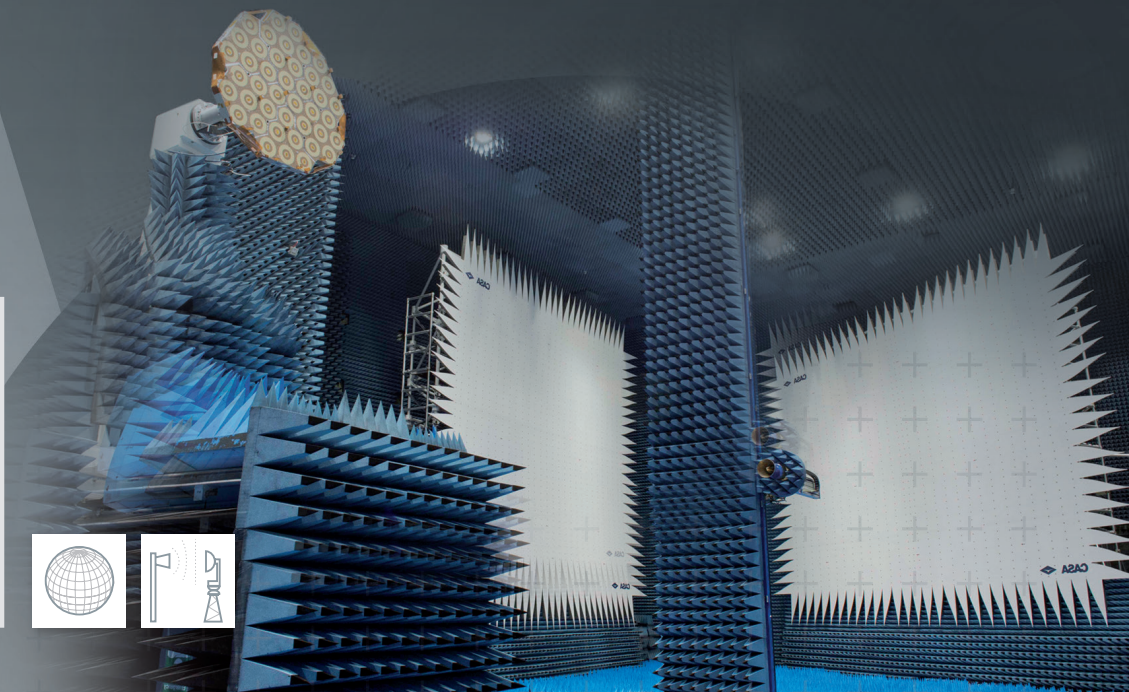




MEASUREMENT PROBES AND FEEDS

Dual Polarized Probes



SOLUTION FOR

- Wideband for spherical near-field measurement
- Suitable for FF measurements
- Calibration and polarization reference

MAIN FEATURES

Technical performance

- Dual linear polarization with high on-axis polarization purity and isolation
- Mono-mode excitation on a 1:3 bandwidth
- Radiation pattern dominated by first-order spherical modes (allowing for first-order probe correction)
- Low return loss / VSWR

Design

- Wideband orthomode junction (OMJ) based on inverted quad-ridge circular waveguide with external feeding circuits, feeding a circular aperture

Surface treatment

- Surtec 650 according to MIL-C 5541E class 3
- Polyurethane paint

Repeatability

- Stiff and robust mechanical design
- Precision machined
- Standard MVG circular interface for precision centering
- Precision guiding pin for accurate polarization alignment
- High reliability RF components

Delivered documents

- Typical performance data (TYMEDA™)
- Measured return loss data and port-to-port coupling

PRODUCT CONFIGURATION

Equipment

- Mounting flange
- Removable absorber plates
- Integrated polarization switch

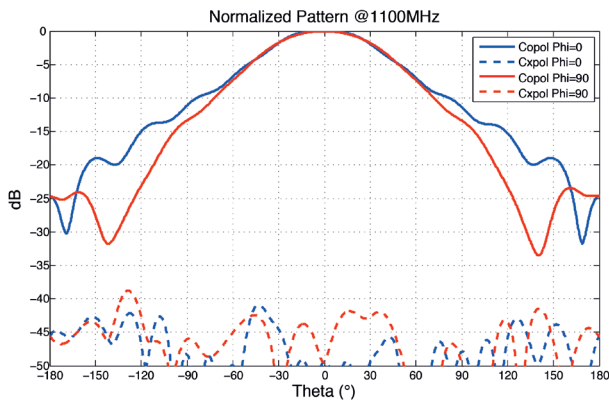
Related services

- Calibration and maintenance
- Customization

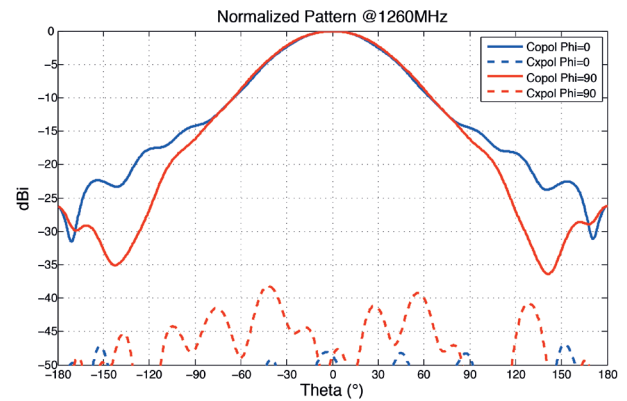
Electrical characteristics

Part number	SP800-A	SP1100-A	SP2000-A	SP6000-A	SP18000-A	SP50000-A
Type of antenna	Dual polarized wideband probe	Dual polarized wideband probe	Dual polarized wideband probe	Dual polarized wideband probe	Dual polarized wideband probe	Dual polarized wideband probe
Frequency range	0.8 – 3 GHz	1.1 – 2 GHz	2 – 6 GHz	6 – 20 GHz	18 – 40 GHz	50 – 75 GHz
Polarization	Dual linear	Dual linear	Dual linear	Dual linear	Dual linear	Dual linear
Gain	6 – 17 dBi	7 – 11 dBi	7 – 15 dBi	7 – 15 dBi	6 – 11 dBi	9 – 11 dBi
VSWR	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Return loss	< -10 dB	< -10 dB	< -10 dB	< -10 dB	< -10 dB	< -10 dB
Port to port isolation	> 45 dB	> 45 dB	> 45 dB	> 45 dB	> 45 dB	> 45 dB
Cross-polar discrimination	> 40 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB	> 40 dB
Polarization orientation	< 0.6°	< 0.6°	< 0.6°	< 0.6°	< 0.6°	< 0.6°
Channel imbalance	< 0.5 dB	< 0.5 dB	< 0.5 dB	< 0.5 dB	< 0.5 dB	< 0.5 dB
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms

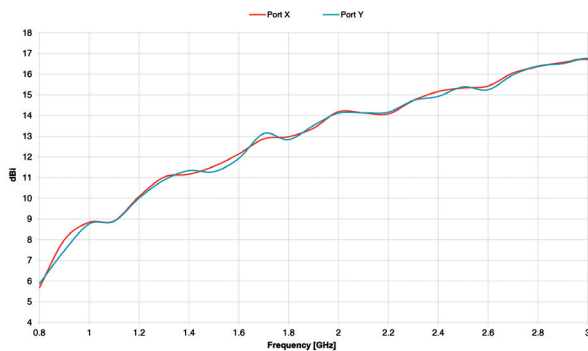
SP1100-A normalized radiation pattern @ 1100 MHz



SP1100-A normalized radiation pattern @ 1260 MHz



SP800-A realized gain





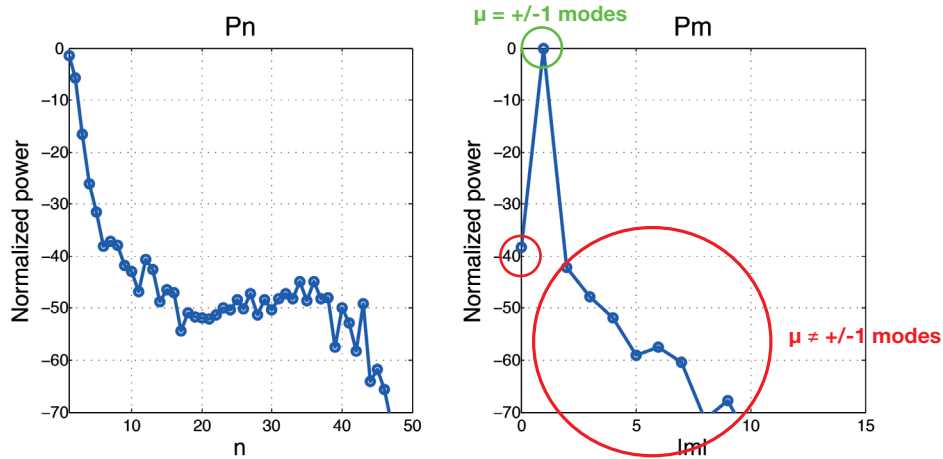
Probe-corrected spherical near-field antenna measurements are the most accurate method for characterization of the radiated fields of antennas. The traditional spherical near-field antenna measurement techniques require a first-order ($\mu = \pm 1$) probe, i.e. a probe with only first-order azimuthal modes in the spherical vector wave expansion of the radiated field, since this provides an efficient and robust probe-correction in the near-field to far-field transformation.

The dual polarized wideband probe is designed so as to obtain a radiation pattern where first-order spherical modes are dominating. Furthermore, amplitude and phase balance of the feeding section affect the excitation of higher order modes in the waveguide, which is reflected in the rise of radiated higher-order spherical modes.

L. J. Foged et al., "Wide band dual polarized probes for near and farfield measurement systems", AMTA 2007, November 4-9, 2007 St. Louis, MO, USA.

L. J. Foged et al., "Probe performance limitation due to excitation errors in external beam forming network", 33rd Annual Symposium of the Antenna Measurement Techniques Association, AMTA, October 2011, Englewood, Colorado, USA

Typical spectra of the spherical wave coefficients for the dual polarized wideband probe



Mechanical characteristics

Part number	SP800-A	SP1100-A	SP2000-A	SP6000-A	SP18000-A	SP50000-A
Dimensions [mm]						
W = H	609,6	600	609,6	410	400	400
L	590	590	552	362	215	215
D	504	448	365	214	78	78
Weight (approx.)	12.5 Kg	9.5 Kg	7 Kg	3.5 Kg	1.5 Kg	3.0 Kg
RF Connector	3.5 mm Female ⁽¹⁾	3.5 mm Female ⁽¹⁾	3.5 mm Female ⁽¹⁾	3.5 mm Female ⁽¹⁾	2.92 mm Female ⁽²⁾	WR15
Material	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminium
Treatment	Surtec 650 ⁽³⁾	Surtec 650 ⁽³⁾	Surtec 650 ⁽³⁾	Surtec 650 ⁽³⁾	Surtec 650 ⁽³⁾	Surtec 650 ⁽³⁾
Interface	Circular Ø 200 mm	Circular Ø- 200 mm	Circular Ø 200 mm	Circular Ø 200 mm	Circular Ø 110 mm	Circular Ø 110 mm
RF Absorbers	AEMI AEP-12	AEMI AEP-12	AEMI AEP-8	AEMI AEP-4	TDK IS-005A	TDK IS-005A

(1) SGMC 115-37-37-000

(2) SWMI type 1032-10SF

(3) According to MIL-C 5541E class 3

