Ultra-Broadband Antennas

Type BTA

In the frequency range between 80 MHz and 150 MHz - which has been problematic for susceptibility tests up to now - only 50 % of the amplifier power required in the past are necessary on an average, with equal measuring conditions, as compared to conventional broadband antennas.

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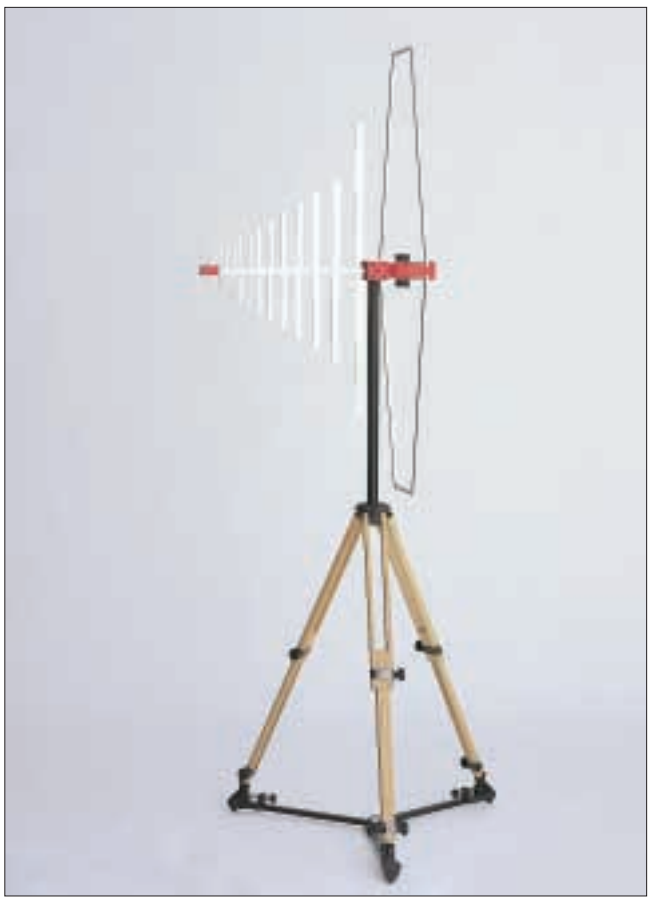
The new BTA antennas were developed in cooperation with the antenna specialists of TESTCOM, Prague. By combining their experience gained in decades of antenna construction with our know how in the planning and construction of absorber chambers, and being acquainted with the interaction between antennas and absorber chambers, it was possible to develop a group of antennas which exclude the weak points of conventional broadband antennas in almost every respect.

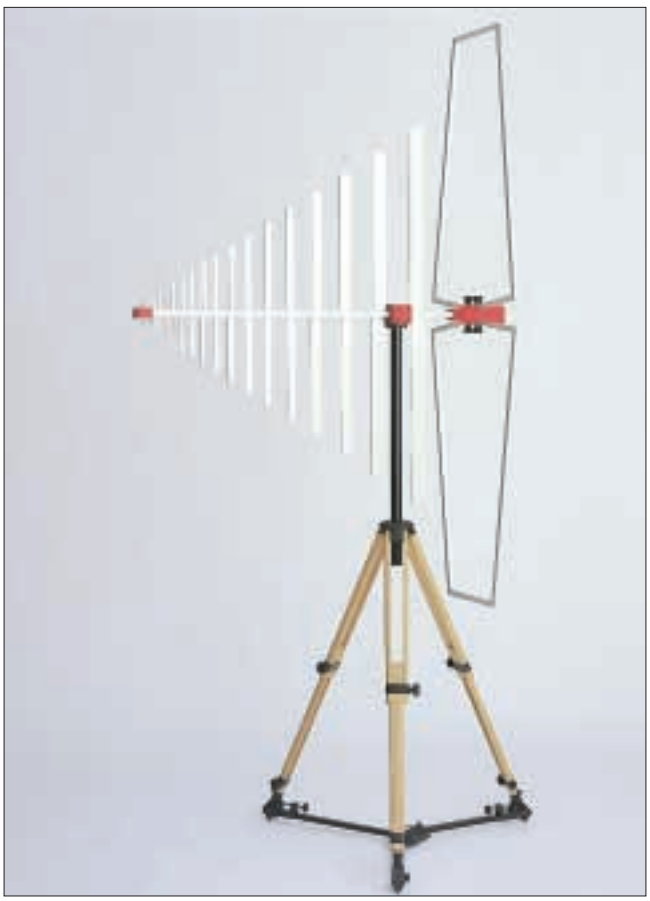
BTA-H Antenna

The BTA-H is perhaps the smallest broadband antenna presently available on the market. With only 69 cm in length, and a weight of 3.0 kg, this antenna is optimally suited for the operation on the antenna mast. An advantage in small absorber chambers is that the small dimensions of the antenna leave room for an increased testing distance and a larger distance to the absorbers or the conducting surface, resp.. Thus, the coupling effects between absorber chamber and antenna are reduced, which has a positive influence on the field homogeneity and the max. reachable field strength, especially in the field generation. The BTA-H is equally suitable for emission measurements and susceptibility tests, and is therefore the ideal universal antenna for free field, absorber chamber and external measurements.



BTA-L Antenna

The most important aspect of the BTA-L is the extension of the frequency range to lower frequencies so that even for measurements from 26 MHz to 2000 MHz the time-consuming changing of antennas is no longer necessary. In this case, the antenna has to be somewhat larger, but with 113 cm in length it is still much smaller than comparable antennas. In practice, the BTA-L offers considerable advantages both for emission measurements and susceptibility tests. The matching of the broadband dipoles to the log-periodic structure has been optimized for the whole frequency range. In the frequency range between 80 MHz and 150 MHz - which has been problematic for susceptibility tests up to now - only 50 % of the amplifier power required in the past are necessary on an average, with equal measuring conditions, as compared to conventional broadband antennas. It is therefore no longer necessary to make additional investments in expensive amplifier power (see also paragraph „Required forward power...“).

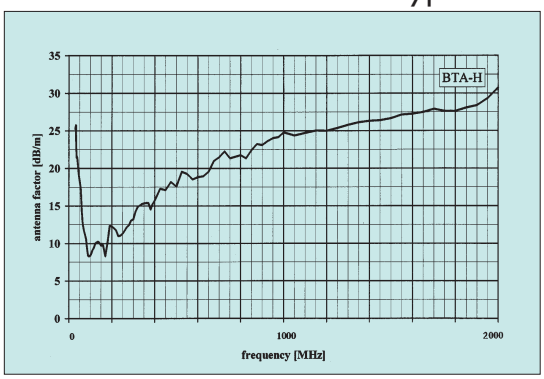


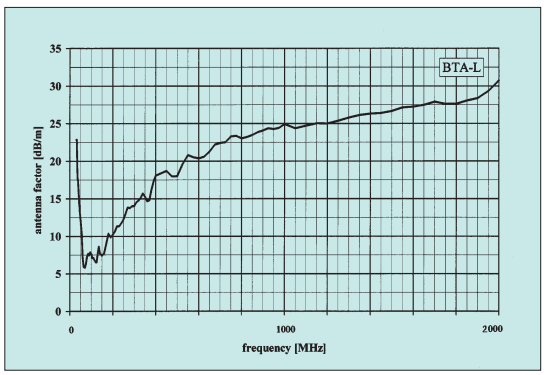
Required forward power in susceptibility tests

The BTA antennas have been optimized for the frequency range from 80 MHz to 150 MHz, which is mostly a critical range in susceptibility tests. In this frequency range, the conventional broadband antennas require a higher amplifier power for generating a certain field strength, because of the poor matching (unfavourable standing wave ratio). Just for this reason, a lot of money is often spent for higher amplifier power. The diagram „Typical standing wave ratio" shows that the standing wave ratio of the BTA antennas in this critical frequency range, as compared to conventional broadband antennas, is very low, due to the optimized matching of broadband dipoles and log-periodic structure. Already from 66 MHz on, the standing wave ratio (SWR) of the BTA-L is smaller than 2:1; on an average (from 80 MHz on) it amounts to 1,4:1. Due to this innovation, a maximum of 50 %, on an average, of the amplifier power required in the past, is necessary when using BTA antennas in the critical frequency range.

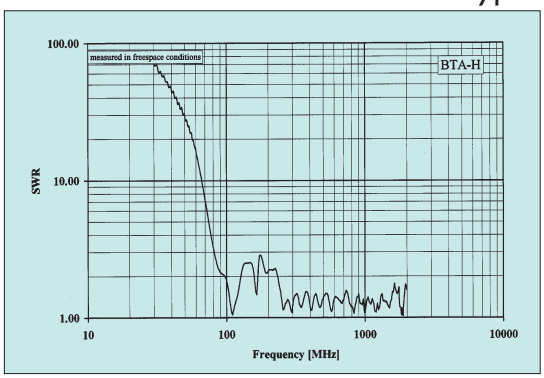
Supposing an amplifier power of normally 100 W for 10V/m at a measuring distance of 3.0 m, this value is reduced to 50 W. The diagram „Typical forward power" shows that the forward power can be reduced even to 20 W in case of favourable environmental conditions (which may be of considerable influence). Our diagrams were established in an absorber chamber for a measuring distance of 3.0 m, with 1.0 m long pyramid absorbers. In this case, the characteristics of the antenna are influenced positively by the capacitive coupling between pyramid absorbers and antenna. However, there are numerous influencing factors which have to be considered when determining the amplifier power. Please consult our engineers for a solution tailored to your specific conditions.

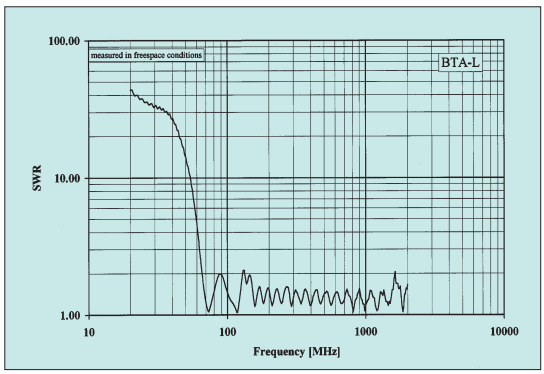
Typical antenna factors



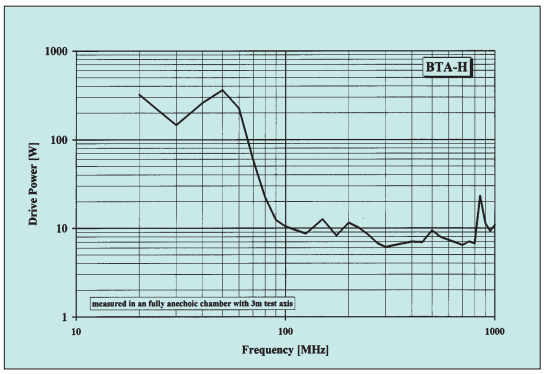


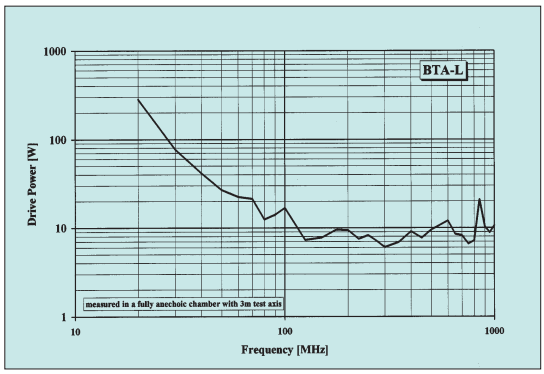
Typical SWR





Typical forward power for 10 V/m at 3.0 m measuring distance





Selection criteria Feature	BTA-H	BTA-L
Frequency range 26 MHz to 2000 MHz		x
Frequency range 30 MHz to 2000 MHz	x	x
Emission measurements 30 MHz to 2000 MHz	x	x
Susceptibility tests 80 MHz to 2000 MHz	x	x
Susceptibility tests 26 MHz bis 2000 MHz		x
Installation on antenna mast	x	
Installation on tripod (3/8" and 1/4")	x	x
Adapter for 3/8" and 1/4"-thread inclusive	x	x
Half amplifier power in the critical frequency range from 80 MHz bis 150 MHz	(x)	x
Optimized for small absorber chambers	x	
Capable of beeing loaded up to 1000 W	x	x
Small weight (3,0 kg)	x	
Small dimensions (length 69 cm)	x	
Individual calibration	x	x
Precise manufacturing by means of laser technology	x	x
Better field homogeneity due to improved radiation characteristics	x	x
Reusable transport packaging inclusive	x	x

Technical data	BTA-H	BTA-L
Frequency range	30 MHz - 2000 MHz	26 MHz - 2000 MHz
Dimensions (LxBxH) in mm	690 x 1290 x 440	1134 x 1709 x 550
Weight	3 kg	5 kg
SWR (average, from 80 MHz on)	1,59	1,41
Max. input power	1000 W	1000 W
Impedance	50 Ohm	50 Ohm
Connection	typ N female	typ N female

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