Anritsu Advancing beyond

Electro Magnetic Field Measurements

Isotropic EMF Antennas

2000-1800-R

9 kHz to 300 MHz, H-Field

2000-1792-R

30 MHz to 3 GHz, E-Field

2000-1791-R

700 MHz to 6 GHz, E-Field

Introduction

Anritsu's EMF Measurements are designed to be easy to use while providing the user with numerous automated features that enable them to do their job quickly and more efficiently. Electromagnetic field measurements (EMF, Option 444) are available on the following Anritsu handheld instruments:

- Field Master Pro™: MS2090A
- Field Master™: MS2080A
- Spectrum Master™: MS2711E, MS2712E, MS2713E, MS2720T
- Cell Master™: MT8212E and MT8213E
- LMR Master™: S412E
- Site Master™: S332E, S362E, MS2089A

In order to conduct EMF measurements, an Anritsu isotropic antenna is required. Anritsu offers three isotropic antennas covering a frequency range from 9 kHz up to 6 GHz. Refer to your instrument data sheet for compatible models and additional related options and accessories.

Isotropic Antenna Highlights

- Each antenna contains a tri-axis sensor with an integrated RF switch device, microcontroller and memory. Each of the three sensors is situated orthogonally inside the antenna housing to transmit and receive a spherical radiation pattern. In this way, all radiation at the antenna's geographical position is measured, regardless of direction of arrival.
- Each isotropic antenna is characterized over its entire frequency range. The antenna factors are stored in the antenna's memory and automatically downloaded into the Spectrum Analyzer once the antenna USB cable is inserted.
- The RF switch, microcontroller, and memory inside the antenna are controlled by firmware in the Spectrum Analyzer via a USB cable. The microcontroller operates the RF switch, controlling which probe is active. Once all three probes are switched, a composite RMS calculation is made. The memory inside the antenna is used to store parameters associated with that particular antenna. This includes serial number, date of compliance testing, antenna frequency range, and antenna factors.

Dimensions

2000-1800-R
9 kHz to 300 MHz

2000-1792-R
30 MHz to 3 GHz

2000-1791-R
700 MHz to 6 GHz

Table of Contents

Definitions 4
2000-1800-R 5
Electrical Characteristics 5
Plots 5
Mechanical Characteristics 5
2000-1792-R 6
Electrical Characteristics 6
Plots 6
Mechanical Characteristics 6
2000-1791-R 7
Electrical Characteristics 7
Plots 7
Mechanical Characteristics 7
Ordering Information 7
EMF Antennas/Probes 7

Definitions

Typical Specifications

Typical specifications are not tested and not warranted. They are generally representative of characteristic performance.

All specifications subject to change without notice. For the most current data sheet, please visit www.anritsu.com

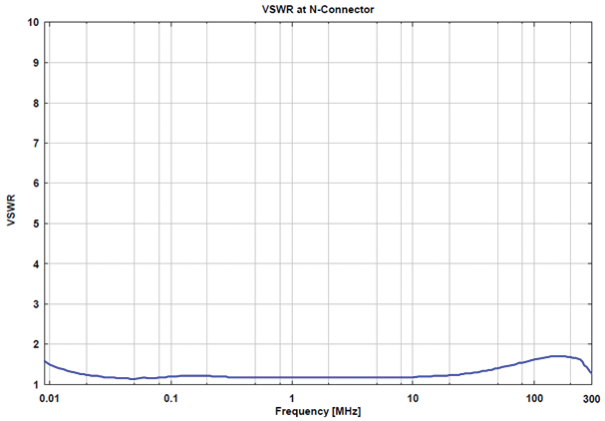
2000-1800-R

The 2000-1800-R isotropic antenna is a tri-axis H-Field sensor with an integrated RF switch. The RF switch is controlled by the analyzer via a USB port.

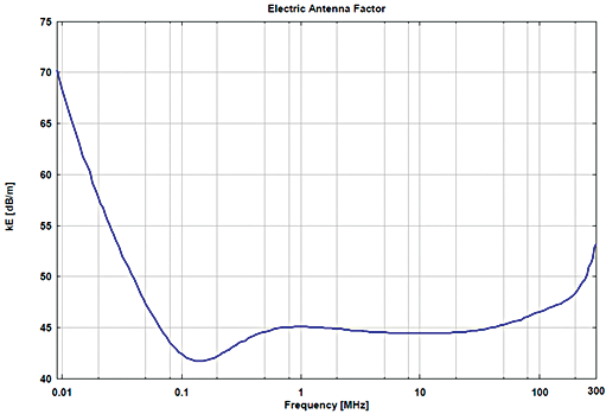
Electrical Characteristics

Sensor	Three axis sensor with scanned axes, H-Field
Frequency Range	9 kHz to 300 MHz
1 dB Compression Point at Output	118 dBµV typical
Decoupling of the axis	> 20 dB typical
VSWR	< 1.5 (20 kHz to 50 MHz) typical
RF Connector	N-Connector Male, 50 Ω
Supply and Control	USB connection to Anritsu Handheld Instrument

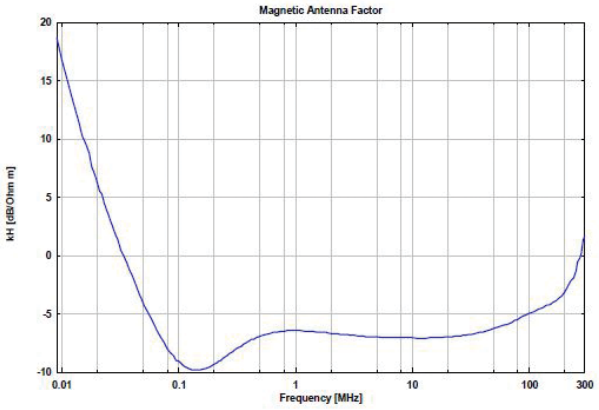
Plots (all plots typical)



VSWR



Antenna Factor



Magnetic Antenna Factor

Mechanical Characteristics

Color	Body: Light Gray Handle: Black
Weight	850 g
Environmental Conditions	–10 °C to +50 °C, IP54
Mechanical Compliance	Operating: 7M3 (IEC 60721-3)
Dimensions	550 mm x 146 mm

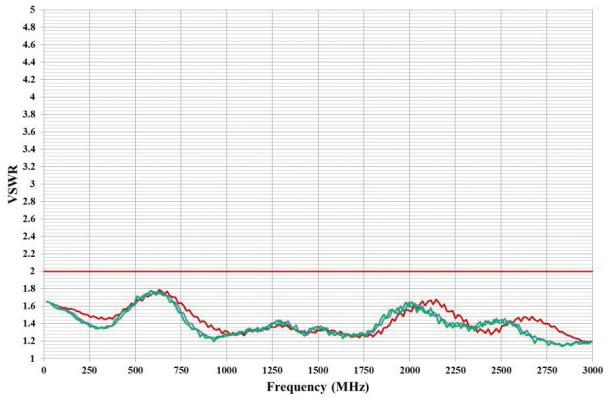
2000-1792-R

The 2000-1792-R isotropic antenna is a tri-axis E-Field sensor with an integrated RF switch. The RF switch is controlled by the analyzer via a USB port.

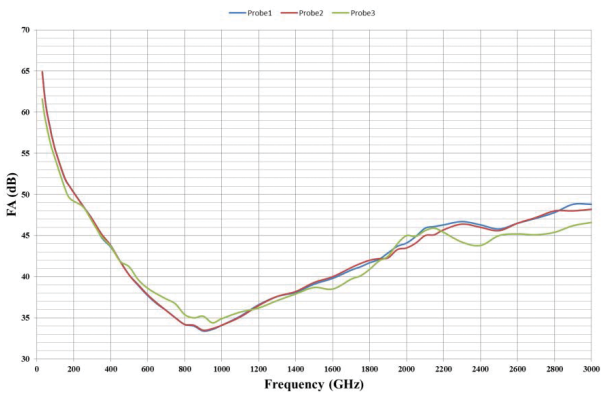
Electrical Characteristics

Sensor	Three axis sensor with scanned axes, E-Field
Frequency Range	30 MHz to 3 GHz
Typical 3D Isotropy	< ± 1.5 dB (300 MHz to 1 GHz) < ± 2.3 dB (1 GHz to 3 GHz)
Dynamic Range (1 kHz RBW)	0.1 mV/m to 200 V/m typical 25 µV at 900 MHz 35 µV at 1800 MHz 50 µV at 3000 MHz
Maximum Field Strength	500 V/m (destruction limit)
Switching Time	< 10 µs
RF Connector	N-Connector Male, 50 Ω
Supply and Control	USB connection to Anritsu Handheld Instrument

Plots (all plots typical)



VSWR



Antenna Factors

Mechanical Characteristics

Radome Material	ABS
Color	Body: Light Gray Handle: Dark Gray
Weight	800 g
Climatic Compliance	Operating: 7K3 (IEC 60721-3)
Mechanical Compliance	Operating: 7M3 (IEC 60792-3)
Temperature Range	Operating: –25 °C, +70 °C
Humidity	100% at +40 °C for up to 96 hours
Dimensions	450 mm x 150 mm

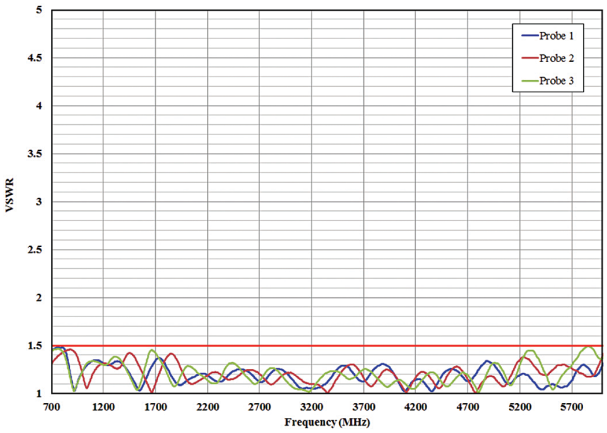
2000-1791-R

The 2000-1791-R isotropic antenna is a tri-axis E-Field sensor with an integrated RF switch. The RF switch is controlled by the analyzer via a USB port.

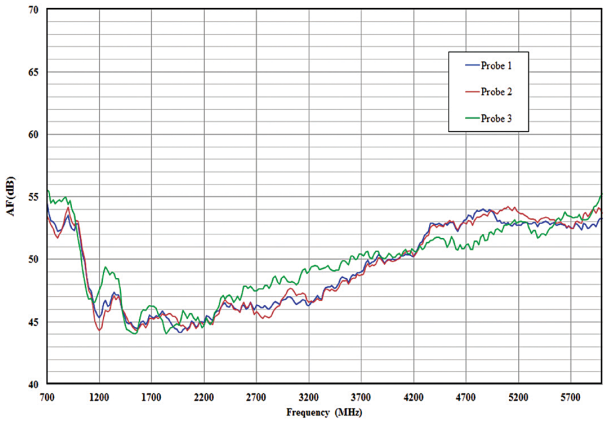
Electrical Characteristics

Sensor	Three axis sensor with scanned axes, E-Field
Frequency Range	700 MHz to 6 GHz
Typical 3D Isotropy	≤ ± 2 dB (0.7 GHz to 2 GHz) ≤ ± 2.5 dB (2 GHz to 3.6 GHz) ≤ ± 3.5 dB (3.6 GHz to 6 GHz)
Dynamic Range (1 kHz RBW)	0.2 mV/m to 200 V/m (typical)
Maximum Field Strength	500 V/m (destruction limit)
Switching Time	< 10 µs
RF Connector	N-Connector Male, 50 Ω
Supply and Control	USB connection to Anritsu Handheld Instrument

Plots (all plots typical)



VSWR



Antenna Factors

Mechanical Characteristics

Radome Material	ABS
Color	Body: Light Gray Handle: Dark Gray
Weight	450 g
Climatic Compliance	Operating: 7K3 (IEC 60721-3)
Mechanical Compliance	Operating: 7M3 (IEC 60792-3)
Temperature Range	Operating: –25 °C, +70 °C
Humidity	100 % at +40 °C for up to 96 hours
Dimensions	320 mm x 87 mm

Ordering Information

EMF Antennas/Probes

Accessory	Description
	2000-1800-R Isotropic Antenna, H-Field, 9 kHz to 300 MHz, N Connector (male), 50 Ω
	2000-1792-R Isotropic Antenna, E-Field, 30 MHz to 3 GHz, N Connector (male), 50 Ω

Accessory	Description
	2000-1791-R Isotropic Antenna, E-Field, 0.7 GHz to 6 GHz, N Connector (male), 50 Ω

Refer to the product web page of your instrument for additional product information.

Training at Anritsu

Anritsu has designed courses to help you stay up to date with technologies important to your job. For available training courses, visit: www.anritsu.com and search for training and education.

Anritsu Advancing beyond

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List Revision Date: 20240416

2000-1800-R, 2000-1792-R, 2000-1791-R TDS, PN: 11410-01070, Rev. E

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