



DEVELOPMENT OF NEAR-FIELD ULTRA WIDEBAND ANTENNA PARAMETERS MEASUREMENT SYSTEM



Code Nr. VP2-1.3-ŪM-02-K-01-031

Beginning: 01.10.2009

End: 28.09.2012

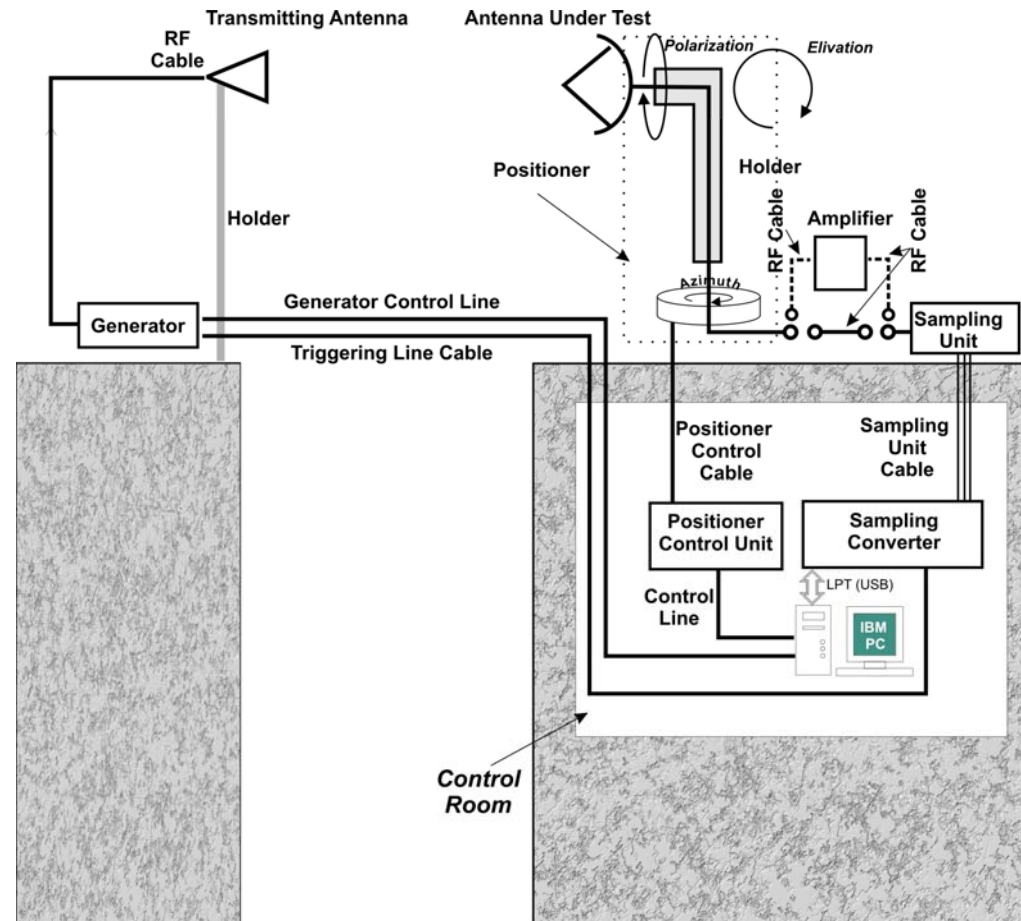


Performers

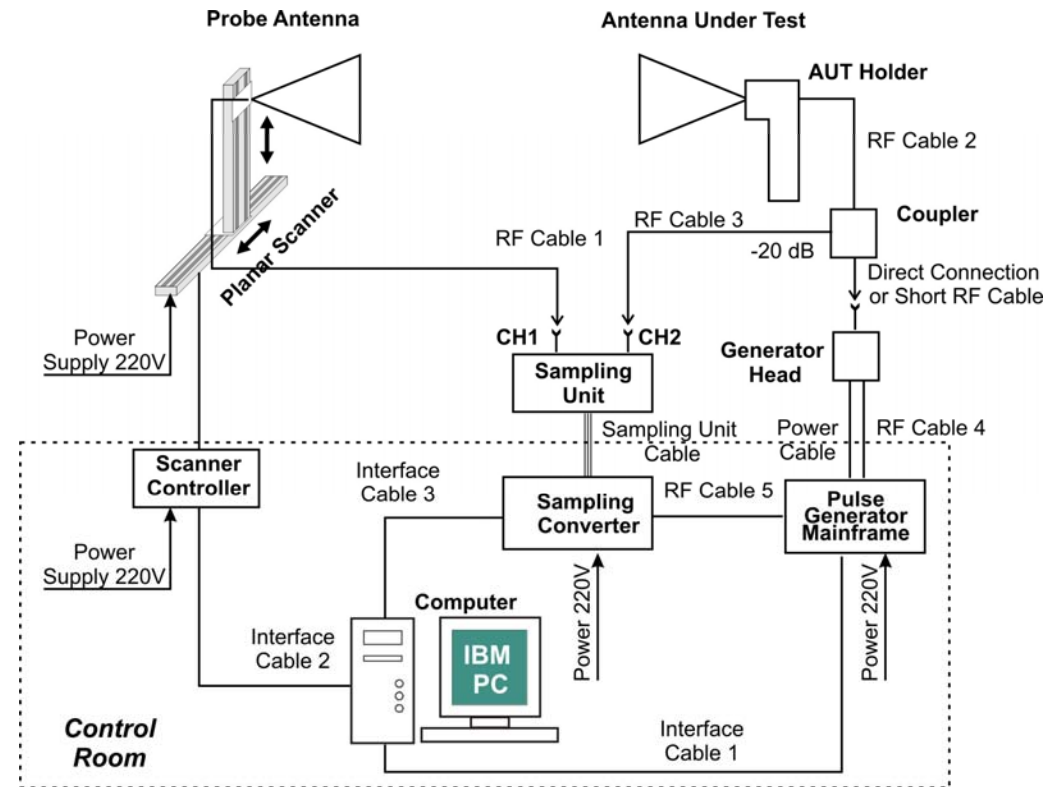
Company	Field Of Activity	Performing Part	Information
	<ul style="list-style-type: none"> • Electrical Measurements instruments (Sampling Converters, Short Pulse Generators) • Antenna Measurement Systems • UWB Radars and their Applications • ISAR Measurements • Digital Signal Processing 	<ul style="list-style-type: none"> • Algorithms • Software • Sampling Converter • Pulse Generator • Probe Antennas • System Design • System Test 	<p>http://www.geozondas.com e-mail: info@geozondas.com</p>
	<ul style="list-style-type: none"> • Optical and mechanical components (optics holders, optical mounts, adaptors, fixation elements) • Precision mechanical units (XYZ translators, rotation stages, adjustment units, motorized controllers) • Antivibration optical tables • Optical measurement instruments 	<ul style="list-style-type: none"> • Rotation Unit (Positioner) • Phase center tuning 	<p>http://www.standa.it e-mail: sales@standa.it</p>



Far-Field Measurement Diagram



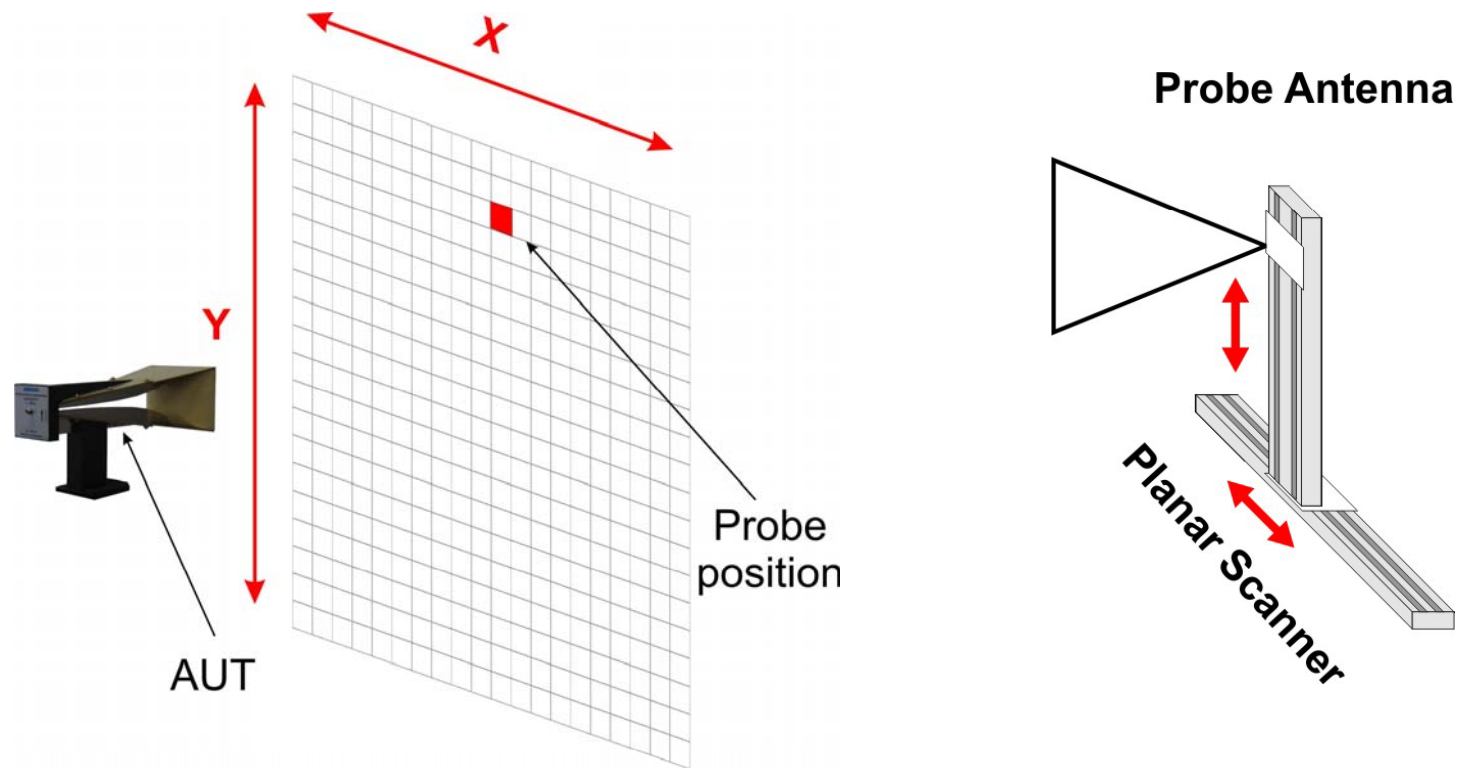
Near-Field Measurement Diagram



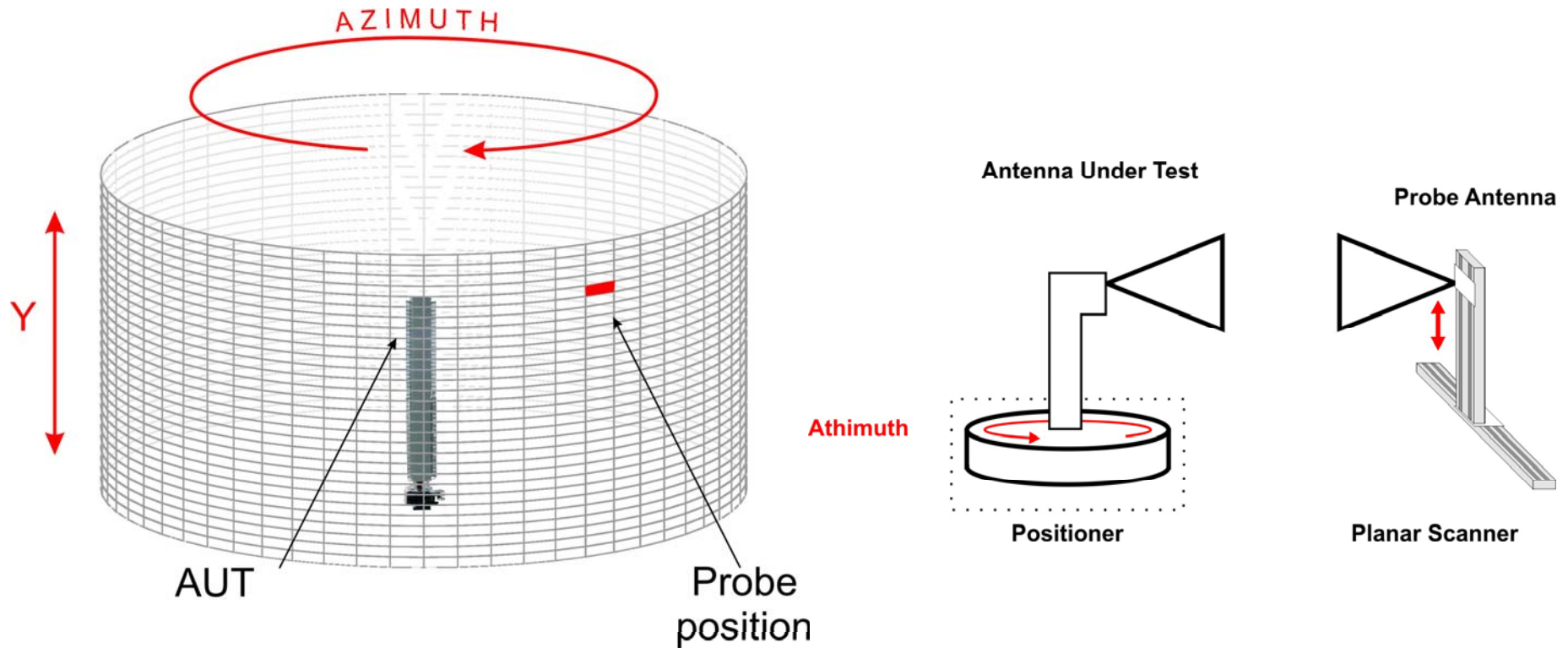
The minimum scan density is established by Nyquist sampling theorem, which states that the phase of any spatial frequency component must shift by less than 180° between adjacent samples. Typical scan intervals range from $0,5$ to 10λ



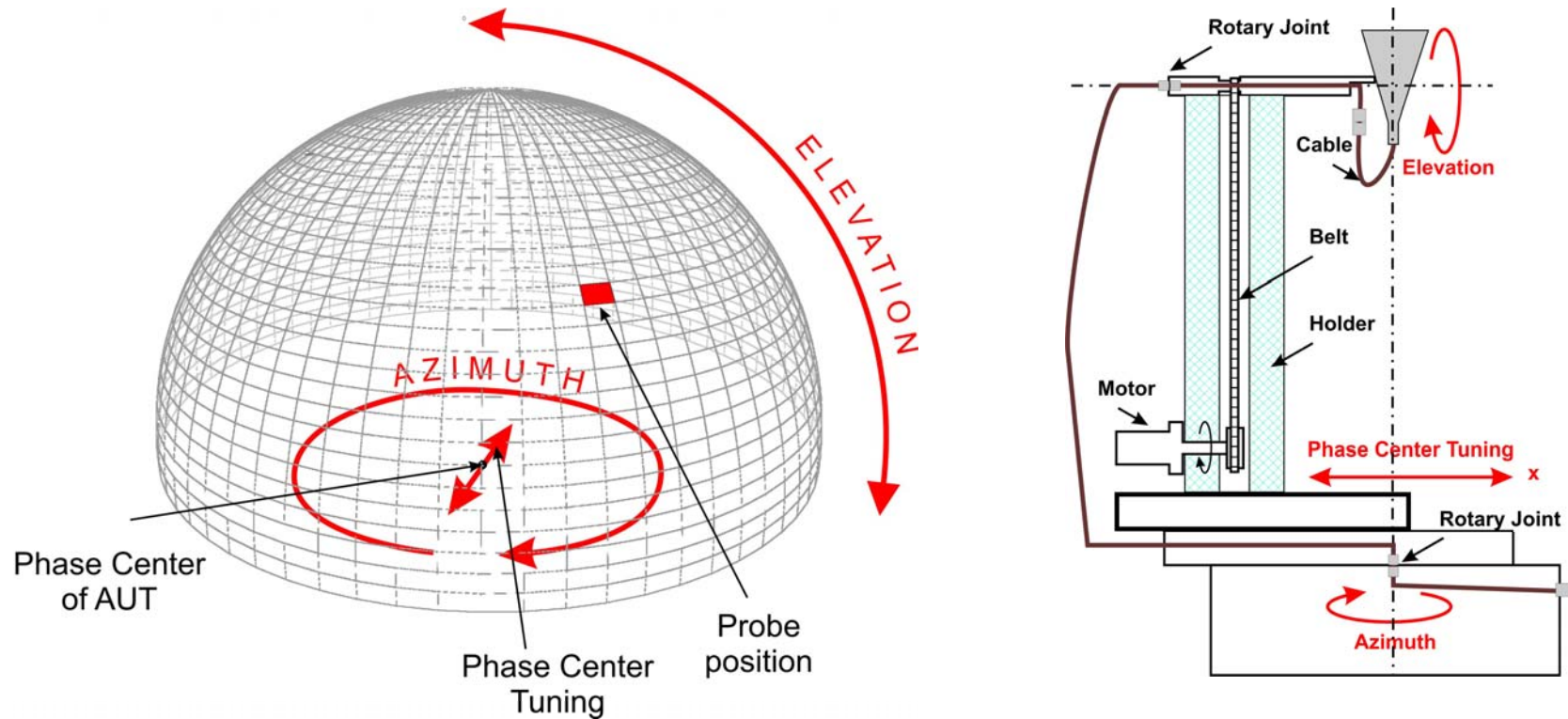
Plain Measurements



Cylinder Measurements



Sphere Measurements



Instruments and Equipment (1)

Digital Sampling Converter

Sampling Rate 1MHz
Jitter RMS 2,5ps
Time Window 20 ps-200 ns



Sampling Unit

Bandwidth 0-26GHz
Noise RMS 1mV



Pulse Generator Mainframe

Triggering TTL Ext/Int
PRF 0,001-50 MHz



Pulse Generator Head

Pulse Width 25 ps
Pulse Amplitude 25 V



Probe Antenna

Bandwidth 1-26GHz



Optimization fo sampling rate 1 MHz and higher.
Enhancement of thermal stability

Development and design.
Test and correction
Enhancement of bandwidth



Instruments and Equipment (2)

X-Y Scanner

X-direction	1000 mm
Y-direction	1000 mm
Resolution	0,05 mm
Load	30 kg



3-axes Positioner

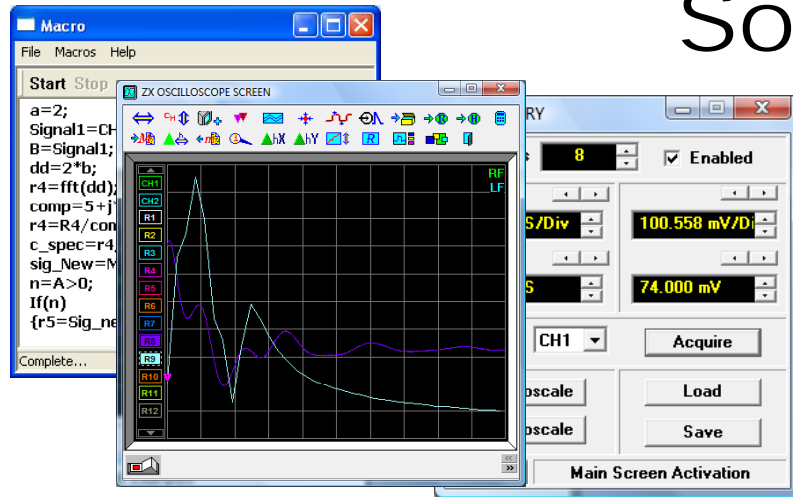
Azimuth	0-360°
Elevation	0-180°
Resolution	0,1°
Load	50 kg



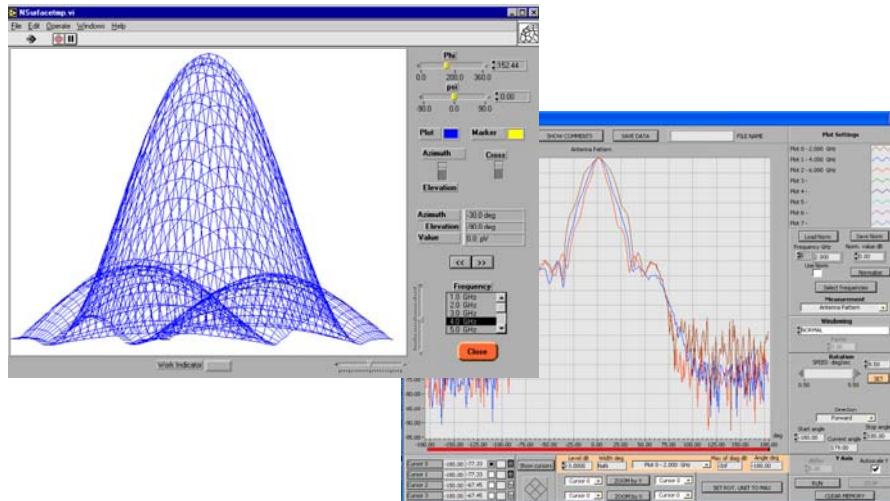
Development and design
Controller
Integration to system
Phase center tuning



Software



Operation Control Software



System Control Software

Algorithms

Signal Processing



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PARAMETERS MEASUREMENT SYSTEM
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