DEVELOPMENT OF A REAL-TIME, 3D & PORTABLE MICROWAVE VIDEO CAMERA

M.J. Horst, M.T. Ghasr, M. Dvorsky and R. Zoughi
Applied Microwave Nondestructive Testing Laboratory
(amntl)
Electrical and Computer Engineering Department
Missouri University of Science and Technology (S&T)
Rolla, MO, 65409
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Microwave Imaging

• NDE Applications:
  – Dielectric composite structures
  – Aircraft radome
  – Corrosion under paint
Reflectometer vs 2D Array

• Advantages of using a 2D array:
  – Real-time image data acquisition.
  – No bulky mechanical scanning system.

• Challenges of designing a 2D array:
  – Spatial sampling controlled by antenna size.
  – Can be complex and expensive
3D Microwave Camera
3D Microwave Camera
3D Microwave Camera
3D Microwave Camera
3D Microwave Camera
3D Microwave Camera
Thank You

QUESTIONS?
3D Microwave Camera
3D Microwave Camera
Antenna Design

Top Layer

Antenna Feed

Two Receivers

Bottom Layer

--- Radiator
Antenna Array

Non-Uniform Spacing

5.6 mm  2.4 mm  5.6 mm  2.4 mm
Electronic Scan Along Array

Radiated Electric Fields

Reflected Electric Fields
Fabricated Array
Controller Board
Reflectometer Calibration