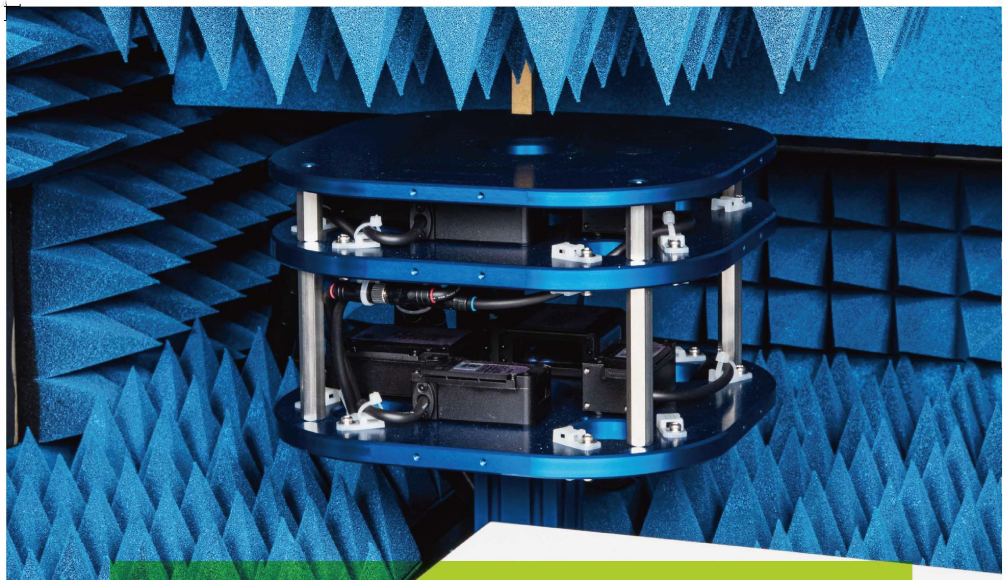

## SPECIFICATIONS IN BRIEF

| | | |
|---|---|---|
| **SHIELDED CHAMBER** | | |
| Frequency range | | 18 GHz to 50GHz |
| Shielding effectiveness | 18 GHz to 50GHz | > 70 dB |
| Dimensions (W × H × D) | outside dimensions and chamber mount | 1.2m×1.2m×2m |
| Axis | | 6 |
| Weight | with Scanner and chamber mount | < 450 kg |
| Door operation | | manually operated |
| **SCANNER SYSTEM** | | |
| Angular resolution | VH switching | 0.02° |
| Positioning repeatability | azimuth/elevation | 0.01mm |
| Load capability | weight | 3 kg |
| | maximum dimensions of the DUT | 20 cm × 20 cm |
| **MEASUREMENT ANTENNA** | Probe antenna | |
| Frequency range | 26.5 GHz to 40 GHz | Option > 40 GHz |
| **OPTION** | | |
| Probe antenna | Waveguide port antenna for each band | |
| Accessory | | ATT, Amp, mixer, source module, RF cable |
| PC | software | include PC |

Specification are subject to change without notice.


We support your power!!

**Microwave Factory Co.,Ltd.**

CRFE
CORNES RF ENGINEERING

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## MICROWAVE FACTORY

# THE 5TH GENERATION TEST SYSTEM

# plato

POWER DENSITY RECONSTRUCTION BY
MEASUREMENTS OF ELECTRIC FIELD INTENSITY
AND PHASE USING NEAR-FIELD SCANNING PROBE

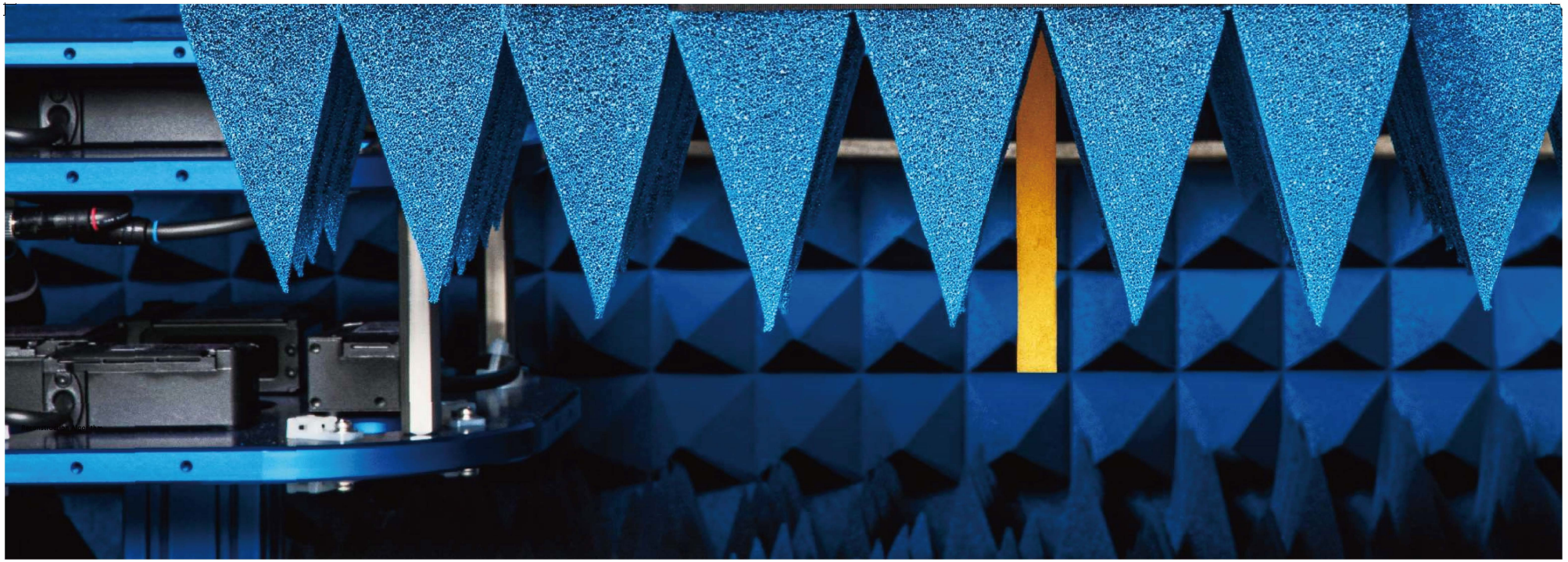
## INTRODUCTION

The 5th Generation 3G PP wirelesscommunications standard, also known as 5G, will soon becomeavailable to the public. Compared to the 4th Generation 4G wireless services, 5G willoffer improvements in communications speed, reduced latency and increased capacity. Two key enabling factors of 5G areits adoption ofmillimeterwave frequenciesand utilization of directional phasedarray antennas.

There is growingconcern thatthe millimeterwave electromagnetic fields (EMF) radiated by 5G devicesmay have harmfuleffects, especially when concentrated or focused by phased array antennas. At lower 4G frequency bands (<10GHz) Specific Absorption Rate (SAR) measurementtechniques weretraditionally used to assess the potentially harmful effectsofhuman exposure to wireless signals. SARtechniquesare not sufficient, however, toassessapplicationsabove 10GHz becauseskin surfaceheating is dominantat frequenciesabove 10GHz. This requires higher frequency EMF exposure techniquesand standards to beadopted toaddress 5G millimeterwave device EMF exposure.

For 5G applications, Power Density measurementtechniques are being adopted to assessthe safety ofwireless signal levelsfor applications greaterthan 10GHz and to ensure conformance to EMF exposurelimits. The Plato platform offered by Microwave Factory is a turn key Power Density measurementsy stem forevaluating EMF exposure at 5G millimeter wave bands.

* Product image for illustration purposes only. Actual product may vary.



## RECONSTRUCTION ALGORITHM

Thereare several metho d to evaluate power density ofwireless devices. Oneof theevaluation metho d is based upon theevaluation Electric File d (E-fiel d) and Magnetic Fiel d (H-fiel d). Another metho d is base d on planewave equivalent approximation. For power density base d on E- and H- fiel ds, the near E- and near H- fiel ds are measured on a surface and thetheir Poy inting vector evaluate d. Fig.1 shows schematic view of power density assessment in close proximity toa device using this technique.

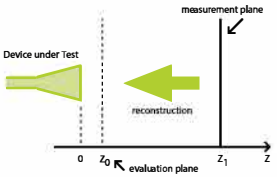



Fig.1 Schematic of power density reconstructed si de view

- Measure Ex and Ey Fiel ds on Measurement Plane z1
- E-fiel ds on theevaluation plane z0 are reconstructed
- H-fields on the evaluation plane z0 derive d using reconstructed E-fiel ds
- Power density evaluated from E and H fields at evaluation plane z0
- Extende d capability of Phaseless Measurementsfor power density evaluation

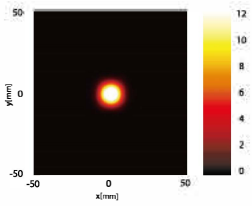


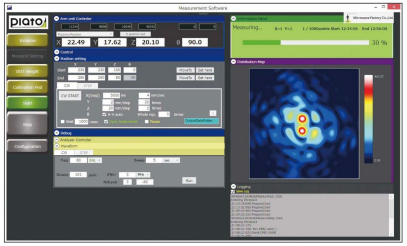

Fig.2 Reconstructed Power Density from Near Fiel d measurements
Reference Horn antennaat 30 GH z z0 = 2mm

plato

## SOFTWARE

Plato is designed an d develope d a power density measurement sy stem . This sy stem is use d forevaluation ofthe power density at millimeter wavefrequency for wireless devise. Thus, Plato is able to confirmcompliance to RF-EMC exposurestan dardsfor wireless devices usingthis sy stem.

Plato software automatically calculates an d displa y s power density values accor ding to a reconstruction algorithm base d on data acquired from the instrument. The user determines the range of measurement an d the Platosoftware automatically measuresthe maximum power density.



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