Part No. ETH-MMW-1000 (version 1A)
Millimeter Measurement System
Frequency Range: 18 GHz – 75 GHz

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

Self-Contained Moveable System

Compact and portable, the Ethertronics®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 Ethertronics®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 with 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

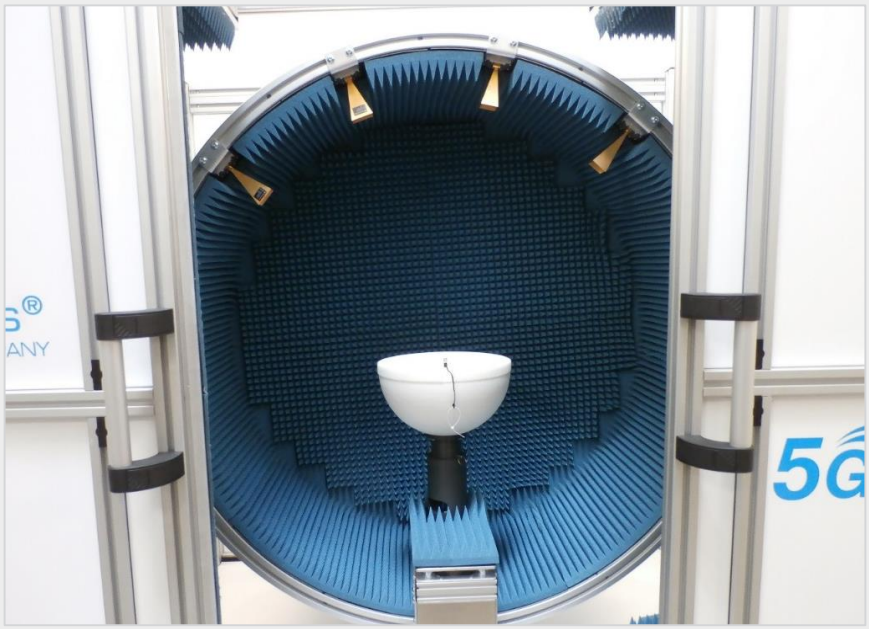
Frequency range:
- □ 18 GHz to 75 GHz

Max. Size of DUT:
- □ 45 cm

Max. Mass of DUT:
- □ 10 kg on the mast

Typical dynamic range:
- □ 50 dB

➔ A simplified design, associated with a keen eye for detail, and the use of recognized quality components to maximize the performance…and the user experience.



Testing existing and upcoming technologies

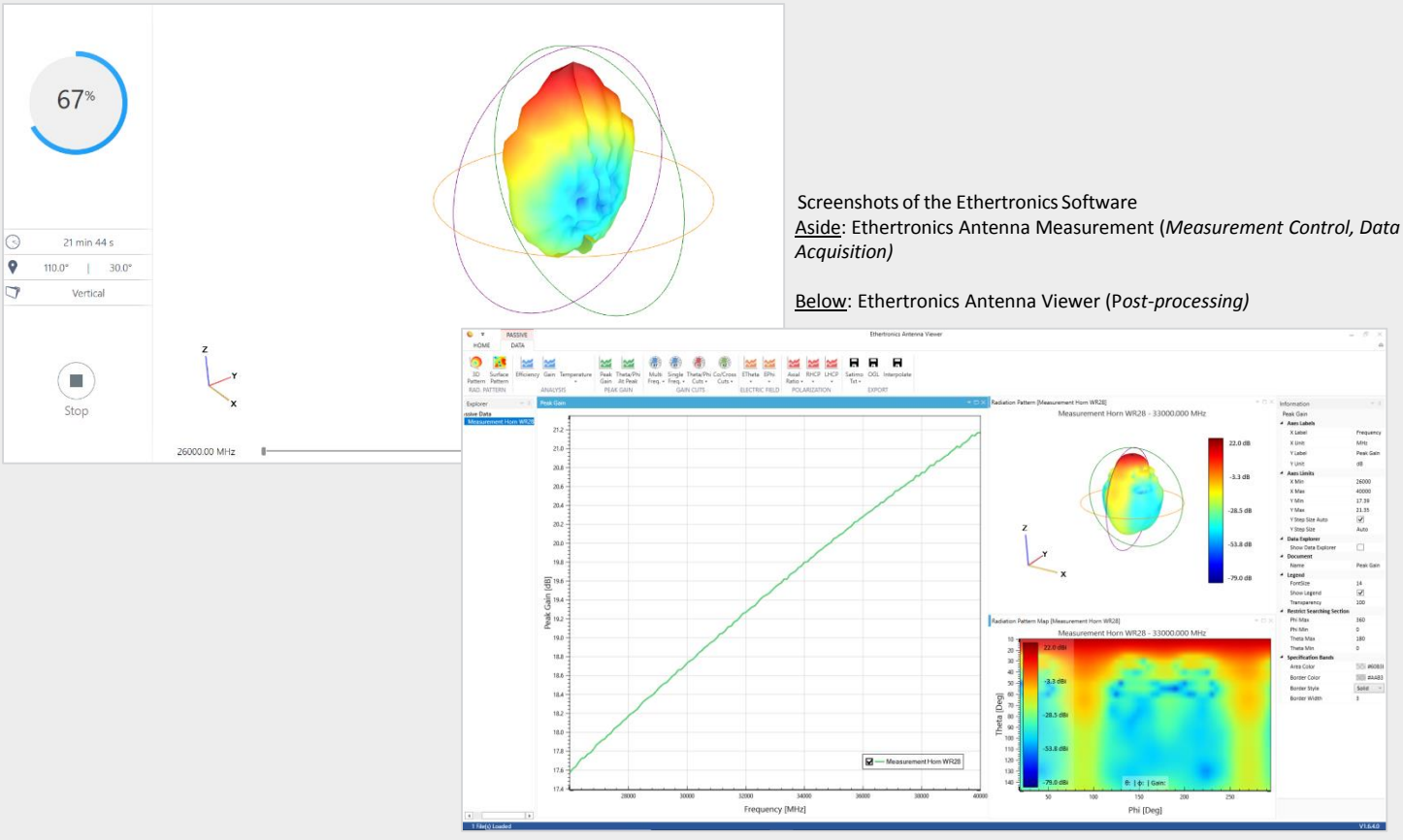
The Ethertronics®ETH-MMW-1000 is a flexible turn-key solution, suitable for all testing needs for mmWave system development and validation.

Hence, different combinations are possible, to cover one or several usual Millimeter wave bandwidths (18-26.5 GHz, 26.5-40 GHz, 33 to 50 GHz, 50 to 67 GHz…).

The System is supplied with the complete Ethertronics Software Suite:

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

SYSTEM CONFIGURATION	
Software	Ethertronics Antenna Measurement (*Measurement Control, Data Acquisition)* Ethertronics 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 Ethertronics Software

Aside: Ethertronics Antenna Measurement (*Measurement Control, Data Acquisition)*

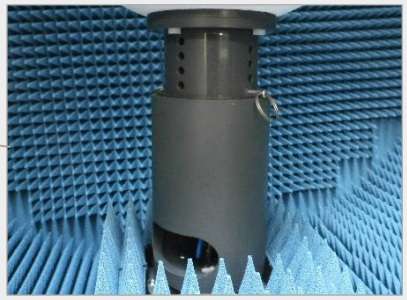
Below: Ethertronics Antenna Viewer (*Post-processing)*

STANDARD SYSTEM COMPONENTS

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

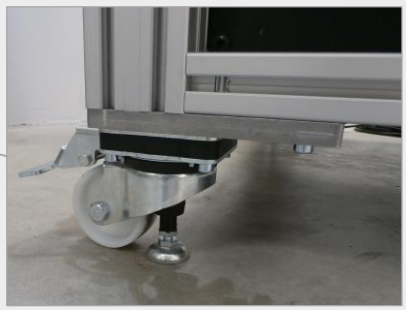
Rectangular Horn antenna
Dedicated to 1 polar/1 frequency bandwidth

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.



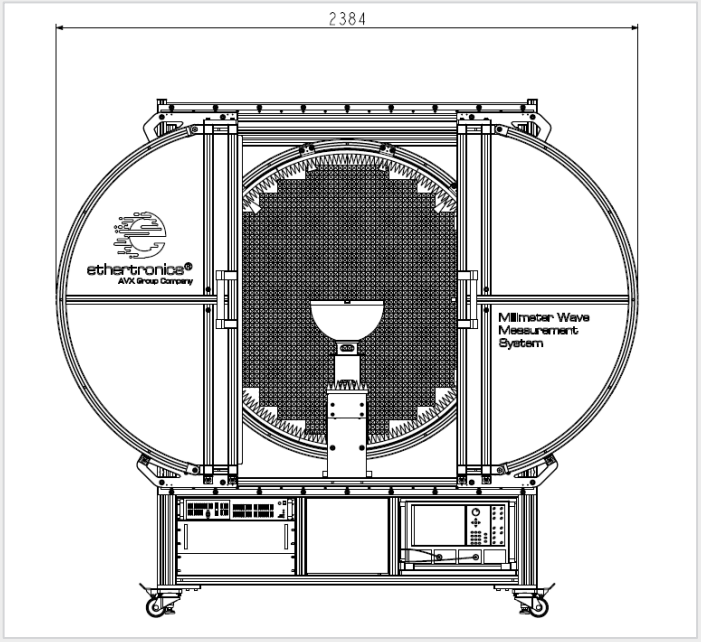
Steerable lifting wheels,
for optimal stability during measurements, that still allows quick relocation within the Test Facility.

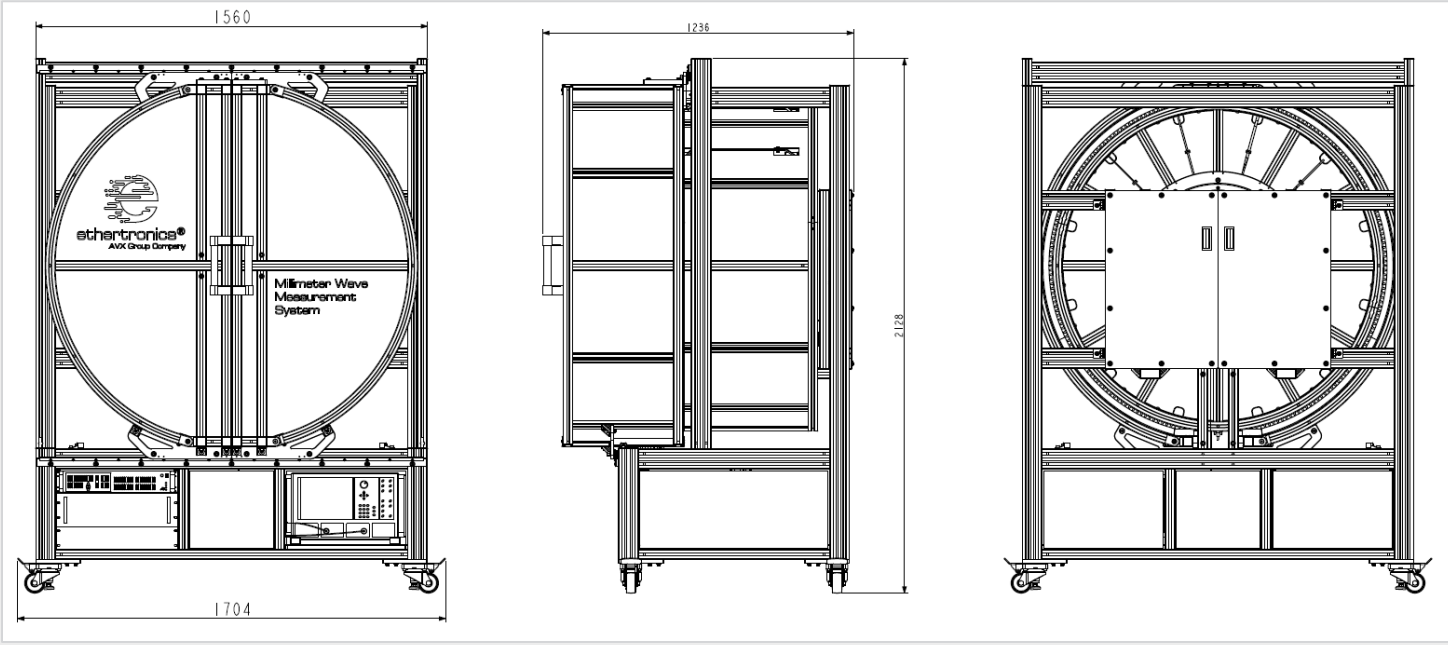
ELECTRICAL SYSTEM SPECIFICATIONS	
Electrical (VAC):	110-240 VAC
Voltage (Hz)	50/60 Hz
Amps:	10 A (220V) / 16 A (110V)
Plug type:	Type E/F (CEE 7/7) or NEMA 5-15
Shield material:	Aluminium plate
External connections	HDMI(F)+ C14 (IEC 60320) + USB

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 and interface are also available*
Total overall mass	Around 430 kg (without VNA)
Shield material:	Aluminium
External dimensions	See aside

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

* Centered load





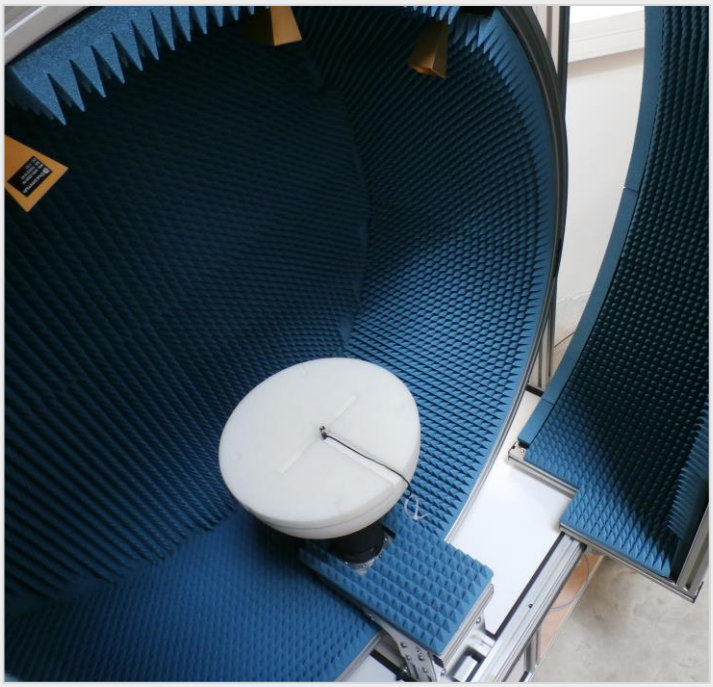
*All dimensions are in millimeter and provided in this document for informational purposes only

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

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