

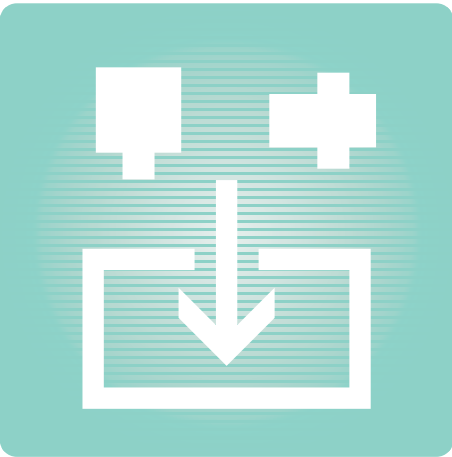


Electronic Measuring Instruments



Components





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Fixed Attenuators for High Power Measurement

J0395, B0472

DC to 9 GHz/18 GHz



J0395

Specifications

Model	J0395
Frequency Range	DC to 9 GHz
Attenuation	30 dB
Attenuation Accuracy	±0.5 dB
VSWR (max.)	1.2 (DC to 4.0 GHz) 1.3 (4.0 GHz to 9.0 GHz)
Maximum Allowable Power	30 W (44.7 dBm)
Connector	N-type, 50Ω
CE	RoHS: 2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018
UKCA	RoHS: S.I. 2012 No.3032, EN IEC 63000: 2018

Model	B0472*
Frequency Range	DC to 18 GHz
Attenuation	30 dB
Attenuation Accuracy	±1.0 dB
VSWR (max.)	1.25 (DC to 8.0 GHz) 1.35 (8.0 GHz to 12.4 GHz) 1.45 (12.4 GHz to 18.0 GHz)
Maximum Allowable Power	100 W (50 dBm)
Connector	N-type, 50Ω

*: RoHS non-compliant product
Cannot be shipped to the EU, UK and EFTA.

Fixed Attenuators

J1750A, J1751A, J1752A, J1753A, J1754A

DC to 18 GHz



J1751A

Specifications

Model	J1750A	J1751A	J1752A
Frequency Range	DC to 18 GHz		
Attenuation* ¹	10 dB	20 dB	30 dB
Attenuation Accuracy* ¹	±0.60	-0.5, +0.8	±0.85
VSWR	1.20 (DC to 4 GHz), 1.25 (4 GHz to 8 GHz), 1.30 (8 GHz to 12.4 GHz), 1.6 typ. (12.4 GHz to 18 GHz)		
Maximum Allowable Power* ²	5W		
Connector	N-P/N-J		
Impedance	50Ω		
Operating Temperature Range	-55°C to +100°C		
Dimensions and Mass	Maximum diameter: 20.62 × Length: 48.26 mm, <50 g		
CE	RoHS: 2011/65/EU, (EU)2015/863, EN IEC 63000: 2018		
UKCA	RoHS: S.I. 2012 No.3032, EN IEC 63000: 2018		

Model	J1753A	J1754A
Frequency Range	DC to 18 GHz	
Attenuation* ¹	3 dB	6 dB
Attenuation Accuracy* ¹	±0.40	
VSWR	1.20 (DC to 4 GHz), 1.25 (4 GHz to 8 GHz), 1.30 (8 GHz to 12.4 GHz), 1.6 typ. (12.4 GHz to 18 GHz)	
Maximum Allowable Power* ²	5W	
Connector	N-P/N-J	
Impedance	50Ω	
Operating Temperature Range	-55°C to +100°C	
Dimensions and Mass	Maximum diameter: 20.62 × Length: 48.26 mm, <50 g	
CE	RoHS: 2011/65/EU, (EU)2015/863, EN IEC 63000: 2018	
UKCA	RoHS: S.I. 2012 No.3032, EN IEC 63000: 2018	

*1: At 25°C, accuracy includes frequency and power variations. Temperature coefficient for attenuation: .0004 dB/dB/°C typ.

*2: Average power at 25°C ambient, derate linearly to 2 W at 100°C.

2Way/4Way Low Amplitude Error Divider

J1941A/J1942A

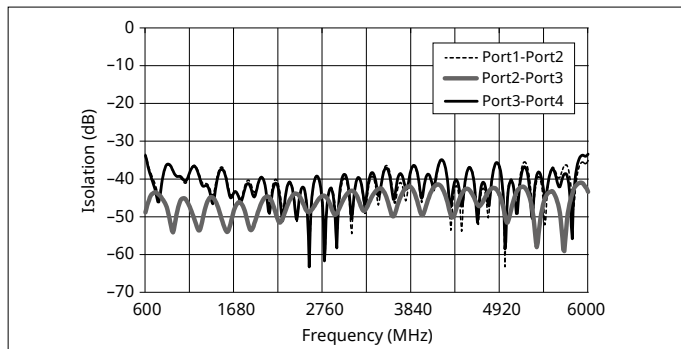
0.6 GHz to 6 GHz



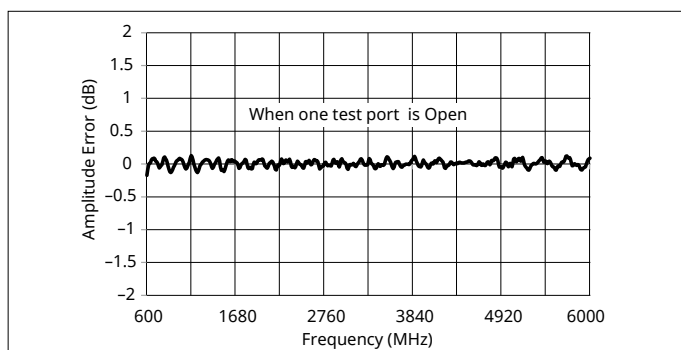
Specifications

Model	J1941A	J1942A
Frequency Range	0.6 GHz to 6 GHz	
Divide Number	2	4
Ports Unbalance	≤ 0.1 dB (0.6 GHz to 4 GHz) ≤ 0.15 dB (4 GHz to 6 GHz)	
Amplitude Error	≤ 0.5 dB	
Insertion Loss	$\leq 0.5f + 7$ dB	$\leq 0.5f + 10$ dB
VSWR (Common port)	< 1.5	
VSWR (Test port)	< 1.3	
Input Level (Max.)	+38 dBm (max., Duty $\leq 50\%$, $\leq 30^\circ\text{C}$)	
Connector	SMA (J)	
CE	RoHS: 2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018	
UKCA	RoHS: S.I. 2012 No.3032, EN IEC 63000: 2018	

J1941A/J1942A of low amplitude error 2 divider/4 divider is a divider that suppresses occurrence of amplitude error even if there is an open end on the test port side.



J1942A Isolation Performance (Actual measurement value)

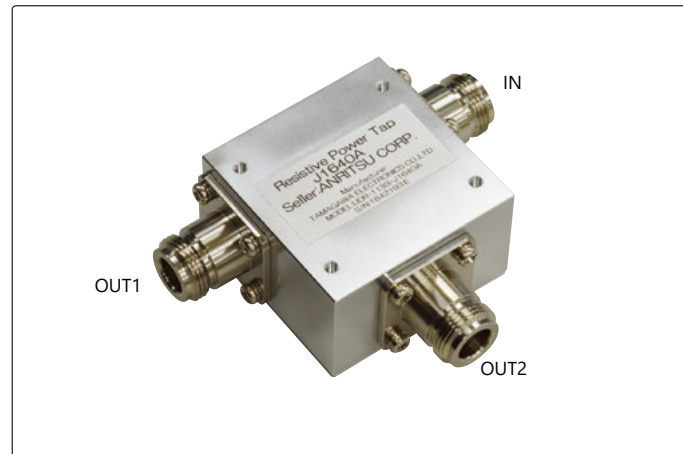


J1942A Amplitude Error Performance (Actual measurement value)

Resistive Power Tap

J1640A

DC to 3000 MHz

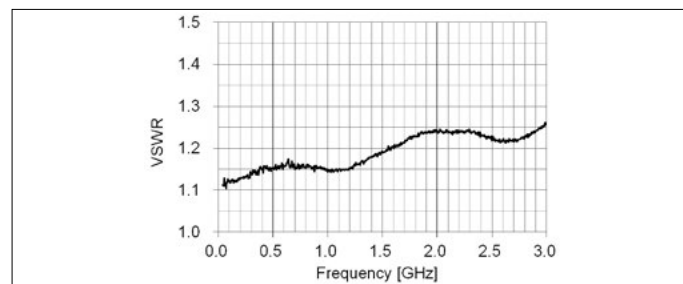


The Resistive Power Tap J1640A is used to branch the transmitted signal when measuring the spurious characteristics of a transmitter with a field strength meter or spectrum analyzer. It has flat attenuation frequency characteristics over DC to 3000 MHz, eliminating the need to consider frequency characteristics when making measurements. The maximum allowable input power is 16 Watts.

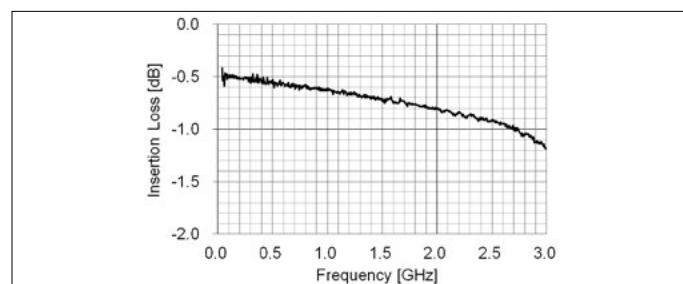
Specifications

Frequency Range	DC to 3000 MHz
Impedance	50Ω (nom.)
VSWR	≤ 1.35 (DC to 3000 MHz) (IN, OUT1, OUT2)
Maximum Allowable Power	16 W (IN-OUT1)
Insertion Loss (IN-OUT1)	≤ 1.0 dB (DC to 1000 MHz) ≤ 1.2 dB (1000 MHz to 1700 MHz) ≤ 1.5 dB (1700 MHz to 3000 MHz)
Branching Attenuation	40 dB ± 1 dB (100 MHz) (IN-OUT2)
Frequency Characteristics of Branching Attenuation (IN-OUT2)	± 0.5 dB (DC to 300 MHz) ± 1.0 dB (300 MHz to 1000 MHz) ± 1.5 dB (1000 MHz to 1700 MHz) ± 2.5 dB (1700 MHz to 3000 MHz)
Connectors	N (f)
Operating Temperature Range	0°C to +45°C
CE	RoHS: 2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018
UKCA	RoHS: S.I. 2012 No.3032, EN IEC 63000: 2018

Characteristics



VSWR Characteristics: IN



Insertion Loss Characteristics: IN-OUT1

Precision RF & Microwave Components

The Industry Leader for High Frequency Components



Precision Components-Precision Measurements

Anritsu is a leader in the design and production of precision microwave components.

- Precision Coaxial Connector Systems to 145 GHz
- Precision Coaxial and Waveguide to Coax Adapters
- RF Detectors
- Precision Terminations and Air lines
- Precision Fixed Attenuators
- Precision Step Attenuators
- Precision Directional Coupler up to 110 GHz
- Precision Power Dividers and Splitters
- Precision Standard and Kelvin Bias Tees
- Precision DC Blocks
- Broadband Microwave Limiters

Connector Design Leadership

Anritsu is the leader of high frequency microwave connector technology and is driven by an ongoing commitment to exceed customer needs. Anritsu created and trademarked the K Connector™ with coverage to 40 GHz, along with a complete family of 40 GHz test equipment. It was an immediate success and today is used on many commercial components, test fixtures, and defense and aerospace systems. The K Connector is mechanically compatible and mates with SMA WSMA and 3.5 mm connectors.

For certain applications, users want to access frequencies up to 43.5 GHz on a K connector. Anritsu has developed and introduced Extended-K™ connectors that not only provides frequency scalability to 43.5 GHz with mode-free performance on a K connector, but is also traceable ensuring a known measurement uncertainty.

The V Connector™ offers coaxial coverage to 65 GHz and uses a 1.85 mm geometry endorsed by the International Electrotechnical Commission (IEC). It mates with commercially available 2.4 mm connectors.

The W1 Connector™ provides mode-free performance to 110 GHz and uses a 1.00 mm coaxial connector front side interface.

The 0.8 mm connector family is a complete coaxial connector system with single-mode performance to 145 GHz. It contains male and female non-hermetic connectors, male and female broadband terminations and in series adapters. The 0.8 mm connector is well suited for high frequency applications ranging from components to systems and instrumentation.

Coaxial and Waveguide to Coax Adapters

A series of precision measurement adapters are available to adapt one connector type to another. Poor adapter VSWR (or poor return loss) can be a major source of measurement error and, therefore adapters must be carefully selected. Anritsu precision adapters typically have 6-12 dB better return loss than competitive units. Waveguide-to-Coax Adapters are available to 125 GHz.

Precision Terminations and Air Lines

Anritsu is recognized as the leader in the field of impedance standards. Anritsu air lines and terminations are unsurpassed for accuracy and impedance match. Not only do these products increase measurement accuracy, they also provide the only method of certifying the performance of SWR autotesters, bridges, directional couplers, and other devices.

Precision Fixed Attenuators

Anritsu attenuators offer superior performance in a low cost package. The low VSWR (excellent return loss) minimizes signal reflections and simultaneously reduces ripple effects in the output frequency response. This assures flat, consistent attenuation characteristics regardless of other devices reflection characteristics.

The 41K, 41VA, and 41W Series attenuators are specifically designed for applications where accuracy is a basic requirement. Available frequency ranges cover DC to 26.5, 43.5, 70, and 110 GHz.

Many other attenuator applications principal objective is the reduction of power. Since the attenuator might not be inserted at a measurement point, the measurement precision discussed earlier is not required. In such a power-reducing system application, attenuators are often required in large quantities, making price an important consideration. The 43K Series includes models covering DC to 26.5 GHz, and DC to 40 GHz. All are available with 3, 6, 10, or 20 dB attenuation values. All have the Anritsu K Connectors and are compatible with 3.5 mm and SMA connectors.

Whatever your fixed attenuator needs might be, Anritsu provides the solution.

Precision Step Attenuators

Anritsu offers low loss, high precision step attenuators. These programmable step attenuators are available with 10 dB steps from 0 to 70 dB or 0 to 110 dB ranges. DC to 40 GHz frequency range ensures the broadest attenuation and frequency coverage available. Contact Anritsu for needs above 40 GHz or for custom step sizes.

Precision Power Dividers and Splitters

Anritsu offers the world's only W1 coaxial power divider and power splitter solution up to 110 GHz. Anritsu produces precision V Connector dividers and splitters to 65 GHz and precision K Connector dividers and splitters to 40 GHz. All Anritsu power dividers are 3-resistor symmetrical designs with excellent amplitude and phase tracking. Anritsu power splitters are 2-resistor designs, used to accurately split signals for ratio measurements.

Precision Bias Tees

Anritsu bias tees are used to combine DC and RF for active device measurements. Low RF throughline loss and low SWR ensure negligible effect on measurements from 50 kHz to 65 GHz. For users that require the most precision measurements by eliminating DC errors, Anritsu offers Kelvin bias tees. A high resistance of the DC coil results in voltage drop that leads to biasing voltage error which can be corrected through a sense coil on the Kelvin bias tee. Kelvin bias tees are available from 50 kHz to 10/65/110 GHz.

Broadband DC Blocks

Anritsu DC Blocks are used to prevent DC signals from passing through and are available up to 110 GHz.

Broadband Microwave Limiters

Anritsu broadband microwave limiters provide the widest frequency range available in a limiter. Designed to protect sensitive microwave equipment, these limiters incorporate unique single-side limiting to provide soft limiting characteristics over 10 MHz to 26.5 GHz.

RF Detectors

Just as directivity is the principal error contributor in reflection measurements, the impedance match of the signal source and RF detector is a significant error contributor in transmission measurements.

Anritsu offers a complete line of coaxial RF detectors covering from 10 MHz to 50 GHz with the lowest SWR available. The excellent impedance match of the detectors, along with that of the test port on the SWR Autotesters and bridges, minimize errors when making simultaneous transmission and measurements.

Calibration and Verification Kits

Anritsu offers calibration kits which contain all of the precision components and tools required to calibrate an Anritsu VNA in a connector style of your choice. Anritsu K, V, and W coaxial calibration kits offer optional data-based calibration files. Data-based calibration, along with precision components, provide superior VNA accuracy for R&D and production environments.

Specials

Anritsu also manufactures assemblies and components to meet specific customer requirements in both coaxial and waveguide structures. These include such components as Connectors, Bias Tee, Step Attenuator, Detector, Power Sensors, Waveguide, Coaxial Adapters, and RF Cables etc.

When requesting quotations on special assemblies, as a minimum please provide this information: frequency range, electrical characteristics, mechanical details and outline dimensions if any.

H-Field/E-Field sensor/E-Field Isotropic Antenna

2000-1800-R/2000-1791-R/2000-1792-R EMF Option 444

ElectroMagnetic Field Measurements

The Isotropic Antennas are Tri-axis with Integrated RF Switches.



Anritsu's ElectroMagnetic Field (EMF) measurements are designed to measure radiation compliance with various national standards for personal safety set by governmental regulatory authorities. Many countries have mandated EMF safety testing in areas where cellular or other high power transmission antennas are located. The EMF option is primarily targeted to both cellular operators and government regulators. Additionally, contractors and small service companies perform building inspections and field surveys to monitor radiation exposure intensities in areas situated near transmission antennas.

Anritsu's EMF measurements are designed to be easy to use, while providing the user with numerous automated features which will enable them to do their job quickly and more efficiently. EMF measurements (EMF, Option 444) are available on the following Anritsu products: Field Master Pro™ MS2090A; Spectrum Master™ MS2720T; and LMR Master™ S412E. For the Spectrum Master MS2720T and LMR Master S412E, firmware version 1.12 or later is required. For the Field Master Pro MS2090A™ firmware version V2020.4.2 or later is required.

EMF Option (444) provides the capability to measure electromagnetic field radiation when used in conjunction with an Anritsu isotropic antenna. Automated measurements can be taken using user-definable time intervals.

EMF Measurements Key Features and Benefits

- Limit lines that are user-settable at various power levels across the spectrum
- Limits can be saved for recall at a later time
- Axis dwell time is user-settable (time that each axis [X, Y, and Z] measures radiation before switching to next axis)
- Pass/Fail indicators on screen for immediate feedback on test results
- Automatic save feature for easy storage of measurement results to internal memory (autologging) or USB stick
- Results provided for maximum, minimum, average of all measurements conducted
- Clear display of measurement status, measurement time, number of measurements taken, and most other user settings
- Measurement time is user-configurable
- Pre-amp standard for measurements of low-level signals

Available field strength units include the following:
(S412E supports spectrum analyzer and LTE modes only; MS2090A supports spectrum analyzer mode only.)

Spectrum analyzer mode: dBm/m², dBmV/m, dBuV/m, V/m, W/m², dBW/m², A/m, dBA/m, W/cm², MS2090A is dBm/m² and dBW/m² only

- LTE and TD-LTE mode: dBm/m², V/m, W/m²
- W-CDMA mode: dBm/m², V/m, W/m², % of Limit (V/m), % of Limit (W/m²)

For wideband radiation measurements, the EMF option operates in spectrum analyzer mode. Total radiation from all sources can be measured over the frequency band desired. The EMF option will also conduct radiation measurements of demodulated signals in specific frequency bands. In this way, measurements can be extrapolated assuming a fully loaded traffic channel in order to present a worst-case analysis. Option 444 will work with demodulated signals of the following types: (S412E supports LTE only)

- W-CDMA
- LTE
- TD-LTE

If the user desires to measure EMF with a demodulated signal, the appropriate demodulation option also will need to be purchased. Additionally, Option 9 (demodulation) will need to be purchased if not offered as standard with the spectrum analyzer being used. Customers with spectrum analyzers purchased previously may upgrade their units with the EMF Option 444. If EMF demodulation measurements are required, the appropriate demodulation option will also need to be purchased and installed.

Isotropic Antenna

In order to conduct EMF measurements, an Anritsu isotropic antenna is required. Anritsu offers three isotropic antennas covering a frequency range from 9 kHz to 6 GHz. These antennas along with their corresponding frequency ranges are shown below.

- 9 kHz to 300 MHz H-Field Isotropic Antenna (Anritsu part number: 2000-1800-R)
- 30 MHz to 3 GHz E-Field Isotropic Antenna (Anritsu part number: 2000-1792-R)
- 700 MHz to 6 GHz E-Field Isotropic Antenna (Anritsu part number: 2000-1791-R)

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.

EMF Measurements on Demodulated Signals

Users may purchase the EMF option in order to make radiation power measurements in Spectrum Analyzer mode. These are power measurements for either narrowband or wideband field strength measurements across the frequency range of the Spectrum Analyzer and isotropic antenna being used. Additionally, EMF testing can be conducted on demodulated signals in various cellular channels. This includes the LTE, TD-LTE, and W-CDMA standards. For MS2720T, Options 9 and 81 are required for W-CDMA. The field strength of the pilot channel (P-CPICH) is measured for all such signals present. Results are then displayed for each individual scrambling code as well as for total power levels for all measurements combined. Additionally, the analog signal strength across the channel is measured and displayed for comparison. In order to present a "worst case" result, extrapolation factors can be automatically calculated and displayed where a fully loaded traffic channel is assumed.

Options 9 and 83 are required for either LTE or TD-LTE on the MS2720T platform. For LTE only, Options 31 and 546 are required for the S412E. Primary Synchronization Signals (P-SS), Secondary Synchronization Signals (S-SS), and Reference Signals (RS) are measured and displayed based on each Cell ID received. In addition, the total radiation field resulting from all cell site signals combined is calculated and displayed. The analog signal strength across the channel is also measured and displayed for comparison. In order to present a "worst case" result, extrapolation factors can be automatically calculated and displayed where a fully loaded traffic channel is assumed. See the picture below for a sample display of an LTE EMF measurement. The display for the TD-LTE EMF measurement is identical.

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, E-Field Isotropic Antenna 30 MHz to 3 GHz 2000-1792-R date of calibration, antenna frequency range, and calibration factors. Each isotropic antenna is calibrated 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 screenshot shows the W-CDMA measurement interface on an Anritsu device. It displays various parameters including Center Freq (877.000 MHz), Reference Source (GPS HI Accy), Power Offset (0.0 dB Ext Loss), Auto Range (On), Scrambling Code (327), Max Spread (512), Threshold (-19.1 dB), and Exr Factor (1.00). The main table shows measurements for different scrambling codes (Index 1-6) with columns for Actual, Total Max, Avg/Meas, and Total Avg. The bottom section shows Current Axis (X-Axis), Measurement Time (06:00), Current Test Status (Pass), and Measurement Num (1/1).

Channel	Index	Scrambling Code	Actual	Total Max	Avg/Meas	Total Avg
Reference Source	1	230	280.41 uV/m	317.43 uV/m	278.06 uV/m	278.06 uV/m
Power Offset	2	278	---	72.51 uV/m	60.87 uV/m	60.87 uV/m
Auto Range	3	342	102.71 uV/m	114.74 uV/m	84.54 uV/m	84.54 uV/m
Scrambling Code	4	422	293.72 uV/m	329.10 uV/m	266.93 uV/m	266.93 uV/m
Max Spread	5	430	259.14 uV/m	301.23 uV/m	268.82 uV/m	268.82 uV/m
Threshold	6	462	---	43.74 uV/m	43.74 uV/m	43.74 uV/m
Exr Factor	Total		935.98 uV/m	1.06 mV/m	1.00 mV/m	1.00 mV/m
	Field Strength		1.93 mV/m	2.00 mV/m	1.68 mV/m	1.68 mV/m

Sample Display of W-CDMA Measurement

The screenshot shows the EMF LTE measurement interface on an Anritsu device. It displays various parameters including Center Freq (751.000 MHz), Reference Source (Int Std Accy), Power Offset (0.0 dB Ext Loss), Auto Range (On), BW (10 MHz), Cyclic Prefix (Normal), EVM Mode (Auto), and Sync Type (Normal (SS)). The main table shows measurements for different cell IDs (Index 1-4) with columns for Cell ID (Grp, Sec), RS (Act), P-SS (Avg/Meas), and S-SS (Avg/Meas). The bottom section shows Current Axis (X-Axis), Measurement Time (01:00), Current Test Status (Pass), and Measurement# (5/5).

Channel	Index	Cell ID (Grp, Sec)	RS (Act)	P-SS (Avg/Meas)	S-SS (Avg/Meas)
Reference Source	1	6 (2, 0)	---	-63.9 dBm/m2	-64.0 dBm/m2
Power Offset	2	204 (68, 0)	-54.3 dBm/m2	-58.9 dBm/m2	-58.9 dBm/m2
Auto Range	3	205 (68, 1)	---	-50.5 dBm/m2	-50.7 dBm/m2
BW	4	206 (68, 2)	---	-40.5 dBm/m2	-40.4 dBm/m2
Cyclic Prefix	Total		-54.3 dBm/m2	-37.0 dBm/m2	-36.9 dBm/m2
EVM Mode	Field Strength(Ex Avg)		-27.5 dBm/m2		
Sync Type	Field Strength(Total Ex Avg)		-20.3 dBm/m2		

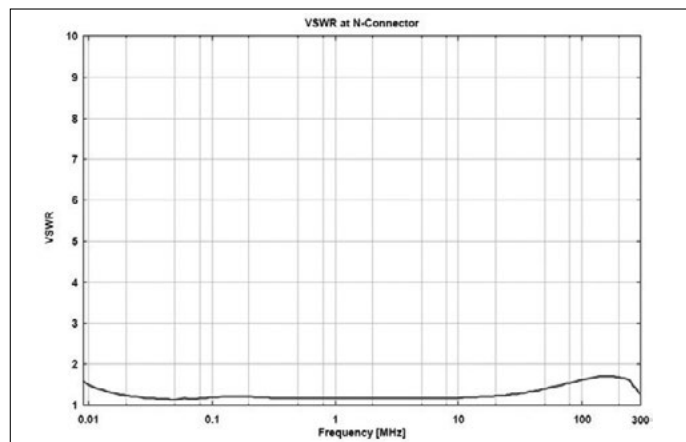
Sample Display of EMF LTE Measurement

2000-1800-R Isotropic Antenna Specifications

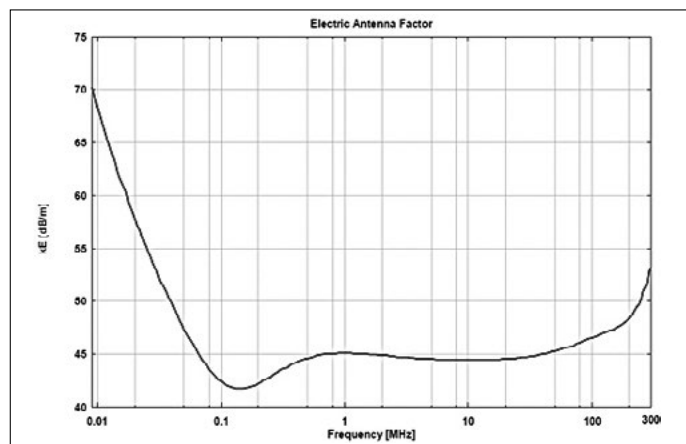
The 2000-1800-R isotropic antenna is a tri-axis H-Field sensor with an integrated RF switch. The RF switch is controlled by the analyzer via a USB port. Each antenna comes with a Certificate of Compliance and supporting test data.

Electrical Characteristics (2000-1800-R)

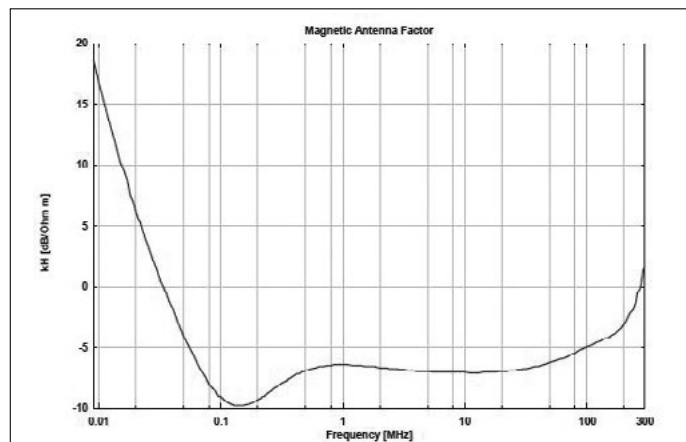
2000-1800-R	H-Field sensor
Sensor Type	Three axis sensor with scanned axes
Frequency Range	9 kHz to 300 MHz
1 dB Compression Point at Output	118 dB μ V (typ.)
Decoupling of the Axis	>20 dB (typ.)
VSWR	<1.5 (20 kHz to 50 MHz) (typ.)
RF Connector	N-Connector (m), 50 Ω
Supply and Control	USB



VSWR (typ.)



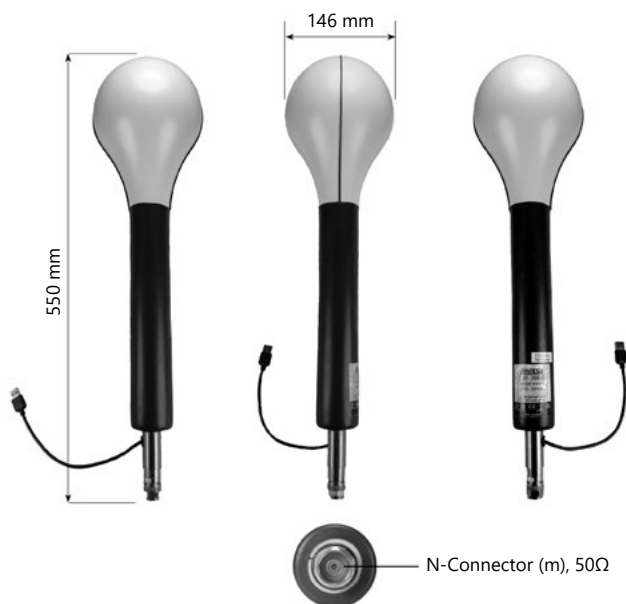
Antenna Factors (typ.)



Magnetic Antenna Factor (typ.)

Mechanical Characteristics (2000-1800-R)

Color	Body: B-39047 "Light Grey" Handle: "Black"
Mass	850 g
Environmental Conditions	-10°C to +50°C, IP54
Mechanical Compliancy	Operating: 7M3 (IEC 60721-3)
Dimensions	550 × 146 mm



2000-1792-R Isotropic Antenna Specifications

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. Each antenna comes with a Certificate of Compliance and supporting test data.

Electrical Characteristics (2000-1792-R)

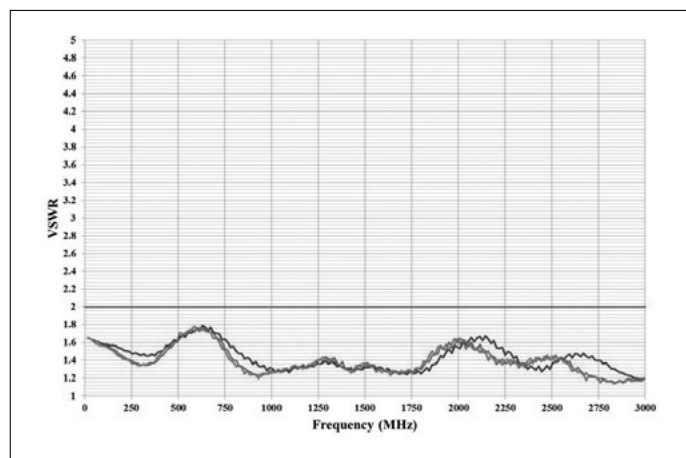
2000-1792-R	E-Field sensor
Sensor Type	Three axis sensor with scanned axes
Frequency Range	30 MHz to 3 GHz
Typical 3D Isotropy	<±1.5 dB (300 MHz to 1 GHz) <±2.3 dB (1 GHz to 3 GHz)
Dynamic Range (with 1 kHz RBW)	0.1 mV/m to 200 V/m (typ.) 25 µV at 900 MHz 35 µV at 1800 MHz 50 µV at 3000 MHz
Maximum Field Strength	500 V/m (destruction limit)
Switching Time	<10 µs
RF Connector	N-Connector (m), 50Ω
Supply and Control	USB

Mechanical Characteristics (2000-1792-R)

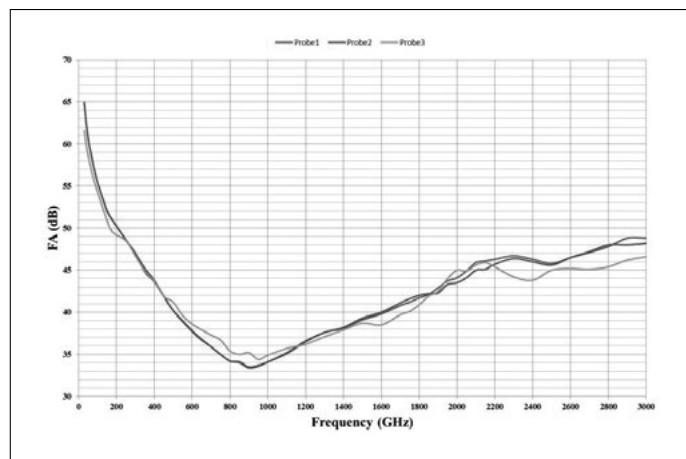
Radome Material	ABS	
Color	Body: B-39047 "Light Grey" Handle: B-39042 "Dark Grey"	
Mass	800 g	
Climatic Compliancy	Operating: 7K3 (IEC 60721-3)	
Mechanical Compliancy	Operating: 7M3 (IEC 60792-3)	
Operating Temperature Range	-25°C to +70°C	
Humidity	100% at +40°C for up to 96 hours	
Dimensions	Maximum Length	Maximum Width
	450 mm ±5 mm (with connector)	150 mm ±1 mm

EU Standards (CE Marking)

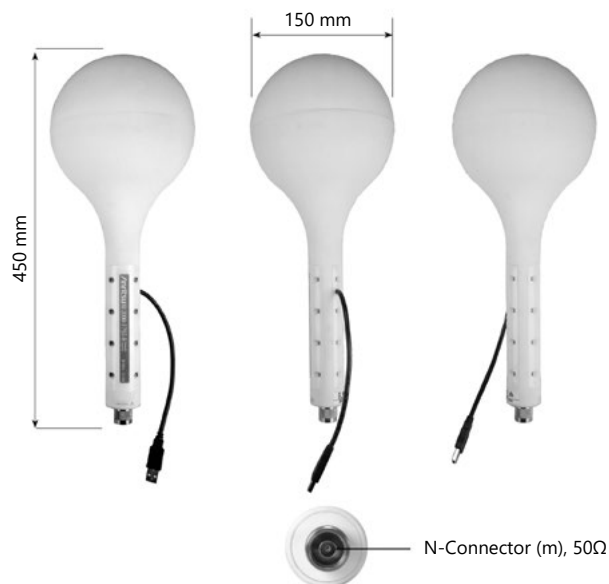
(EU) 2015/863



VSWR (typ.)



Antenna Factors (typ.)



2000-1791-R Isotropic Antenna Specifications

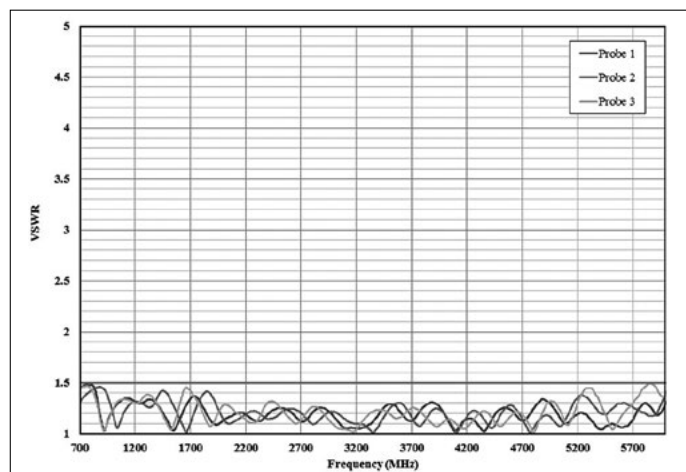
The 2000-1791-R isotropic antenna is a tri-axis E-Field sensor with an integrated RF switch. The RF switch is controlled by the analyzer via a USB port. Each antenna comes with a Certificate of Compliance and supporting test data.

Electrical Characteristics (2000-1791-R)

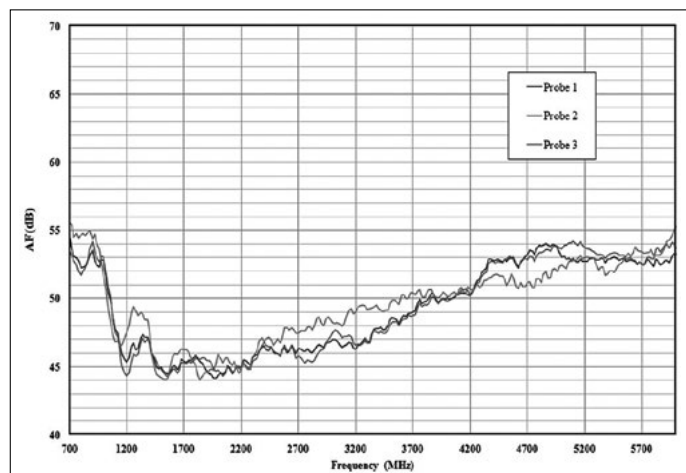
2000-1791-R	E-Field sensor
Sensor Type	Three axis sensor with scanned axes
Frequency Range	700 MHz to 6 GHz
Typical 3D Isotropy	$\leq \pm 2$ dB (0.7 GHz to 2 GHz) $\leq \pm 2.5$ dB (2 GHz to 3.6 GHz) $\leq \pm 3.5$ dB (3.6 GHz to 6 GHz)
Dynamic Range (with 1 kHz RBW)	0.2 mV/m to 200 V/m (typ.)
Maximum Field Strength	500 V/m (destruction limit)
Switching Time	<10 μ s
RF Connector	N-Connector (m), 50 Ω
Supply and Control	USB

Mechanical Characteristics (2000-1791-R)

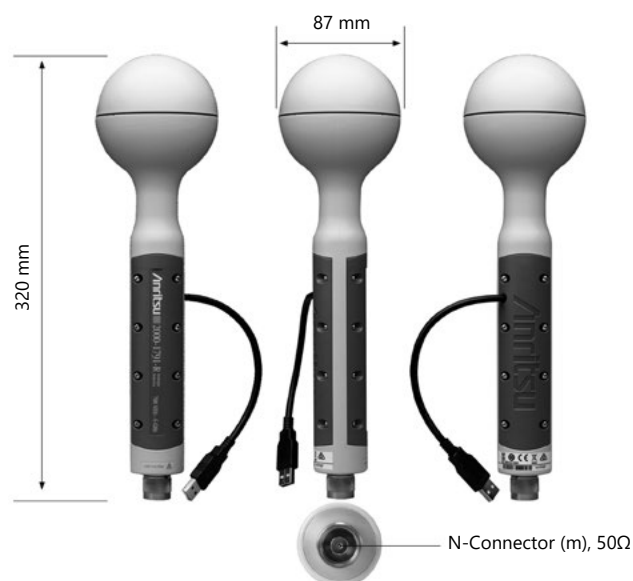
Radome Material	ABS	
Color	Body: B-39047 "Light Grey" Handle: B-39042 "Dark Grey"	
Mass	450 g	
Climatic Compliance	Operating: 7K3 (IEC 60721-3)	
Mechanical Compliance	Operating: 7M3 (IEC 60792-3)	
Operating Temperature Range	-25°C to +70°C	
Humidity	100% at +40°C for up to 96 hours	
Dimensions	Maximum Length	Maximum Width
	320 mm $\pm$ 5 mm (with connector)	87 mm $\pm$ 1 mm



VSWR (typ.)



Antenna Factors (typ.)



Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names.
The actual name of the item may differ from the Order Name.

Model/Order No.	Name
Required Instrument Options and Accessories	
MS2720T-0444	EMF Option 444 for MS2720T
S412E-0444	EMF Option 444 for S412E
MS2090A-0444	EMF Measurement for MS2090A
2000-1800-R	Isotropic Antenna, 9 kHz to 300 MHz, N Connector (m), 50Ω
2000-1792-R	Isotropic Antenna, 30 MHz to 3 GHz, N Connector (m), 50Ω
2000-1791-R	Isotropic Antenna, 700 MHz to 6 GHz, N Connector (m), 50Ω
200-1528-R	GPS Antenna, SMA (m) with 15 ft cable
Related Instrument Options	
MS2720T-0009	20 MHz Bandwidth Demodulation for MS2720T
MS2720T-0881	W-CDMA OTA Measurements for MS2720T*
MS2720T-0883	LTE OTA Measurements for MS2720T*
MS2720T-0883	TD-LTE OTA Measurements for MS2720T*
S412E-0006	6 GHz Coverage for S412E Spectrum Analyzer
S412E-0031	GPS Receiver for S412E (Requires suitable GPS Antenna)
S412E-0546	LTE OTA Measurement for S412E (Requires Option 31)

*: Requires Option 9, 20 MHz Bandwidth Demodulation



Field Master Pro MS2090A
with 2000-1800-R
Isotropic Antenna



Spectrum Master MS2720T
with 2000-1791-R
Isotropic Antenna

Kelvin Bias Tee

K252, V252, W252MF, W252FM

100 MHz to 110 GHz



K252



W252

For precision bias applications, the Kelvin connection bias tee is available. The high resistance of the standard bias tee DC coil results in a voltage drop that can lead to DC biasing voltage errors in the bias signal. A Kelvin connection bias tee is used to eliminate DC biasing errors by allowing a user to measure the DC bias signal through the sense connector, post DC coil. Kelvin connection bias tees, unlike standard bias tees, are designed for applications where the user can accurately measure the DC signal to a device under test (DUT), effectively creating a precision bias signal.

Features

- 100 MHz to 110 GHz frequency coverage on kelvin bias tee products
- The W1 connector™ is compatible with 1.00 mm connectors
- The V connector™ is compatible with 2.4 and 1.85 mm connectors
- The K connector™ is compatible with SMA, 3.5, and 2.92 mm connectors
- Design is robust and well suited for high-frequency system and instrumentation applications

Specifications

Model Name	K252	V252
Frequency Range	100 MHz to 40 GHz	100 MHz to 65 GHz
Insertion Loss	<2.5 dB (typ.)	<3.7 dB (typ.)
Return Loss	11 dB	10 dB (60 GHz) 8 dB (65 GHz)
Maximum DC Voltage	50 V	
Maximum Direct Current	0.5 A	
RF Power	1 W	
RF Connector	Input: K (m), Output: K (f)	Input: V (m), Output: V (f)
DC Connector	SMC (m)	
Temperature Range	0°C to +50°C	
CE	RoHS Directive (EU) 2015/863	

Model Name	W252FM	W252MF
Frequency Range	100 MHz to 110 GHz	
Insertion Loss	<3.5 dB	
Return Loss	12 dB (Min.) (100 MHz to 26 GHz) 9.5 dB (Min.) (>26 GHz to >65 GHz) 8 dB (Min.) (>65 GHz to 110 GHz)	
Rise Time	<3.2 ps (typ.)	
Group Delay	108±20 ps (typ.)	
Maximum DC Voltage	16 V	
Maximum Direct Current	0.4 A	
RF Power	1 W	
RF Connector	Input: W1 (f), Output: W1 (m)	Input: W1 (m), Output: W1 (f)
DC Connector	SMC (m)	
Temperature Range	0°C to +50°C	
CE	RoHS Directive (EU) 2015/863	



Specifications are subject to change without notice.

• **United States**

Anritsu Americas Sales Company

490 Jarvis Drive, Morgan Hill, CA 95037-2809, U.S.A.
Phone: (408)-778-2000

• **Canada**

Anritsu Electronics Ltd.

Americas Sales and Support

490 Jarvis Drive, Morgan Hill, CA 95037-2809, U.S.A.
Phone: +1-800-Anritsu (1-800-267-4878)

• **Brazil**

Anritsu Eletrônica Ltda.

Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP, Brazil
Phone: +55-11-3283-2511

• **Mexico**

Anritsu Company, S.A. de C.V.

Blvd Miguel de Cervantes Saavedra #169 Piso 1, Col. Granada
Mexico, Ciudad de Mexico, 11520, MEXICO
Phone: +52-55-4169-7104

• **United Kingdom**

Anritsu EMEA Limited

900 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200

• **France**

Anritsu SA

12 avenue du Québec, Immeuble Goyave,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50

• **Germany**

Anritsu GmbH

Nemetschek Haus, Konrad-Zuse-Platz 1,
81829 München, Germany
Phone: +49-89-442308-0

• **Italy**

Anritsu S.R.L.

Spaces Eur Arte, Viale dell'Arte 25, 00144 Roma, Italy
Phone: +39-6-509-9711

• **Sweden**

Anritsu AB

Kistagången 20 B, 2 tr, 164 40 Kista, Sweden
Phone: +46-8-534-707-00

• **Finland**

Anritsu AB

Technopolis Aviapolis, Teknobulevardi 3-5 (D208.5.),
FI-01530 Vantaa, Finland
Phone: +358-20-741-8100

• **Denmark**

Anritsu A/S

c/o Regus Winghouse, Ørestads Boulevard 73, 4th floor,
2300 Copenhagen S, Denmark
Phone: +45-7211-2200

• **Spain**

Anritsu EMEA GmbH

Representation Office in Spain

Calle Manzanares 4, Primera planta, 28005 Madrid, Spain
Phone: +34-91-572-6761

• **Austria**

Anritsu EMEA GmbH

Am Belvedere 10, A-1100 Vienna, Austria
Phone: +43-(0)1-717-28-710

• **United Arab Emirates**

Anritsu A/S

Office No. 164, Building 17, Dubai Internet City
P. O. Box – 501901, Dubai, United Arab Emirates
Phone: +971 (0) 4-2424919

• **India**

ANRITSU INDIA PRIVATE LIMITED

6th Floor, Indique ETA, No.38/4, Adjacent to EMC2,
Doddanekundi, Outer Ring Road, Bengaluru – 560048, India
Phone: +91-80-6728-1300
Fax: +91-80-6728-1301

• **Singapore**

ANRITSU PTE LTD

1 Jalan Kilang Timor, #07-04/06 Pacific Tech Centre
Singapore 159303
Phone: +65-6282-2400

• **Vietnam**

ANRITSU COMPANY LIMITED

16th Floor, Peakview Tower, 36 Hoang Cau Street, O Cho Dua Ward,
Hanoi, Vietnam
Phone: +84-24-3201-2730
Fax: +84-24-3201-2740

• **P.R. China (Shanghai)**

Anritsu (China) Co., Ltd.

Room 2301-2303, Tower A, New Caohejing International Business
Center No. 391 Gui Ping Road, Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898

• **P.R. China (Hong Kong)**

ANRITSU COMPANY LIMITED

Unit 1302, 13th Floor, New East Ocean Center,
No.9 Science Museum Road, TsimShaTsui East,
Kowloon, Hong Kong
Phone: +852-2301-4980

• **Japan**

ANRITSU CORPORATION

8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-1244
Fax: +81-46-296-1239

• **Korea**

Anritsu Corporation Limited

8F, A TOWER, 20, Gwacheondaero 7-gil, Gwacheon-si,
Gyeonggi-do, 13840, Republic of Korea
Phone: +82-2-6259-7300

• **Australia**

Anritsu Pty Ltd

Unit 20, 21-35 Ricketts Road, Mount Waverley, Victoria 3149, Australia
Phone: +61-3-9558-8177

• **Taiwan**

ANRITSU COMPANY, INC.

7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816