

Biconical antenna for micro-wave frequencies – SAM-18, 3 – 18 GHz

for field strength radiation under free-space conditions, for example Site-VSWR measurements acc. to CISPR 16-1-4



Description

The SAM-18 was designed because of the worldwide unavailability of omnidirectional or dipole-like broadband antennas operating above 3 GHz. Accepting some limitations (i.e. antenna factor and VSWR increase, symmetry reduction) the SAM-18 can be used from 1 GHz on. The validation of test sites with commonly used microwave antennas (e.g. Log.-per. or horn antennas) leads to insufficient results, since these directive gain antennas with concentrated directional pattern do not take the test site characteristics into account.

Application

The typical applications of the microwave biconical antenna are the evaluation of test sites, the (frequency selective) field strength measurement and the generation of defined field strength (e.g. ERP or EIRP). Thanks to the wide bandwidth there is no need for a time consuming change of the antenna elements as required when operating with tuned half-wave dipoles. The biconical elements allow a continuous sweep over the complete frequency range. Because of the dipole-like directional pattern, the fixed phase center and the high power handling capability the SAM-18 may replace tuned half-wave dipoles in many applications. The SAM-18 is not intended for emission testing with very low limits, horn and log.-per. antennas are better matched for this purpose because of their better antenna factor. A typical application of the SAM-18 is the use as a (highly linear) broadband nearfield probe thanks to its small dimensions.

Technical specifications

Type:	SAM-18
Frequency range:	3 GHz to 18 GHz
Max. input power:	10 W
N-connector, female:	50 Ohm
Isotropic gain (3.5 - 18 GHz):	typ. -4 ... +3 dBi
Antenna factor:	43 ... 53 dB/m
Balun (low loss):	1:1
Inversion symmetry (3 - 18 GHz):	typ. < 0.5 dB
Cross polarization rejection:	< - 20 dB
Half-power beamwidth (E-plane):	84° - 45°
Mounting tube:	$L_H = 560$ mm, $d = 22$ mm
Index ring:	$L_R = 190$ mm
Element length total:	$L_E = 20$ mm
Element diameter:	$D = 9$ mm
Weight:	420 g

Measurements

