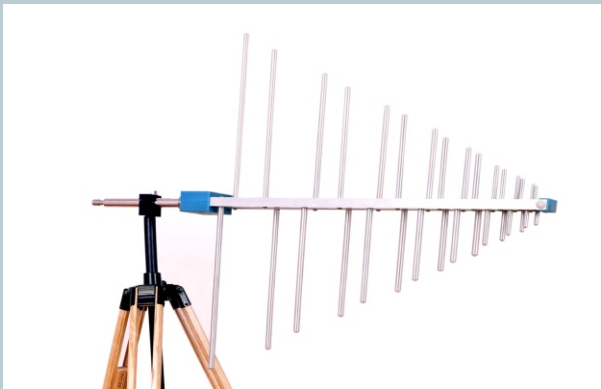


# EMC

## Precision Antennae and Shielding Kits

### Product Portfolio

Precision Antennae for Advance  
RF measurements






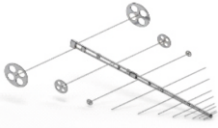

# **BNN Communication Engineers Pvt Ltd**

## **Product Portfolio: EMC Precision Antennae**

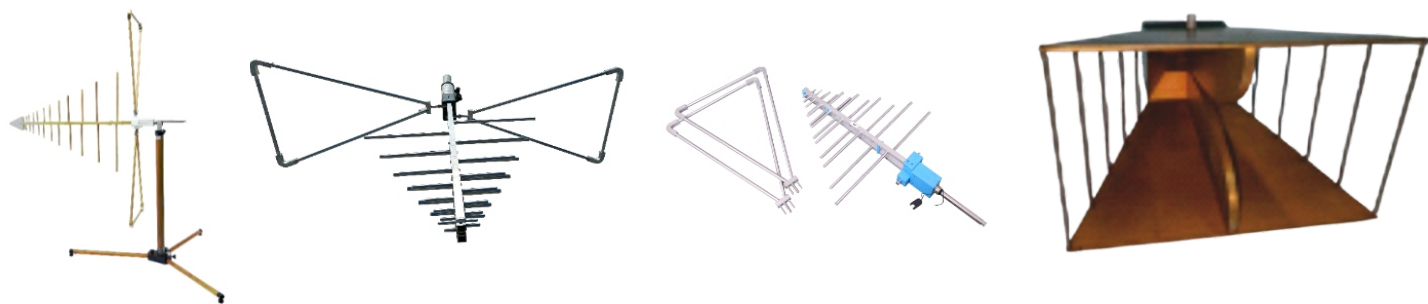
BNN is a leading designer and manufacturer of precision antennae used for reliable, precise and accurate measurements in EMC emission and immunity testing, interference localization and analysis.

<i>Type</i>	<i>Broad Frequency Range</i>	<i>Photographs</i>
<i>Biconical</i>	<i>20MHz-300MHz</i>	
<i>Log Periodic Dipole Array (LPDA)</i>	<i>20MHz-3GHz</i>	
<i>Hybrid LPDA/Ridged Antennae</i>	<i>20MHz-40GHz</i>	
<i>Magnetic Loop Antenna</i>	<i>10 Hz-30MHz</i>	
<i>Monopole/Dipole Antennae/Pre-Amplifiers</i>	<i>9KHz-18GHz</i>	

# Biconical/LPDA Antennae

Model No/Freq Range	Key Features	Applications
 Biconical Antenna ANB-0230 (20MHz-300MHz)	Impedance 50 Ω, Antenna Factor 7 – 25 (dB/m), Symmetry< 1dB, Max input Power 100W, Polarization Linear (V/H), Connector Type N female, Dimensions, 1320 X 865 mm	Emissions, NSA, SE, EM Field monitoring.
 Biconical Antenna ANB-021G (20MHz-1000MHz)	Impedance - 50Ω (Nominal), Precision construction, Material – Aluminum	Emissions, NSA EM Field monitoring
 Biconical Antenna ANB-0230S (20MHz-300MHz)	Collapsible Bi-Conical Antenna, 50 Ω, 10 watt, Linear (V/H), N female, 70cm x 33cm 40 cm/70cm, <1.0 Kg	Portable measurement applications, SE Interference analysis. EM Field monitoring
 Biconical Antenna ANB-0230HP (30MHz-300MHz)	Impedance 50 Ω, Average VSWR (80-300MHz) =2.5:1, Antenna Factor 7 – 25 (dB/m), Symmetry< 1dB, Max input Power 1000 watt, Polarization Linear (V/H), Connector Type N female, Dimensions 1320 X 960 X 520 mm, Weight 2.35 Kg	Radiated Immunity, SE, EM Field Tx Applications
 LPDA ANLPD - 0215 (200MHz - 1500MHz)	VSWR 2.5 (200 – 1000 MHz), Antenna Factor 10 – 30 (dB/m), Max Power 200 watt, Polarization Linear, Connector Type N female, Dimensions (L x W) 970 x 756 mm, Weight 2.2 Kg	Emissions, Immunity, NSA, EM field monitoring
LPDA ANLPD-0215HP (200MHz - 1500MHz)	VSWR 2.5 (200 – 1000 MHz), Antenna Factor 10 – 30 (dB/m), Max Power 1000 watt, Polarization Linear, Connector Type N female, Dimensions (L x W), 970 x 756 mm, Weight 3 Kg	Emissions, Immunity, NSA, EM field monitoring
LPDA ANLPD -703GHP (70MHz - 3000MHz)	VSWR <2.5, Gain 4-8 (dBi), Max Power 1000 watt, Polarization Linear (V / H), Connector Type N female, Dimensions (WxL) 1.9x1.5m (folded elements), 1.9x2.18 (Straight elements), Weight <3.5 Kg	Emissions, Immunity, NSA, EM field monitoring
LPDA AN-LPD2- 2010 (20-1100MHz)	VSWR 2.5 (Avg), Gain >6 (dBi), Max Power 3500 watt, Polarization Linear (V / H), Connector Type, 7/16 inch DIN, Dimensions (WxL) 7.5m x 5.1m, Weight 28 Kg	Tx/ Rx for Bidirectional communication, Signal intelligence, EMC Immunity
LPDA ANLPD-0220 (200MHz-2000MHz)	VSWR 2.5, Antenna Factor 10 – 30 (dB/m), Max Power 200 watt, Polarization Linear Connector Type N female, Dimensions (L x W ) 970 x 756 mm, Weight 2.2 Kg	Emissions, Immunity, NSA, EM field monitoring, SE
LPDA ANLPD-02220VHP (20MHz- 220MHz),	VSWR 2.5 (Avg), Max Gain 6 (dBi), Max Power 3500 watt, Polarization, Linear (V / H), Connector Type 7/16 inch DIN, Dimensions (WxL), 3.5m x 3.7m, Weight 22 Kg	Vehicle-level automotive EMC testing (RS immunity), ISO 11451-2, AIS 004 (Part 3)

## Hybrid LPDA/Ridged Antennae



Model No/Freq Range	Key Features	Applications
<p><i>Bi-Log</i> AN-BI-0320HP (20MHz-2000MHz)</p>	<p>Antenna Factor 4 – 35 (dB/m), Max Continuous Power 1000 W (20-1400MHz), 850W (2000MHz), Polarization Linear, Connector Type N Type Female, Dimensions (L x W x H) 1100 x 1500 x 510 mm, Weight ~4 Kg</p>	<p><i>Radiated Immunity, SE</i></p>
<p><i>Bi-Log</i> AN-BI-0330P (20MHz-2000MHz)</p>	<p>Antenna Factor 4 – 35 (dB/m), Max Continuous Power 300 W, Polarization Linear, Connector Type N Type Female, Dimensions (L x W x H) 1100 x 1500 x 510 mm, Weight ~4 Kg</p>	<p><i>Radiated Emission, Immunity, SE, Site Surveys</i></p>
<p><i>Tri Log</i> AN-TRI-0306 (20MHz-6GHz)</p>	<p>VSWR &lt;2.5 (Averaged from 30-7000MHz), Antenna Factor 5 – 43 (dB/m), Symmetry Deviation within <math>\pm 1</math>dB, Max Continuous Power 300 W, Polarization Linear, Connector Type N Type Female, Dimensions (L x W x H) 1500*1350*550 mm, Weight 5kg</p>	<p><i>Radiated Emission, Immunity, SE, Site Surveys</i></p>
<p><i>Tri Log</i> AN-TRI- 0306HP (20MHz-6GHz)</p>	<p>VSWR &lt;2.5 (Averaged from 30-7000MHz), Antenna Factor 5 – 43 (dB/m), Max Continuous Power 1000 W (20-1400MHz), 400W (7000MHz), Polarization Linear, Connector Type N Type Female, Dimensions (L x W x H) 1500*1350*550 mm, Weight 5kg</p>	<p><i>Radiated Immunity, SE</i></p>
<p><i>DUAL RIDGE HORN</i> ANDRH 0118 (1-18GHz)</p>	<p>VSWR Max 2.5, Antenna Factor 20 – 45 (dB/m), Max Continuous Power 100 W (N), 50 W (SMA), Polarization Linear, Connector Type N / SMA – F Type, Dimensions (L x W x H) 210 x 240 x 142 mm, Weight ~2</p>	<p><i>Radiated Emission, Immunity, SE, Site Surveys</i></p>

# Magnetic Loop Antennae



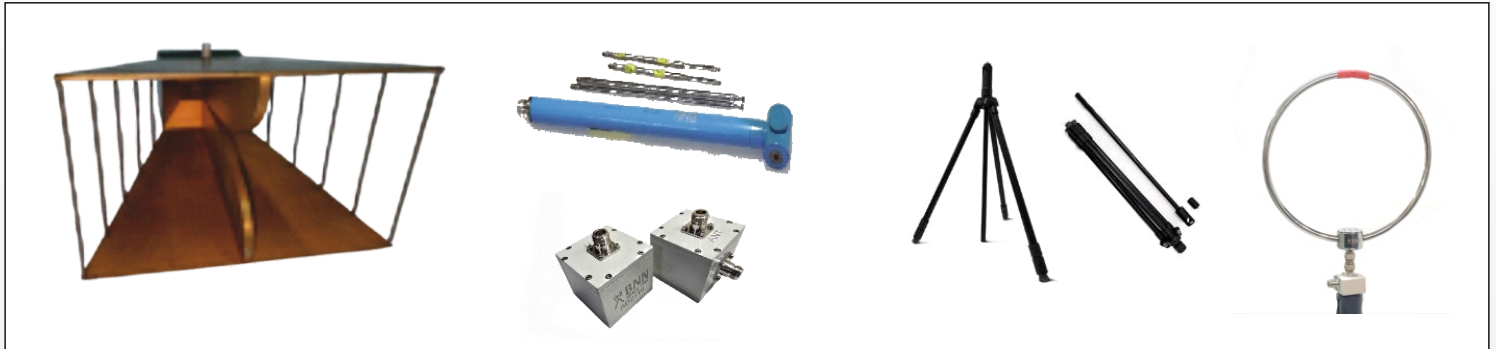
Model No/Freq Range	Key Features	Applications
<p>Passive Loop 0.6m AN-MLO-9306P (9KHz-30MHz)</p>	<p>Loop Diameter 0.6m, # Turns 1, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination BNC-F 50Ω, N-F optional, Size 600 x 640 mm, Weight 1.5 Kg</p>	<p>SE Testing (IEEE 299) Emissions measurement</p>
<p>Active Loop 0.6m (8KHz-30MHz) AN-MLO-9306A</p>	<p>Loop Diameter 0.6m, # Turns 1, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination BNC-F 50Ω, N-F optional, Size 600 x 640 mm, Weight 1.5 Kg</p>	<p>SE Testing (IEEE 299) Emissions measurement</p>
<p>Passive Loop 0.3m AN-MLO-9303P (9KHz-30MHz)</p>	<p>Loop Diameter 0.3m, # Turns 1, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination BNC-F 50Ω, N-F (optional), Size 300 x 328 mm, Weight 0.6 Kg</p>	<p>SE Testing (IEEE 299) Emissions measurement</p>
<p>Active Loop 0.3m AN-MLO-9303A (9KHz-30MHz)</p>	<p>Loop Diameter 0.3m, # Turns / Wire Type 1 / 14 AWG PVC Coated, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination BNC-F, N-F (opt.)50Ω, Linear Dynamic Range 100 dB @ 100 KHz, 120 dB @ 10 MHz, Size / Weight 300 x 328mm/ 1.2 Kg</p>	<p>SE Testing (IEEE 299) Emissions measurement</p>
<p>Passive Loop 0.3m (1MHz-30MHz) AN-MLO-1303P</p>	<p>Loop Diameter 0.3m, # Turns 1, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination N-F, Size 300 x 328 mm, Weight 0.6 Kg, Antenna can be used in active mode by connecting to Pre-Amplifier 9K30M</p>	<p>SE Testing (IEEE 299)</p>
<p>Passive Loop 0.3m (9KHz-10MHz) AN-MLO-9103P</p>	<p>Loop Diameter 0.3m, # Turns 8, Wire Type 14 AWG PVC Coated, Shielding Electrostatic, Termination N-F, Size 300 x 328 mm, Weight 0.6 Kg, Antenna can be used in active mode by connecting to Pre-Amplifier 9K30M</p>	<p>SE Testing (IEEE 299)</p>
<p>Passive Loop AN-MLO-30100KRX 30Hz – 100KHz</p>	<p>Loop Diameter 4 cm, # Turns 51, Wire Type 30 AWG Enamel Insulated copper, Shielding Electrostatic, Termination BNC, Resistance Minimum 4 Ohms, Inductance Minimum 180 micro H, Weight 0.6 Kg</p>	<p>RS 101 / Mil Std 461 ISO 11452-8</p>

# Monopole/Dipole Antennae/Pre-Amplifiers



<b>Model No/Freq Range</b>	<b>Key Features</b>	<b>Applications</b>
<i>Active Monopole Antenna, ANMP-10K30M (9KHz-30MHz)</i>	<i>Impedance 50 Ohms, Battery 12V NiMH 2000mAh, Average Battery Life 10h, Termination BNC-F 50Ω, N-F optional, Weight 2 Kg</i>	<i>SE Testing (IEEE 299) Mil Std Testing, CISPR 25 Emissions measurement</i>
<i>Passive Monopole Antenna, ANMPPAS-10K30M (9KHz-30MHz)</i>	<i>Impedance 50 Ohms, Termination BNC-F 50Ω, N-F optional, Weight 2 Kg</i>	<i>SE Testing (IEEE 299), Mil Std Testing</i>
<i>Dipole antenna DIP6518M (65MHz-180MHz)</i>	<i>Gain &gt;2dBi, Maximum CW Power 200W, Impedance 50 Ohms, Connector N Type-Female, Length 14", Weight 300g, Two Telescopic Elements with Extension Rods</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>
<i>Dipole antenna DIP40M1G (400MHz-1GHz)</i>	<i>Gain &gt;2dBi, Maximum CW Power 200W, Impedance 50 Ohms, Connector N Type-Female, Length 14", Weight 300g, Two Telescopic Elements with Extension Rods</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>
<i>Dipole antenna DIP1840M (180MHz-400MHz)</i>	<i>Gain &gt;2dBi, Maximum CW Power 200W, Impedance 50 Ohms, Connector N Type-Female, Length 14", Weight 300g, Two Telescopic Elements with Extension Rods</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>
<i>RF Pre-Amplifier AMP 01G (DC-1GHz)</i>	<i>Typical Gain 31 dB @ 100KHz, 24 dB @ 1 GHz, Noise Figure 3.0 dB, Impedance 50Ω (Nominal), Connectors SMA Female, Power Supply Using 230V-50Hz adapter with output 12V, 0.3A DC, VSWR 1.8, Dimensions 120 x 95 x 58mm, Weight 600g, Max Input Power + 10 dBm</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>
<i>RF Pre-Amplifier AMP 020G (1-20GHz)</i>	<i>Gain 29 ± 2.5 dB @ 1-20 GHz, Noise Figure 2.0 dB @ 8 GHz, Impedance 50Ω (Nominal), Connectors SMA Female, Power Supply, Using 230V-50Hz adapter with output 12V, 0.5A DC, VSWR 1.8, Dimensions 120 x 95 x 58mm, Weight 600g, Max Input Power 0 dBm</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>
<i>RF Pre-Amplifier AMP 9K30M (9KHz-30MHz)</i>	<i>Gain &gt;36dB, 9KHz-500KHz &gt;19dB, 500KHz-30MHz, Noise Figure 3.2dB, Impedance 50Ω (Nominal), Connectors N Type Female, Power Supply Using 230V-50Hz adapter with output 12V, 0.3A DC, VSWR 1.7, Dimensions 120x95x58mm, Weight 600g,</i>	<i>SE Testing (IEEE 299), Emissions, interference measurements</i>

# Shielding Test Kits/Antenna Masts



Model No/Freq Range	Key Features	Applications										
<p><i>Shielding Effectiveness Measurement System, AnKit-SE-9K18G</i></p> <p><i>9KHz-18GHz</i></p>	<p><i>Can measure Shielding Effectiveness as per IEEE 299. When used with appropriate Tx/Rx* the kit offers a wide dynamic range:</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><i>10 kHz</i></td> <td style="width: 50%;"><i>90 dB</i></td> </tr> <tr> <td><i>100 kHz</i></td> <td><i>100 dB</i></td> </tr> <tr> <td><i>1 MHz</i></td> <td><i>110 dB</i></td> </tr> <tr> <td><i>15 MHz</i></td> <td><i>110 dB</i></td> </tr> <tr> <td><i>130 MHz – 18 GHz</i></td> <td><i>120 dB</i></td> </tr> </table> <p><i>The kit is complete, with masts, adaptors and cables for immediate deployment to start testing SE. The kit has a proven track record with active users testing hundreds of chambers each year using this kit. Repeatable and Accurate measurements</i></p>	<i>10 kHz</i>	<i>90 dB</i>	<i>100 kHz</i>	<i>100 dB</i>	<i>1 MHz</i>	<i>110 dB</i>	<i>15 MHz</i>	<i>110 dB</i>	<i>130 MHz – 18 GHz</i>	<i>120 dB</i>	<p><i>SE Testing (IEEE 299), Emissions</i></p>
<i>10 kHz</i>	<i>90 dB</i>											
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<i>1 MHz</i>	<i>110 dB</i>											
<i>15 MHz</i>	<i>110 dB</i>											
<i>130 MHz – 18 GHz</i>	<i>120 dB</i>											
<p><i>Antenna Mast</i></p> <p><i>MAS FG-03</i></p>	<p><i>Overall height adjustment (190mm– 1725mm), Antenna or Adapter mount Screw Size 3/8" male, Material Fibre Glass, Diameter of circle around foot, Approx. 1.5m</i></p> <p><i>Weight 5-8 Kg</i></p>	<p><i>SE Testing (IEEE 299), Emissions, Immunity</i></p>										
<p><i>Antenna Mast</i></p> <p><i>MAS FG-05</i></p>	<p><i>Overall height adjustment, (150mm– 2000mm), Antenna or Adapter mount Screw Size 3/8" male, Material Fibre Glass, Diameter of circle around foot Approx. 1.5m</i></p> <p><i>Weight 3 Kg</i></p>	<p><i>SE Testing (IEEE 299), Emissions, Immunity</i></p>										
<p><i>Antenna Mast</i></p> <p><i>MAS FG-06</i></p>	<p><i>Overall height adjustment Up to 3m, Antenna or Adapter mount Screw Size, 3/8" male, Material Fibre Glass, Diameter of circle around foot Approx. 1.5m</i></p> <p><i>Weight 5-8 Kg</i></p>	<p><i>SE Testing (IEEE 299), Emissions, Immunity</i></p>										

## Company Profile

BNN has been a trusted name in the telecommunications test and measurement industry since 1995. The antenna division at BNN has a comprehensive facility / setup for:

- ◆ Electrical design and optimization of antennae using CAD based FDTD simulations.
- ◆ Mechanical design of antennae using CATIA 3D Mechanical CAD software.
- ◆ Fabrication at precision CNC machine workshops.
- ◆ Electrical Testing of antennae for VSWR, Gain, Radiation Pattern, and power / E field performance at Open Area test Site and inside fully anechoic chambers.
- ◆ Mechanical testing of antennae for humidity, temperature and mechanical shock cycles.

BNN antennae are used in EMC test setups as well as defence and space research organizations.

The key focus at BNN is to **Make in INDIA**, for the world!



11/11 Sector III, Rajendra Nagar, Sahibabad – 201005, Uttar Pradesh,  
State Code: 09, INDIA Tel: +91 120 4212415,  
Email: [bnncom@gmail.com](mailto:bnncom@gmail.com) Website: [www.bnncom.com](http://www.bnncom.com)