source?  
  Yes   No   Unknown

**Additional Information or Requirements**

Please convey additional information about this facility, or define additional requirements. A reminder; a sketch of the antenna range layout would be very helpful!

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