KYOCERA AVX

MILLIMETER WAVE MEASUREMENT SYSTEM

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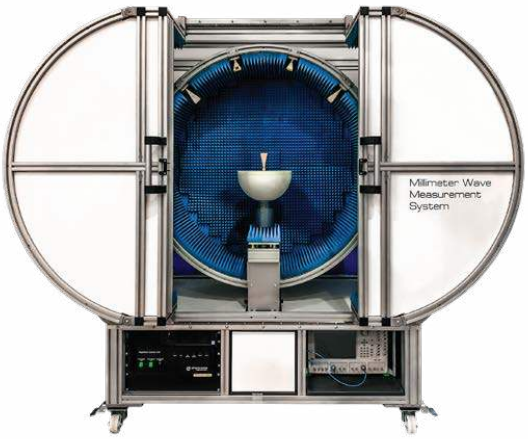
Datasheet | Millimeter Measurement System

Part No. ETH-MMW-1000 (version 1A)

KYOCERA AVX presents the **ETH-MMW-1000 Millimeter Measurement System**, a cost effective, compact and adaptable solution for testing antennas/devices at mmWave frequencies.



Self-Contained Movable System

Compact and portable, the ETH-MMW-1000 frees up space in laboratories and production environments. The system integrates its Gigahertz Control Unit, Measurement PC and welcomes a Vector Network Analyzer, a Spectrum Analyzer or a Radiocom Tester. Easily installed into a new or existing construction, the moveable chassis can be relocated within a test facility.

Accurate and Cost Effective Far-Field Measurement System

The ETH-MMW-1000 includes a distributed axis positioning system, consisting of:

- An azimuth mast rotator for rotating the DUT about the Phi axis
- A Theta ring positioner for elevating the measurement Horns around the DUT.

Each measurement frequency band uses a dedicated RF path (High Performance RF cables, rectangular waveguides and Horns…).

The fully anechoic enclosure provides a shielded environment over a very wide frequency range (from 18 GHz to 75 GHz) and insures stable gain and phase measurement results.

Main Features

Technology

- Far-field / Spherical w/oversampling

Measurement Capabilities (Passive and Active)

- Gain
- Directivity
- Efficiency
- Beamwidth
- Cross polar discrimination
- Sidelobe levels
- 3D radiation pattern
- Radiation pattern in any polarization
- TRP, TIS, EIRP and EIS

Frequency range:

- 18 GHz to 75 GHz

Max. Size of DUT:

- 45 cm

Max. Mass of DUT:

- 10 kg on the mast

Typical dynamic range:

- 50 dB

A simplified design, meticulously scrutinized for detail and precision, incorporating the use of high-quality components to maximize performance and ease of use.

Testing Existing and Upcoming Technologies

The ETH-MMW-1000 is a flexible turn-key solution, suitable for all testing needs for mmWave system development and validation.

The ETH-MMW-1000 supports multiple combinations of mmWave frequencies with scalability to cover existing and forthcoming 5G mmWave frequencies and bandwidths (18-26.5 GHz, 26.5-40 GHz, 33 to 50 GHz, 50 to 67 GHz).

The ETH-MMW-1000 is supplied with the complete KYOCERA AVX Software Suite:

- KYOCERA AVX Antenna Measurement *(Measurement Control, Data Acquisition)*
- KYOCERA AVX Antenna Viewer *(Post-processing and tabular/graphical data output)*

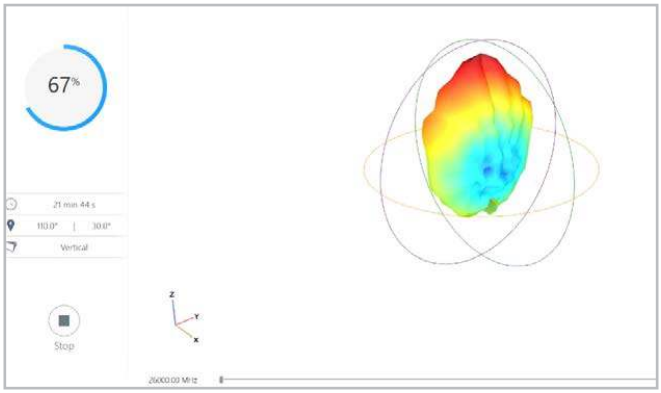
SYSTEM CONFIGURATION

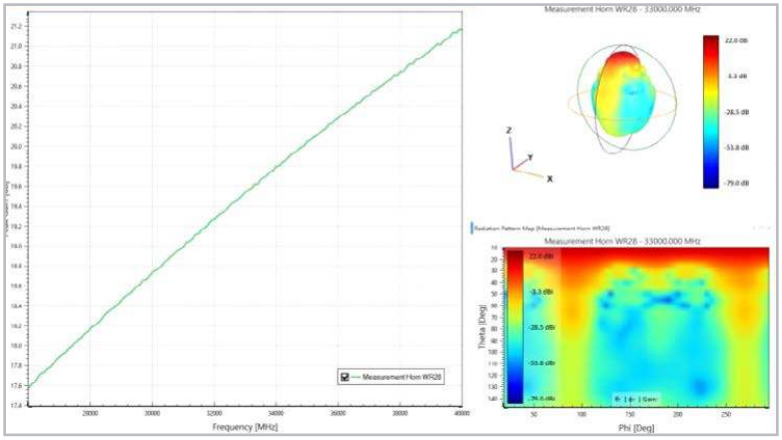
Software	KYOCERA AVX Antenna Measurement (Measurement Control, Data Acquisition) KYOCERA AVX Antenna Viewer (Post-processing and tabular/graphical data output)
Equipment	Autonomous Millimeter Measurement System, including: • Complete frame equipped with mechanical positioners and sliding doors, rubberized absorbers • RF path assembled (RF Cables, Waveguides, Measurement Horns, Amplification stage, Switches…) • Integrated Gigahertz Control Unit • Integrated Computer (Windows 10) • (Optional) Vector Network Analyzer
Accessories	Reference Horns (Optional) Mast adaptation part
Services	Installation Training Warranty (Optional) Post warranty service plans

Screenshots of the KYOCERA AVX Software

Top: KYOCERA AVX Antenna Measurement *(Measurement Control, Data Acquisition)*

Bottom: KYOCERA AVX Antenna Viewer *(Post-processing)*





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Standard System Components

Sliding door

Allows easy access to the center of the system, in order to position the DUT.

Rectangular Horn Antenna

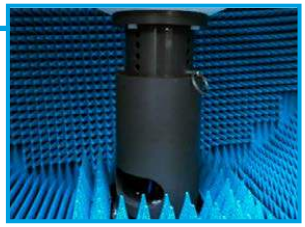
Dedicated to 1 polar/1 frequency bandwidth.

Half sphere support interface (Ø 300 mm)

Includes dedicated notch to position the DUT (tablet/phone type) in vertical/horizontal position.

PVC Mast

The height is easy to adjust in order to center the DUT in the middle of the rotating ring.



Vector Network Analyzer

Placed in the bottom part of the frame, alongside the Integrated GigaHertz Control Unit and the PC Measurement.

Steerable Lifting Wheels

Allow for optimal stability during measurements that still allows quick relocation within the Test Facility.

Electrical System Specifications

Electrical (VAC):	110-240 VAC
Voltage (Hz):	50/60 Hz
Amps (A):	10 A (220V) / 16 A (110V)
Plug type:	Type E/F (CEE 7/7) or NEMA 5-15
Shield material:	Aluminum plate
External connections:	HDMI(F)+ C14 (IEC 60320) + USB

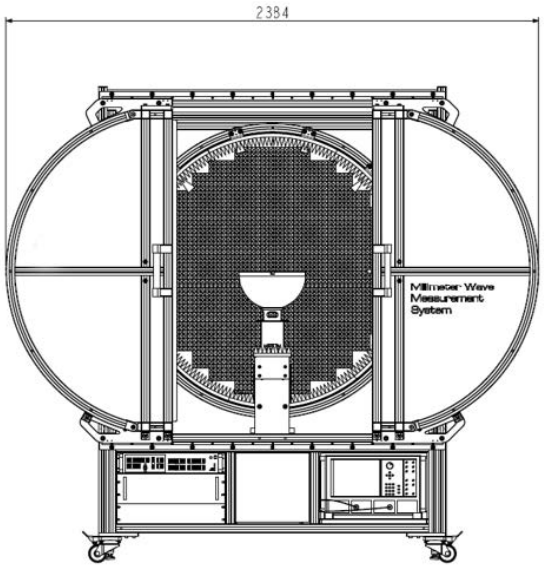
Mechanical System Specifications

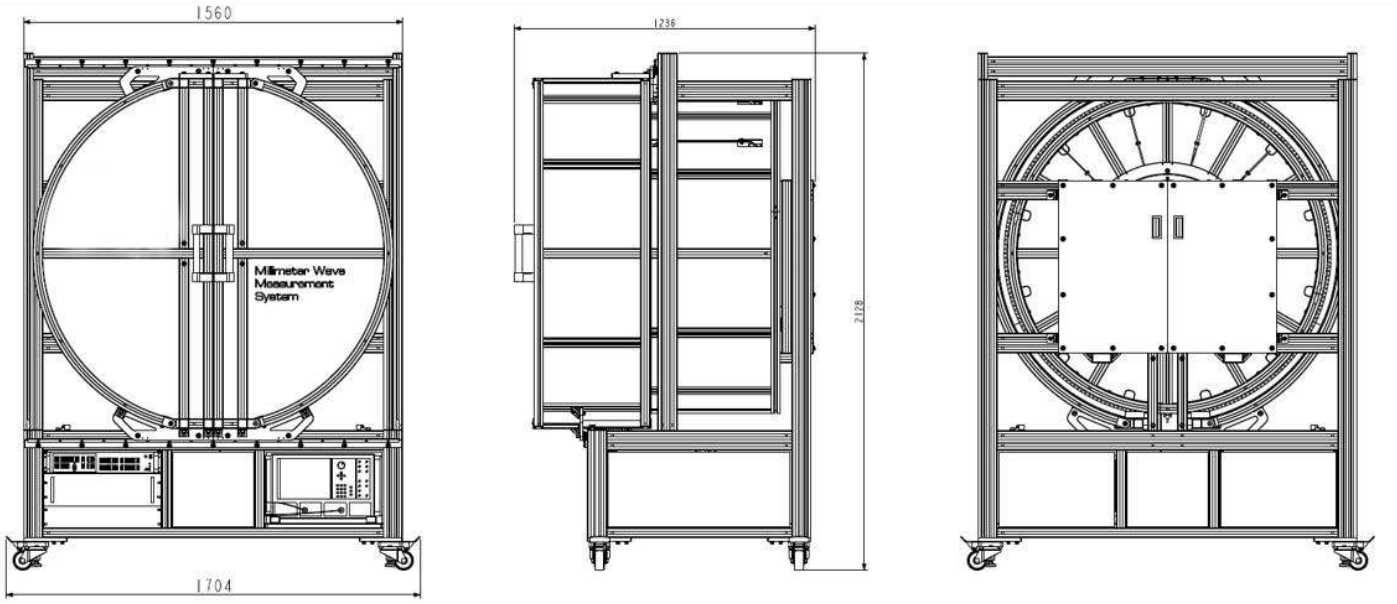
Positioners (Theta and Phi):	0-180° or/and 0-360° Rotation 0.01° Position resolution
Frame:	Aluminium Profile
Mast + interface:	PVC, Polystyren / Rohacell®51, equipped with Slip Ring *Custom mast & interface also available*
Total overall mass:	Around 430 kg (without VNA)
Shield material:	Aluminum
External dimensions:	See Aside

DUT Specifications

DUT max. mass*:	10 kg
Maximum DUT size:	45 cm

*Centered Load





All dimensions are in millimeter and provided in this document for informational purposes only

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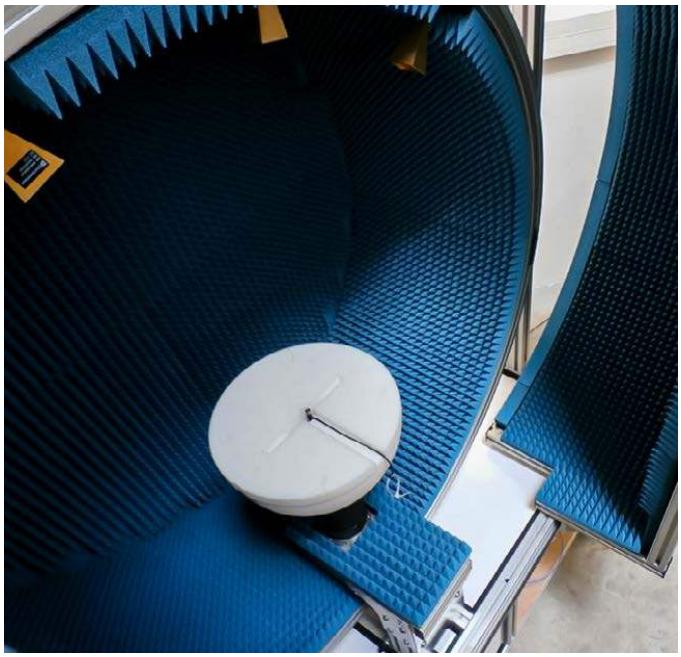
Frequency Range

Different combinations are possible to cover one or several usual Millimeter Wave bandwidths.	18 to 26.5 GHz 26.5 to 40 GHz 33 to 50 GHz 40 to 60 GHz 50 to 67 GHz 50 to 75 GHz



Custom Probe Configuration

In order to optimize the measurement time, the number of measurement probes dedicated to a bandwidth can be optimized. A minimum of 2 measurement probes is required to cover H and V polarizations but up to 12 probes on the ring positioner can be used.

Measurement Time (with 2 measurement probes)

10 frequencies, 22.5° sampling	~ 4.5 min
10 frequencies, 10° sampling	~ 16.5 min
100 frequencies, 22.5° sampling	~ 5.5 min
100 frequencies, 10° sampling	~ 19 min

Typical Dynamic Range

20 – 40 GHz	55 dB
40 – 67 GHz	50 dB
Typical cross polar level that can be measured	< -30 dB

Peak Gain Accuracy

20 - 35 GHz	± 0.9 dB
35 - 50 GHz	± 0.9 dB
50 - 67 GHz	± 0.9 dB
Peak Gain repeatability	± 0.3 dB

ABOUT KYOCERA AVX

KYOCERA AVX is a worldwide leading supplier of passive electronic components, connectors, passive and active antennas, sensors and control units. KYOCERA AVX offers a wide range of components manufactured to the highest quality and reliability standards.

Our products include ceramic, solid electrolytic and film capacitors, pulse supercapacitors, varistors, thermistors, filters, inductors, diodes, antennas, connectors, sensors and control units. Our worldwide manufacturing capability includes facilities located in seventeen countries on four continents, allowing us to continue meeting customer needs on a global basis.

KYOCERA AVX is committed to supporting the needs of its customers for applications today and in the future. Together with continuous quality improvement process, KYOCERA AVX components provide reliable solutions for consumer application needs.

As a technology leader, KYOCERA AVX will continue to add to its product portfolio on a regular basis. Details of new devices being offered and their specifications will be shown on the KYOCERA AVX website: WWW.KYOCERA-AVX.COM.

North America
Tel: +1 864-967-2150

Central America
Tel: +55 11-46881960

Europe
Tel: +44 1276-697000

Asia
Tel: +65 6286-7555

Japan
Tel: +81 740-321250