EMC/RF PRODUCT CATALOG

2025-2026

ABSOLUTE EMC

EMC TEST EQUIPMENT AND SERVICES
THE SECRET FOR ABSOLUTE VALUE

At Absolute EMC, we are deeply committed to understanding and responding to each customer's unique project requirements with both speed and precision. We view every interaction as an opportunity to strengthen our relationship and ensure long-term success—for your organization and ours.

We continuously monitor response times and review customer feedback to refine our processes. With decades of experience in the EMC industry, we understand the importance of meeting critical deadlines and delivering accurate, dependable solutions.

Our mission is simple: to provide the highest quality EMC testing solutions and unmatched support, all while optimizing cost and turnaround time. More than just a supplier, we aim to be a trusted member of your team—invested in your goals and ready to assist whenever challenges arise.

If at any time your experience does not meet your expectations, we want to hear from you. Your satisfaction is not just a goal—it's our highest priority.

WELCOME

From our founder

Throughout my journey in the EMC industry—from running test labs to working with top manufacturers—I've built my career on two unwavering principles: respect and honesty. These values remain at the core of everything we do at Absolute EMC.

As we move further into 2025, we continue to see challenges across our industry: delayed lead times, poor service responsiveness, and lack of communication. It's a troubling trend, and one we're determined to counter. At Absolute EMC, we've built our company on the idea that when you succeed, we all succeed. That means treating every client, partner, and colleague not as a transaction—but as a member of our extended team.

Whether we're cutting foam for custom test fixtures, designing tailored setups, or just being on-call to troubleshoot a test failure—we're always here to help. Our focus has never been on volume or shortcuts. Instead, we prioritize clear communication, timely support, and long-term trust.

We've aligned ourselves only with manufacturers who share our values of technical excellence and transparency. Because we don't just sell EMC equipment—we help you build better processes, solve complex challenges, and grow with confidence.

As a lean and focused organization, we offer a personal, responsive experience you won't find with large corporate distributors. We don't disappear after the sale. We're there before, during, and long after—ready to jump in, troubleshoot, and push forward together.

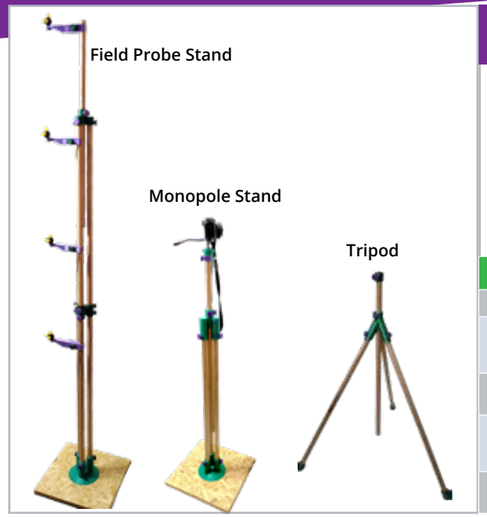
If you're already working with us—thank you. If you're new to Absolute EMC, we invite you to explore what it means to have a partner who genuinely cares about your success.

Let's raise the bar for our industry—together.

Jason H. Smith
Engineer/President

CONTENTS

LOW COST POSITIONERS



EMC TRIPOD AND MONOPOLE

Special Selected for EMC Environments

Absolute EMC positioner products are all designed with minimal metal parts. The antenna thread is the only metal item. This has much less influence on any EMC testing. Cost is kept low by utilizing 1" wood dowels and 3D printed interconnections.

- Tripod
- Monopole
- Field probe stand
- All pieces fit with 1" dia. Wood dowels (Optional Fiber-glass)

Kits	Included Items
Tripod kit	(1x) tripod section, (1x) tripod head, (3x) tripod leveling feet, (1x) Leveling Bubble, (4x) 1" x 3' wood dowels
Tripod Deluxe kit	(1x) tripod section, (3x) tripod head, (includes 1 of each), (3x) tripod leveling feet, (1x) Leveling Bubble, (4x) 1" x 3' wood dowels, (1x) TP-Ball Head, (1x) TP- Cable Support, (1x) EMC EPS Block 1M, (1x) TP-Bag
Monopole kit	(1x) Monopole section, (1x) Monopole base, (1x) tripod head, (1x) Leveling Bubble, (4x) 1" x 3' wood dowels, (1x) MP- Ballast Bag
Monopole Deluxe kit	(1x) Monopole section, (1x) Monopole base, (3x) tripod head (one of each), (1x) Leveling Bubble, (7x) 1" x 3' wood dowels, (1x) MP- Ballast Bag, (1x) TP-Ball Head, (1x) TP- Cable Support, (1x) EMC EPS Block 1M, (1x) TP-Item Tray, (1x) Monopole Extension
Field Probe Stand	(1x) MP-Section, (1x) MP-Extension, (1x) MP-Base, (4x) MP-Probe Adaptor, (1x) MP- Ballast Bag, (1x) Leveling Bubble, and (7x) 1" x 3' wood dowels

COMPONENTS

Tripod Section	TP-Head	TP-Leveling Bubble	TP-Leveling Feet	TP-Cable Support	TP-Weight Ballast	TP-Ball Head

Monopole Section	Monopole Base	MP-Ballast Bag	MP-Extension	TP-22mm Antenna	TP-Item Tray	MP-Probe Adapter

TP-Bag	TP-Bag Deluxe	MP-Rotator (cantilever camera over test table)

CUSTOM DESIGNS, 3D PRINTING

Log Periodic Rotator	Horn Antenna Rotator	Current Clamp Center Spacer Kit

LAS 2000

Cost Effective Loop Holder Stand

COAX CABLES & SUPPORTS

ABSOLUTE *COAX* CABLES

Special for EMC Environments

The Absolute Coax series of cables are designed specifically to meet the requirements for EMC testing. Each industry has requirements that are unique; EMC is no different. Absolute EMC has gone through the selection process to only offer the best performance quality and value.

- **Series AB-A:** A great choice for applications with medium power and lower frequency. Best cost option.
- **Series AB-B**: Suited for high frequency emissions up to 40 GHz.
- **Series AB-C**: Best coax with the best performance available up to 18GHz. High power low loss.
- **Series AB-D**: Lowest loss up to 6 GHz and great price point

Series	Frequency Range	Power @ 1GHz	Loss @ 1 GHz	Loss @ 18 GHz [6 GHz]	Outer Diameter
AB-A	Up to 18 GHz	410 Watts	0.130 dB/ft (0.427 dB/m)	0.640 dB/ft (2.100 dB/m)	0.163 in (0.414 cm)
AB-B	Up to 40 GHz	590 Watts	0.110 dB/ft (0.362 dB/m)	0.511 dB/ft (1.677 dB/m)	0.144 in (0.366 cm)
AB-C	Up to 18 GHz	1800 Watts	0.049 dB/ft (0.159 dB/m)	0.230 dB/ft (0.755 dB/m)	0.310 in (0.787 cm)
AB-D	Up to 6 GHz	750 Watts	0.032 dB/ft (0.105 dB/m)	[0.089 dB/ft (0.292 dB/m)]	0.590 in (1.5 cm)
EMC106	Up to 18 GHz	1800 Watts	0.049 dB/ft (0.159 dB/m)	0.198 dB/ft (0.65 dB/m)	0.300 in (0.78 cm)

EMC106 COAX

Low Loss Low cost 18GHz

Great alternative to AB-C at a better price point
See specs above

GENERAL USE COAX

Part #	Cable Type	Freq	Conn. 1	Conn. 2	Length	Power @ 1GHz	Loss @ 1 GHz
NM-NM/35/RG223	RG223/U	6 GHz	N(m)	N(m)	35 cm	80 W	0.53 dB/m
NM-NM/75/RG223	RG223/U	6 GHz	N(m)	N(m)	75 cm	80 W	0.53 dB/m
NM-NM/125/RG223	RG223/U	6 GHz	N(m)	N(m)	125 cm	80 W	0.53 dB/m
NM-NM/500/RG223	RG223/U	6 GHz	N(m)	N(m)	500 cm	80 W	0.53 dB/m
NM-SMAM/35/RG223	RG223/U	6 GHz	N(m)	SMA(m)	35 cm	80 W	0.53 dB/m
NM-SMAM/75/RG223	RG223/U	6 GHz	N(m)	SMA(m)	75 cm	80 W	0.53 dB/m
NM-SMAM/125/RG223	RG223/U	6 GHz	N(m)	SMA(m)	125 cm	80 W	0.53 dB/m
NM-BNCM/35/RG223	RG223/U	4 GHz	N(m)	BNC(m)	35 cm	80 W	0.53 dB/m
NM-BNCM/75/RG223	RG223/U	4 GHz	N(m)	BNC(m)	75 cm	80 W	0.53 dB/m
NM-BNCM/125/RG223	RG223/U	4 GHz	N(m)	BNC(m)	125 cm	80 W	0.53 dB/m
BNCM-BNCM/35/RG223	RG223/U	4 GHz	BNC(m)	BNC(m)	35 cm	80 W	0.53 dB/m
BNCM-BNCM/75/RG223	RG223/U	4 GHz	BNC(m)	BNC(m)	75 cm	80 W	0.53 dB/m
BNCM-BNCM/125/RG223	RG223/U	4 GHz	BNC(m)	BNC(m)	125 cm	80 W	0.53 dB/m
BNCM-SMAM/35/RG223	RG223/U	4 GHz	BNC(m)	SMA(m)	35 cm	80 W	0.53 dB/m
SMAM-SMAM/125/RG223	RG223/U	6 GHz	SMA(m)	SMA(m)	125 cm	80 W	0.53 dB/m
NM-NM/75/RG58	RG58/U	6 GHz	N(m)	N(m)	75 cm	65 W	0.57 dB/m
NM-SMAM/75/RG58	RG58/U	5.8 GHz	N(m)	SMA(m)	75 cm	65 W	0.57 dB/m
NM-BNCM/75/RG58	RG58/U	4 GHz	N(m)	BNC(m)	75 cm	65 W	0.57 dB/m
BNCM-BNCM/75/RG58	RG58/U	4 GHz	BNC(m)	BNC(m)	75 cm	65 W	0.57 dB/m
NM-NM/75/RG142	RG142	6 GHz	N(m)	N(m)	75 cm	380 W	0.49 dB/m
NM-NM/300/RG142	RG142	6 GHz	N(m)	N(m)	300 cm	380 W	0.49 dB/m
NM-NM/1000/RG142	RG142	6 GHz	N(m)	N(m)	1000 cm	380 W	0.49 dB/m
NM-SMAM/75/RG142/test	RG142 (armored)	6 GHz	N(m)	SMA(m)	75 cm	380 W	0.49 dB/m
SMAM-SMAM/75/RG142/test	RG142 (armored)	6 GHz	SMA(m)	SMA(m)	75 cm	380 W	0.49 dB/m
NM-NM/500/RG213	RG213/U	3 GHz	N(m)	N(m)	500 cm	80 W	0.23 dB/m
NM-NM/500/RG213	RG213/U	3 GHz	N(m)	N(m)	500 cm	80 W	0.23 dB/m
SMAM-SMAM/25/RG316	RG316/U	6 GHz	SMA(m)	SMA(m)	25 cm	80 W	0.23 dB/m
SMAM-SMAM/75/RG316	RG316/U	6 GHz	SMA(m)	SMA(m)	75 cm	135 W	0.89 dB/m
SMAM-SMBF/75/RG316	RG316/U	4 GHz	SMA(m)	SMB(f)	75 cm	135 W	0.89 dB/m
NM-NM/30/RM141	RM141	11 GHz	N(m)	N(m)	30 cm	950 W	0.38 dB/m
NM-NM/50/RM141	RM141	11 GHz	N(m)	N(m)	50 cm	950 W	0.38 dB/m
NM-NM/100/RM141	RM141	11 GHz	N(m)	N(m)	100 cm	950 W	0.38 dB/m
NM-SMAM/30/RM141	RM141	11 GHz	N(m)	SMA(m)	30 cm	950 W	0.38 dB/m
NM-SMAM/50/RM141	RM141	11 GHz	N(m)	SMA(m)	50 cm	950 W	0.38 dB/m
NM-SMAM/100/RM141	RM141	11 GHz	N(m)	SMA(m)	100 cm	950 W	0.38 dB/m
SMAM-SMAM/30/RM141	RM141	18 GHz	SMA(m)	SMA(m)	30 cm	950 W	0.38 dB/m
SMAM-SMAM/50/RM141	RM141	18 GHz	SMA(m)	SMA(m)	50 cm	950 W	0.38 dB/m
SMAM-SMAM/100/RM141	RM141	18 GHz	SMA(m)	SMA(m)	100 cm	950 W	0.38 dB/m

FOAM TABLES & EUT SUPPORTS

EPS TEST TABLE LT

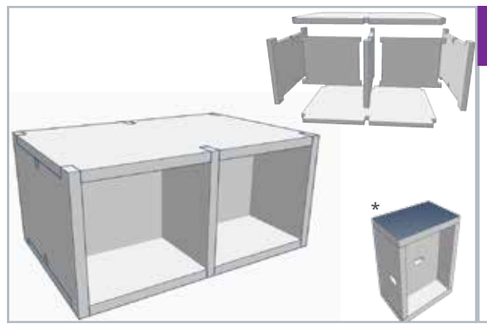
Expanded Polystyrene Permittivity <1.04, 200+lb

Simple, inexpensive solution for your EMI testing. Made from durable, expanded polystyrene (EPS) material and can be customized to your requirements. Complies with CISPR, ISO, & IEC requirements. Shipped flat and assembled on site. Greatly reducing shipping costs. 1.5x1x0.8m
Options:
- Vinyl Decal with your company logo covering top
- Epoxy coating over top increases durability
- HDPE 24"x48" (61x 122CM) top protector
- Pre-Built before shipping

EPS TEST TABLE

Expanded Polystyrene Permittivity <1.04,500+lb.

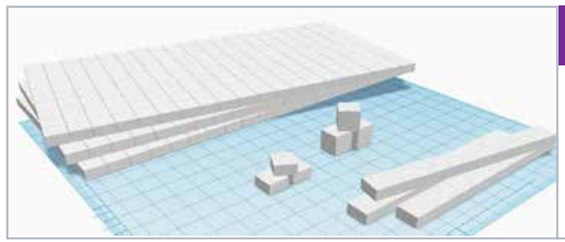
Simple, inexpensive solution for your EMI testing. Made from durable, expanded polystyrene (EPS) material and can be customized to your requirements. Complies with CISPR, ISO, & IEC requirements. Shipped via. freight, pre-assembled. 1.5x1x0.8m standard, custom size available
Options:
- Vinyl decal with your company logo covering top
- Epoxy coating over top increases durability
- HDPE (Hard Plastic) 24"x48" (61x 122CM) top protector



EMC EPS 70X150CM SUPPORT

70cm Support for on top of table = 150x100cm

- 150 x 100 x 70 cm.
- Sit on top of a standard 80cm test table for a 150cm height
- < 1.04 Permittivity
- A new design can be pre-built or shipped flat, self-assembled, glued on-site
- Notched to fit easily together for easy setup
- ***EPS EPS 70CM Support** Smaller cube
  - Easy 1 person moving and stacking
  - 50x75x70 cm (4 cubes to cover 1.5x1m table)
  - Use multiple cubes to enlarge surface



EUT SUPPORTS

Expanded Polystyrene Permittivity <1.04

- **EMC EPS 5cm Sheets** 1 x 2m (custom sized available)
- **EMC EPS Pad** 50 x 50 x 5cm
- **EMC EPS Bar** 100 x 10 x 5cm
- **EMC EPS Block** 10 x 10 x 5cm
- **EMC EPS Cube** 10 x 10 x 10cm
- Custom supports available of any size, solid or engineered
- Standard sizes are stock items, quick delivery

WOOD TABLES & GROUNDING

WOOD TEST TABLE

All Wood Construction (No Metal Fasteners)

The table is built to be shipped flat to reduce shipping costs and assembled on site easily and quickly.

- Built to order, sized to fit your needs
- Customized for your needs: casters,add a bottom shelf
- Braided copper ground straps options
- Ships flat and legs are installed with wooden peg
- Optional Casters 3", 4", or 5"

WOOD TEST TABLE W/GP

Wood Table with Al or Cu Ground Plane

The table is built to be shipped flat to reduce shipping costs and assembled on site easily and quickly.

- Built to order, sized to fit you
- Ground plane can be Copper, Aluminum, or Galvanized steel
- Assortment of grounding options available: braided straps, solid flat metal, easy insertion all with low mOhm impedance
- Optional Wheels: 3", 4", or 5"

Legs fit inside bottom of Table

Tables built to order in VA, USA

Shipped accessories: Wood Pegs, mallet, glue, grounding

Laser etched branding

GROUNDING ACCESSORIES

Chamber wall ground receptacle for table edge, (required to be placed on chamber wall)

Copper, Strips 6"x10' Braided Copper ground strap 0.5" and 1"

Sheets of Copper up to 4'x10' 22-MIL/16-Oz/0.0216"/24-gauge/0.55mm

Edge finger stock gasket for continuous bonding of multiple tables

AL ground planes come with 1/4-20 Ground stud and thumb screw

FLOOR GROUND PLANE

Easy to assemble ground plane

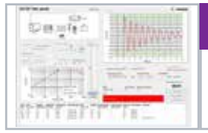
Ground plane is made of 2 layers of Aluminum; 4 panels on bottom and 3 panels on top each offset to produce continuous ground bonding from pressure. No interconnecting fasteners needed.
- Sized for your needs, Available in Al, Cu, or Galvanized steel
- Ground stud located at 2 corners, user switchable
- Table ground stud located at 2 locations, user switchable
- Includes: safety cone for tripping hazard of ground stud, gloves , 2x ground studs, 10ft 1" braided coper ground strap

MIL-STD-461 GENERATORS

POG-CS116

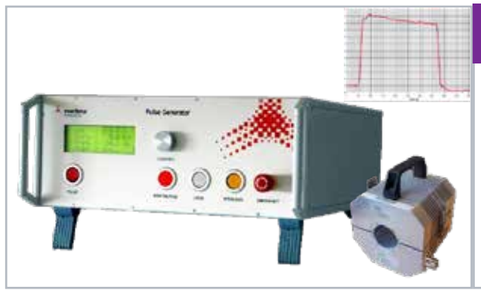
Test Generator, Dampened Wave

• MIL-STD 461 CS116 Compliant: Meets stringent military testing standards.
• Flexible Frequency Options: Choose from 6, 9, or 17 test frequencies.
• Comprehensive Accessories: Includes injection probe, attenuator, oscilloscope, and control software.
• Efficient Operation: Single signal output reduces test time and supports automation.
• User-Friendly Control: Easily controlled via RS232 and USB interfaces.



SW-CS-DOW

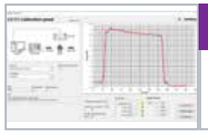
Software for POG Generator and O'Scope Control
• Easy configuration/calibration and testing
• Compatible with many O'Scopes; please check our latest compatibility list



PG-CS115

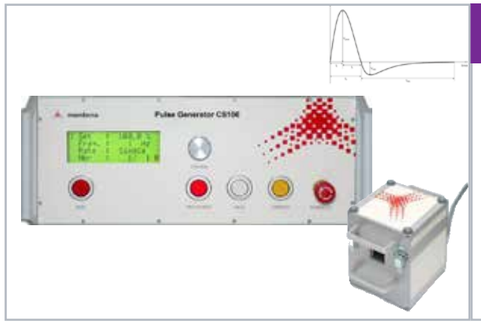
Test Generator, 1kV into 50 Ohms

• MIL-STD 461 Compliant: Meets stringent military standards for reliable testing.
• Flexible Configurations: Available as standalone (PG-CS115) or modular (M-CS115) units.
• Comprehensive Accessories: Optional injection probe, attenuator, oscilloscope, and control software.
• High Precision: Delivers accurate rectangular pulses with rapid rise/fall times (≤ 2 ns). Pulse rates from 1 to 50 Hz
• **Offered as M-CS115, Module fits into POG-116**



SW-CS115

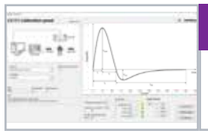
Software for PG-CS115 or M-CS115 Generator and O'Scope Control
• Easy configuration/calibration and testing
• Compatible with many O'Scopes; please check our latest compatibility list



PG-CS106

Spike Test Generator, 500V

• MIL-STD 461F CS106 Compliant: Ensures reliable military-standard testing.
• Flexible Configurations: Available as standalone (PG-CS106) or modular (M-CS106) units.
• High Performance: Delivers up to 500 V peak voltage and 8–100 A peak current.
• Precise Pulse Control: Supports 1–15 Hz repetition rates with swift rise and fall times.
• **Offered as M-CS106, Module fits into POG-116**



SW-CS106

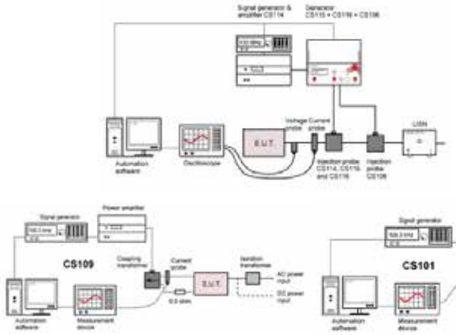
Software for PG-CS106 or M-CS106 Generator and O'Scope Control
• Easy configuration/calibration and testing
• Compatible with many O'Scopes; please check our latest compatibility list

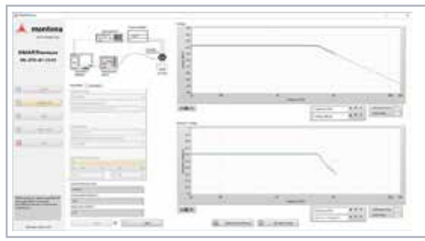
TS-CS114-CS115-CS116-CS106-CS101-CS109-RS101

Modular Test system for MIL-STD-461 CS

Get the tests you need, add additional capability when needed.
Use 1 injection probe for all testing, Save valuable setup time with better automation. Run ALL tests of CS116, CS115, and CS114 all with one clamp setup and configuration

- POG-CS116-6 Base system 6 Frequencies
  - 10, 100 kHz, 1, 10, 30, 100 MHz
- POG-CS116-9 Base system 9 Frequencies
  - 10, 30, 100, 300 kHz, 1, 3, 10, 30, 100 MHz
- POG-CS116-17 Base system 17 Frequencies
  - 10, 18, 30, 56, 100, 180, 300, 560 kHz, 1, 1.8, 3, 5.6, 10, 18, 30, 56, 100 MHz
- M-CS115 Module Adds CS115 Capacity to POG
- M-CS106 Module Adds CS106 for Navy testing
- M-CS114 added equipment for BCI testing
- M-CS101/RS101/CS109 added equipment for Audio range testing
- Configured for table top arrangement or 19" rack as 1 system.
- Automated switching from test to test.
- Save valuable setup time





SMARTIMMUN

Software for RF Conducted immunity Systems Uses O'Scope Control
• Easy configuration/calibration and testing
• Compatible with many O'Scopes; please check our latest compatibility list
  • **LIC-CS101** SMARTImmun license option for MIL-STD-461 E/F/G CS101
  • **LIC-CS109** SMARTImmun license option for MIL-STD-461 E/F/G CS109
  • **LIC-CS114** SMARTImmun license option for MIL-STD-461 E/F/G CS114
  • **LIC-RS101** SMARTImmun license option for MIL-STD-461 E/F/G RS101
  • **LIC-DO160-20** SMARTImmun license option for RTCA DO-160G Section 20 (CS)
  • **LIC-XXXXX** SMARTImmun license option for Customer needs

PG-C201

Damped Sinusoid Generator 300A

100kHz - 55MHz 10 Freq.
300 A for direct injection
150 A for direct injection
75 A with coupling clamp

PG-C202

DOW CS116 +7dB Level

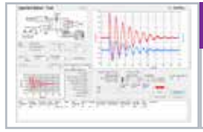
6 Freq Expandable to 12
Over test to CS116
Included High Pow Clamp
Works With SW-CS-DOW

MIL-STD-1275 GENERATORS

PG1275F

Spike & Surge, Imported and Exported

- Standard: MIL-STD-1275F
- Transients supported:
  - imported and exported spikes
  - imported and exported surges
- Test equipment operating voltage: 28 Vdc
- Test equipment operating current: 400 A
- Up to 250mJ for spikes and 1210J for surges
- Output connectors: ITT IP67 400 A
- Remote control: RS232 and USB



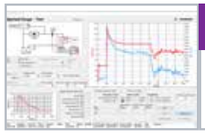
SW-1275F

Software for PG1275F Generator and O'Scope Control
- Easy configuration/calibration and testing
- Compatible with many O'Scopes; please check our latest compatibility list

PG1275E

Injected spikes and injected surges

- Standard: MIL-STD-1275E
- Transients supported:
  - imported and exported spikes
  - imported and exported surges
- Test equipment operating voltage: 28 Vdc
- Test equipment operating current: 400 A
- Up to 2 J for spikes and 470 J for surges
- Output connectors: ITT IP67 400 A
- Remote control: RS232 and USB



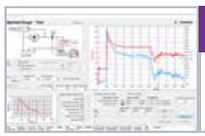
SW-1275E

Software for PG1275E Generator and O'Scope Control
- Easy configuration/calibration and testing
- Compatible with many O'Scopes; please check our latest compatibility list

PG1275D

Spike & Surge, Imported and Exported

- Standard: MIL-STD-1275D
- Transients supported:
  - imported and exported spikes
  - imported and exported surges
- Test equipment operating voltage: 28 Vdc
- Test equipment operating current: 400 A
- Inductor: 5 µH 400 A
- Output connectors: ITT IP67 400 A
- Remote control: RS232 and USB



SW-1275D

Software for PG1275D Generator and O'Scope Control
- Easy configuration/calibration and testing
- Compatible with many O'Scopes; please check our latest compatibility list

MIL-ESD

montena

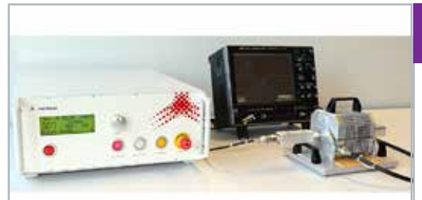
PGESD 300K DP — HELICOPTER 300KV ESD TEST SYSTEM

MIL-STD-331, MIL-STD-464, NATO AECTP-250, AECTP-500

The system is a state-of-the-art solution for evaluating the effects of electrostatic discharges (ESD) on helicopters, aircraft, and other sensitive equipment. This system is specifically designed to simulate real-world scenarios, such as high-voltage discharges caused by flying through dust, dry air, rain, and Snow

- High Voltage Performance: Generates electrostatic discharges up to 300 kV, with reversible polarity.
- Height and Angle Adjustability: The discharge electrode is adjustable from 1.5 to 6 meters in height and ±60° tilt for precise targeting.
- Automated and Safe Operation: Remote-controlled via PC-based software with fiber optic transmission for electrical isolation.
- Comprehensive Testing Capabilities:
- Discharge from a charged electrode to a grounded Equipment Under Test (EUT).
- Discharge from a charged EUT to a grounded electrode.
- High-voltage corona tests ("precipitation-static").

PGESD300K-DP	ESD Pulse generator for MIL-STD 331 C/D, maximum charging voltage: +/-300 kV
ESDELECTRODE300K	Pneumatic remote-controlled discharge electrode
ESD-MAST-6M	Movable mast on wheels, for ESD-Electrode 300K, 1.5 - 6 m adjustable height
ESD-MAST-2M	Movable stand on wheels, for ESD-Electrode 300K, 0.5 - 2 m adjustable height
FT300K	Wall feedthrough for up to 300 kV, for an indoor-outdoor installation of the test setup
ESDR500-300K	300 kV 500 ohm serial resistor to be installed on the PGESD300KDP generator for NATO STANAG 4235 test
ESDR250M	250 Mohm serial resistor for MIL-STD 331D HVC test



PESD-ECSS-12K — 10kV ESD

ESD Pulse Generator to ECSS-E-ST-20-07C

- High-Voltage Range: 20 V to 10 kV, positive polarity only.
- ECSS Compliant: Meets ECSS-E-ST-20-07C Rev.2 for space-grade ESD tests.
- Damped Oscillatory Waveform: Ensures accurate wire-coupled discharge simulations.
- Remote Control & Monitoring: Offers single shot, repetitive, or remote triggering with RS-232/USB.

PST-70K — 70kV R-STATIC ESD

MIL-STD-464C or NATO AECTP-250 Leaflet 253

- High-Voltage Range: 0 to 70 kV, positive polarity (negative optional).
- Current Measurement Selectable: 500 µA or 100 µA full scale / ±5%
- Corona Disk Diameter: 30 cm, Surface Area: 0.07 m²
- Rod Length / Weight: 215 cm / 3.5 kg
- HV Power Supply – Maximum Output Rating: 70 kV / 60 W

ONYX 30 — 30 kV — SEE PAGE 20

Electrostatic Discharge Simulator

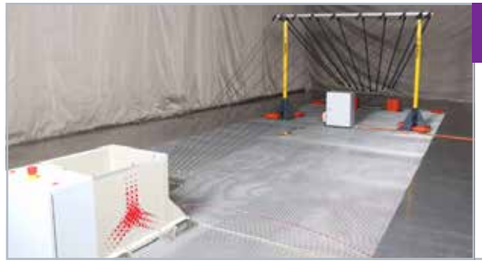
MIL-STD-461G, DO160 Sec 25 Compliant

MOBILE RS105 NEMP

NEMP050 — 50CM

Desk Top Test, EUT up to 17 cm

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. 25 kV Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Computer, Shielded Enclosure for measurement equipment



NEMP140 — 1.4M

Floor Standing, Test EUT up to 45 cm

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. 80 kV Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment, Ground Plane Materials

NEMP360 — 3.6M

Floor Standing, Test EUT up to 1.15 m

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. 240 kV Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment, Ground Plane Materials

NEMP500 — 5.0M

Floor Standing, Test EUT up to 1.7 m

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. 360 kV Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment, Ground Plane Materials

NEMP730 — 7.3M

Floor Standing, Test EUT up to 2.4 m

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. 480 kV Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment, Ground Plane Materials

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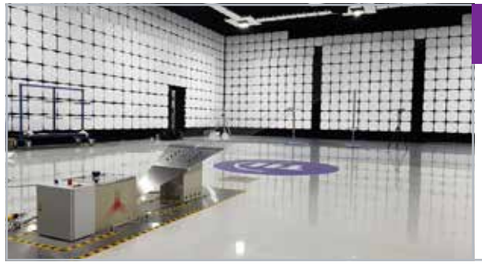


NEMP WM — WALL MOUNT

Sized to maximize Test Area in Chamber

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB), Easy to install and remove.
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment

NEMP110-G — GTEM

GTEM 750 or 1000 can be utilized

- Fully complies with RS105 MIL-STD-461 D/E/F/G/H
- Test 50kV/m (-0dB/+6dB) meets the uniform field
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer

FIXED INSTALL RS105 NEMP

NEMPXXXX-O — OUTDOOR

Outdoor Permanent RS105 Test Systems < 50kV/m

- MIL-STD-464, MIL-STD-188-125-2, IEC 61000-5-25, MIL-STD-461 RS105
- Test 50kV/m (-0dB/+6dB) meets the uniform field
- 2.3ns Rise Time 23nS Duration, Vertical Polarity
- Incl. Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment

Model	Description	Marx Generator	Antenna Height	EUT Size
NEMP500-O	Outdoor large vertically polarized NEMP simulator	360 kV	5 meter	1.5 meter
NEMP730-O	Outdoor large vertically polarized NEMP simulator	480 kV	7.3 meter	2.4 meter
NEMP1300-O	Outdoor large vertically polarized NEMP simulator	1.8 MV	13 meter	4.4 meter
NEMP2500-O	Outdoor large vertically polarized NEMP simulator	3.5 MV	25 meter	8 meter
NEMPXXXX-O	Custom Outdoor large vertically polarized NEMP simulator	XX XV	XX meter	~ 1/3 Height

HPD1000 — HORIZONTAL

MIL-STD-464C or NATO AECTP-250 Leaflet 253

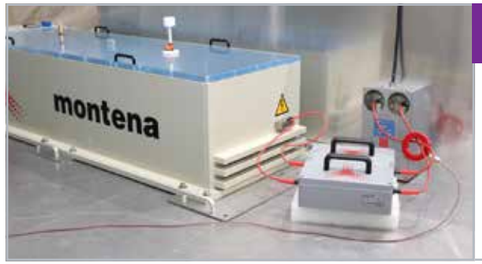
- MIL-STD-464, MIL-STD-188-125-2, IEC 61000-5-25, MIL-STD-461 RS105
- Test 50kV/m (-0dB/+6dB) meets the uniform field
- 2.3ns Rise Time 23nS Duration, Horizontal Polarity
- Incl. Marx Generator, Bounded Wave Antenna, Ground Measurement Probe, PulseLab Software
- Optional: Oscilloscope, Free Field sensor, Fiber Optic Transponders, Computer, Shielded Enclosure for measurement equipment

PULSE CURRENT INJECTION PCI

PPG-E1-1200 — 1.2 KA

PCI Short pulse (E1) generator, 1.2kA

- MIL-STD-188-125 Compliance direct or coupled pulse injection
- Peak Current: 50 A to 1.2 kA (short circuit).
- Peak Voltage: 3 kV to 80 kV (open circuit).
- Output Waveform: Double-exponential.
- Pulse Rise Time: ≤ 20 ns.
- Pulse Duration (FWHM): 500 – 550 ns.
- Portable & Battery-Powered for On-Site Testing



EMP300K-5-500 — 5 KA

PCI Short pulse (E1) generator, 5kA

- MIL-STD-188-125 Compliance direct or coupled pulse injection
- Peak Current: 1.5 kA to 5 kA (short circuit).
- Peak Voltage: 100 kV to 350 kV (open circuit).
- Output Waveform: Double-exponential.
- Pulse Rise Time: ≤ 20 ns.
- Pulse Duration (FWHM): 500 – 550 ns.

IPP3K-4MS — 260 A

Intermediate Pulse (E2) Generator

- MIL-STD-188-125 Compliance direct or coupled pulse injection
- Peak Current: 260 A (short circuit).
- Peak Voltage: 3 kV (open circuit).
- Output Waveform: Double-exponential.
- Pulse Rise Time: ≤ 1.5 µs.
- Pulse Duration (FWHM): 3 – 5 ms.

CLP5K — 50 A

Charge line generator, POE

- MIL-STD-188-125-2 Compliant
- Adjustable 0.05 - 5 kV, 50Amps (CLP5K) voltage ranges
- Supports testing from 30 MHz up to 477.5 MHz
- 30, 45, 50, 60, 90, 106.5, 140.5, 215, 300, 312.5, 477.5 MHz
- Delivers fast rise times with controlled energy output

CLP40K — 400 A

Charge line generator, POE

- MIL-STD-188-125-2 Compliant
- Adjustable 0.2 - 25 kV, 400Amps (CLP40K) voltage ranges
- 30, 40, 50, 75, 100, 125, 150, 175, 220, 250 MHz
- Delivers fast rise times with controlled energy output

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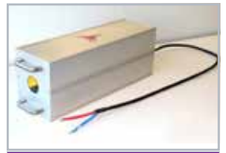
CUSTOMIZED PCI

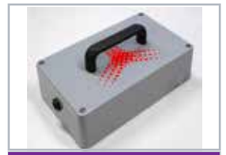
Tailored EMP Testing Solutions

- Customizable from 5 kV to over 500 kV, ensuring realistic EMP simulation
- Optimized for both short and intermediate pulse testing.
- Including direct connection, inductive coupling, and capacitive injection.
- Supports multiple output channels for simultaneous injection across different system components.

DL3 DS3
Mains 4 or 2-line De-coupling device

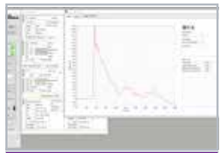


IC3B
Inductive coupler
5 kA



CCL2500
5kA capacitive coupler

TLB4
Dummy load
0.2, 0.5, 2.0, 50 ohm



PulseLab
Software

CLAMP
HV, H-current Measure-ment Clamp

CC-E1-1200-4
capacitive/varistor coupler

MOL2000T2
Fiber Optic Analog link
20Hz 3.2GHz

IC-E1-2150
Special inductive cou-pler 2150 A

SB3G
Shielded enclosure
61 x 52 x 73 cm

DEF-STAN 59-411 GENERATORS

DCS06.B - DCS12.B TRANSIENT

PG-DCS06B-DCS12B

- Fully complies with DEF STAN 59-411 Part 3, DCS06.B and DCS12.
- 2 kV, damped oscillatory wave
- DCS06.B: 100kHz;
- DCS12.B: 10.9 kHz 2.5Ω, 15.9 kHz 0.15Ω & 0.4Ω
- Includes all required accessories + Automated Software

DCS05.B DAMPED SINUSOID

PG-DCS05B-9 (25A), PG-DCS05B-100A

- Fully complies with DEF STAN 59-411 Part 3 DCS05.B
- NEMP Simulation: Sea Services, Below Decks
- Switching Simulation: All Land and Sea Services equipment (Below Decks and Above Decks)
- Test frequencies 0.5, 1, 2, 3, 5, 10, 15, 35, 50 MHz
- PG-DCS05B-15 version can also meet MIL-STD-461 CS116 +6 Freq
- Includes all required accessories + Automated Software

PULSE MEASURMENT PROBES

SGX#X GROUND PLANE

Derivative Sensors E & H

- Pulsed electromagnetic fields up to 10 GHz

Model	Description	Equivalent Area	Frequency Response	Rise Time (10-90%)
SGE1G	D-Dot (E-field), SMA (female), 1kV MaxOutput	1 x 10-2 m²	Up to 1 GHz	320 ps
SGE3-5G	D-Dot (E-field), SMA (female), 1kV MaxOutput	1 x 10-3 m²	Up to 3.5 GHz	110 ps
SGE10G	D-Dot (E-field), SMA (female), 1kV MaxOutput	1 x 10-4 m²	Up to 10 GHz	32 ps
SGM2G	B-Dot (B-field), SMA (female), 1kV MaxOutput	1.1 x 10-4 m²	Up to 2 GHz	180 ps

SFX#X FREE FIELD

Derivative Sensors E & H

- Pulsed electromagnetic fields up to 10 GHz

Model	Description	Equivalent Area	Frequency Response	Rise Time (10-90%)
SFE1G	D-Dot (E-field), 2xSMA (female), 1kV MaxOutput	2 x 10-2 m²	Up to 1 GHz	320 ps
SFE3-5G	D-Dot (E-field), 2xSMA (female), 1kV MaxOutput	2 x 10-3 m²	Up to 3.5 GHz	110 ps
SFE10G	D-Dot (E-field), 2xSMA (female), 1kV MaxOutput	2 x 10-4 m²	Up to 10 GHz	32 ps
SFM2G	B-Dot (B-field), 2xSMA (female), 1kV MaxOutput	2.2 x 10-4 m²	Up to 2 GHz	160 ps

GROUND PLANE & FREE FIELD SETUP

Related Products & Accessories

Model	Description
BL3-5G	Balun 500 Hz - 3.5 GHz needed for free field probe
BL10G	Balun 500 Hz - 3.5 GHz needed for free field probe
SFMK	Mounting kit for free field sensor
Fiber Links	Point-to-point optical link, 80 Hz – 3.5 GHz (see next page)
Fiber Cable	up to 1km lengths possible (see next page)
Probe Mast	Manuel mast for easy probe setup

ITRXXX PASSIVE INTEGRATOR

Model	Time Constant	Frequency	Impedance	Max Input Voltage	Connector
ITR200N	200 ns	1.4 GHz	50 Ω	1 kV (100 ns pulse)	N(f) - BNC or SMA
ITR1U2	1.2 µs	1 GHz	50 Ω	1 kV (100 ns pulse)	N(f) - BNC or SMA
ITR12U	12 µs	200 MHz	50 Ω	1 kV (100 ns pulse)	N(f) - BNC or SMA

VDOTXX COAX HV DIVIDERS

Model	Factor (k)	Frequency	Impedance	Max Voltage	Connector Thr, Out
VDOT8G	3.8x10-13 s	4.5 GHz	50 Ω	20 kV	7/16 female, SMA
VDOT8GS	3.0x10-13 s	2.4 GHz	50 Ω	75 kV	HVM50K female, SMA
VDOT200K	2.1x10-13 s	1.6 GHz	50 Ω	200 kV	HVM200K female, SMA

ATTENUATORS AND LOADS

Model	IN Connector	Frequency	Freq with Comp.	Attenuation	OUT Connector
HVAT50K	HVM50K (female)	200 MHz	4 GHz	54 dB	N(female)
HVAT200K	HVM200K (female)	200 MHz	1.6 GHz	54 dB	N(female)
Loads	50 Ω Loads to match connection				

ANALOG LINKS

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MOL25T 2 CH, 25 MHZ

Precision-engineered, shielded optical transmission

- DC up to 25 MHz
- Two independent 1 M Ω BNC inputs, single fiber
- Immunity Levels: >500 kV/m (MIL-STD 461 RS105)
- Remote-Selectable Attenuation: 1:1, 10:1, 100:1
- Transmits signals over 1 km, 20+ hour battery autonomy
- Connectors BNC or SMA
- Receiver Unit can be rack mountable MOL25T-M (See insert picture)

MOL500T 500 MHZ

Precision-engineered, shielded optical transmission

- DC up to 500 MHz
- Remote-Selectable Impedance: 50 Ω or 1 MΩ Input, single fiber
- Immunity Levels: >500 kV/m (MIL-STD 461 RS105)
- Remote-Selectable Attenuation: 1:1, 10:1, 100:1
- Transmits signals over 1 km, 50+ hour battery / in standby 5 months
- Connectors BNC or SMA
- Receiver Unit can be rack mountable MOL500T-M (See insert picture)

MOL2000T2 3.5 GHZ

Precision-engineered, shielded optical transmission

- 80 Hz up to 3.5 GHz
- 50 Ω Input, Duel Fiber
- Immunity Levels: >500 kV/m (MIL-STD 461 RS105)
- Remote-Selectable Gain:-62.5 dB to +24 dB with 0.5 dB step adjustments
- Transmits signals over 1 km, 40+ hour battery / in standby 10 Days
- Connectors SMA
- Receiver Unit can be rack mountable MOL2000T-M (See insert picture)

MOL3000 3.2GHZ

Same Frequency Range as MOL2000T w/o gain/attenuation control

Simple Point to Point 80Hz to 3.5 GHz Hardened fiber transponder, **single fiber**

FCLBXXX
Single fiber cable
10, 20, 50, 100, 200, 500, 1000m, MOL25T, MOL500T, MOL3000

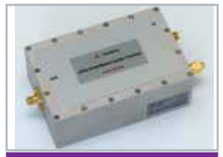
FCLBXXXRU
Rugged fiber cable
10, 20, 50, 100, 200, 500, 1000m, MOL25T, MOL500T, MOL3000

FO2CXXX
Dual fiber cable
10, 20, 50, 100, 200, 500, 1000m, RU available (MOL2000T2)

MOL-MF-10
19" 2U for up to 10 plug-in receiver modules

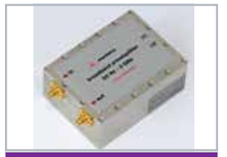
MOL-MF-1
Chassis for one plug-in receiver module

IA1M-50
Impedance adapter 1MΩ to 50 Ω



INV10G
Ultra-Broadband Pulse Inverter

ATPX0-18G
Coaxial attenuator 50 Ω 18GHz, 10, 20, 30 dB



PRA3GXXD
80 Hz - 3 GHz, 20 & 40 dB Pre-amplifiers, Batt

CX-SN
50-ohm semi-rigid coax-ial cable

FAST PULSE TECHNOLGY

PGR-10KV-50R — 10 KV

ns Pulse Generator

- 0.5 to 10 kV, on a 50 Ohm load
- Pulse rise time(10 - 90 %): 5 ns typ.
- Pulse duration: 60 to 160 ns, programmable
- Pulse monitoring: 1:1000 analog divider, N-type connector
- 2 Units can be put in series for 20kV use
- Customization is possible
- Applications: Cold Plasma, stimulation of cells, Plasma activated water, medical applications

PGR-30KV-50R — 30 KV

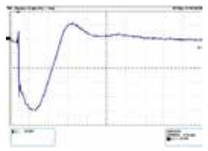
ns Pulse Generator

- 0.5 to 30 kV, on a 50 Ohm load
- Pulse rise time(10 - 90 %): 30 ns typ.
- Pulse duration: 60 to 150 ns, programmable
- Pulse repetition frequency: up to 1 kHz, programmable
- Pulse monitoring: 1:80 analog current output monitoring, SMA
- Customization is possible
- Applications: Cold Plasma, stimulation of cells, Plasma activated water, medical applications

GT50K TRIGGER GENERATOR

Drop in Replacement to PT55

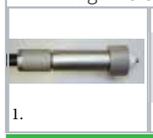
- 50 kV max, 40 kV min
- negative or positive
- Pulse rise time (10-90%): 3nS
- Pulse Duration: 400nS
- Pulse repetition rate: 0.4Hz
- Trigger: BNC 5V or Optical
- Custom Trigger Generators are available



HIGH VOLTAGE CONNECTIONS

Montena Developed HV connectors with excellent performance

HVM Series High Voltage Coaxial Connectors & Cable Assemblies by Montena are specially designed for fast, high-voltage pulse transmission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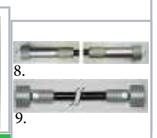
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Model	Description	Voltage DC	Voltage Pulse	Frequency	Impedance	pic
HVM200K-CA (m)	Connector for RG218/U	75 kV	200 kV	1.6 GHz	50 Ω	1.
HVFT200K-S (f)	Feedthrough	75 kV	200 kV	1.6 GHz	50 Ω	2.
HVM200K-S (f)	Panel Mount	75 kV	200 kV	1.6 GHz	50 Ω	3.
HVK200-N Adaptor	Adaptor to N	1.5 kV	3 kV	1.6 GHz	50 Ω	4.
HVM50K-CA (m)	Connector for RG217/U	25 kV	75 kV	4 GHz	50 Ω	5.
HVFT50K-S (f)	Feedthrough	25 kV	75 kV	4 GHz	50 Ω	6.
HVM50K-S (f)	Panel Mount	25 kV	75 kV	4 GHz	50 Ω	7.
HVK200-xxx	Cable HVM200K-CA (m) x2	75 kV	200 kV	1.6 GHz	50 Ω	8.
HVK50-xxx	Cable HVM50K-CA (m) x2	25 kV	75 kV	4 GHz	50 Ω	9.
HVK200-N-xxx	Cable HVM200K-CA (m) to N	1.5 kV	3 kV	1.6 GHz	50 Ω	
HVK50-N-xxx	Cable HVM50K-CA (m) to N	1.5 kV	3 kV	4 GHz	50 Ω	
HVK200-O-xxx	Cable HVM200K-CA (m) to open	75 kV	200 kV	1.6 GHz	50 Ω	
HVK50-O-xxx	Cable HVM50K-CA (m) to open	25 kV	75 kV	4 GHz	50 Ω	

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ANTENNAS, TEM, STRIP-LINES, COILS

TEM3000

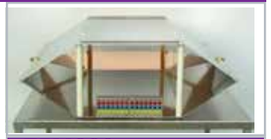
DC - 3 GHz
25 mm Under Septum
110 x 71 mm Usable Area
MAX Field 5.6kV/m

TEM1000

DC - 1 GHz
73 mm Under Septum
220 x 210 mm Usable Area
MAX Field 2.6kV/m

TEM500

DC - 500 MHz
147 mm Under Septum
415 x 424 mm Usable Area
MAX Field 1.5kV/m



TEM220

DC - 220 MHz
364 mm Under Septum
860 x 900 mm Usable Area
MAX Field 800V/m

SR90 - 90 OHM

0 to 1 GHz Stripe-line
200 W
Fold Down for storage
ISO 11452-5

SR50 - 50 OHM

0 to 1 GHz Stripe-line
1 kW
Fold Down for storage
ISO 11452-5

PPL200-70-S

Parallel Plate Vert. Only
70 cm between plates
500 W (1 kW 20 min)
MAX Field 450 V/m @500W

PPL200

Parallel Plate Hor. & Vert.
106 cm between plates
500 W (1 kW 20 min)
MAX Field 320 V/m @500W

GENE-H-30-3K

10kHz to 30MHz
E Field Generator
3kW Height 1.5 to 3.5m
Mil-STD-464 & ISO 11451-2

HIRA 180S

Half Impulse Radiating Antenna
100MHz to 6GHz
Pulse field up to 400kV/m

TPD50-100-4

Terminal Protection
2 line and 4 line versions
Designed for protection of the equipment during NEMP

SRA5090

Impedance Adapter for 90 Ω Strip-lines
50 Ω to 90 Ω adaptor

HC300

Folding Helmholtz Coil
3 m Dia., DC - 90 kHz
460 A/m (= 575 μT) @ 60 A
Coil Factor: 7.7 A/m / A

HC100

Helmholtz Coil
1 m Dia., DC- 660kHz
≤ 940 A/m @ 60A
Coil Factor: 15.6 A/m / A

HC30

Helmholtz Coil
22 cm Dia., DC - 500 kHz
≤ 4.7 kA/m @ 40 A
Coil Factor: 117 A/m / A

HC11

Helmholtz Coil
10 cm Dia., DC - 200 kHz
≤ 50 kA/m @ 40 A
Coil Factor: 1.25 kA/m / A

SC100

Coil
10 cm Dia., DC
275 kA/m (@ 60 A)
Coil Factor: 4.6 kA/m / A

SC65

Coil
1 m Dia., DC- 40 kHz
290 kA/m (@ 60 A)
Coil Factor: 4.8 kA/m / A

IP-DR250+4KHZ

BCI Probe
(4 kHz) 10 kHz - 400 MHz
500 W 15Min

CJ-DR250

Calibration Jig
for IP-DR250

ESD SIMULATORS

HAEFELY
Current and voltage – our passion

ONYX 16 — 16kV

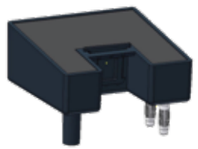
Electrostatic Discharge Simulator

- IEC 61000-4-2 (150 pF / 330 Ω) MIL-STD-461G, DO-160
- Battery **or** mains operation
- 16,5 kV AIR / 10 kV CONTACT discharge
- Lightweight ergonomic design, weight distribution
- Programmable automatic test runs, optional intuitive software
- Predefined test levels acc. to the standard
- Displaying of the real discharge voltage at air mode
- Counter mode with and without automatic polarity change
- Included: air & contact tip, ground strap, AC charger/mains power, carrying/storage case

ONYX 30 — 30 kV

Electrostatic Discharge Simulator

- IEC 61000-4-2 (150 pF / 330 Ω) MIL-STD-461G, DO-160
- Battery **or** mains operation
- 30 kV AIR / 30 kV CONTACT discharge
- Lightweight ergonomic design, weight distribution
- Programmable automatic test runs, optional intuitive software
- Predefined test levels acc. to the standard
- Displaying of the real discharge voltage at air mode
- Counter mode with and without automatic polarity change
- Included: air & contact tip, ground strap, AC charger, carrying/storage case



RC Modules — ESD

RC Modules for Pulse shape forming

Model #	Capacitance	Resistance	Standard
Standard	150 pF	330 Ω	IEC 61000-4-2, ISO 10605, DO-160, MIL-STD-461 CS118, CS.00244
No. 4700531	150 pF	2,000 Ω	ISO 10605, SAEJ1113-13, FORD, GM
No. 4700532	330 pF	2,000 Ω	ISO 10605, SAEJ1113-13, CS.00244, FORD, GM
No. 4700618	330 pF	330 Ω	ISO 10605, CS.00244
No. 4700622	100 pF	1,500 Ω	IEC 612340-3-1, JEDEC 11-A114, MIL-STD-750D
No. 4700620	150 pF	150 Ω	MIL-STD-883
No. 4700619	500 pF	500 Ω	MIL-STD-331
No. 4700621	500 pF	5,000 Ω	MIL-STD-331
No. 4700633	50 pF .. 1nF	50 .. 5,000 Ω	Custom
	100 pF	500 Ω	Chrysler PF9326-D-May 00, Chrysler LP388-C-42
	150 pF	500 Ω	JASO D001-87 and 94

SOFTWARE
Package of fiber optical RS 232 interface and control & report software

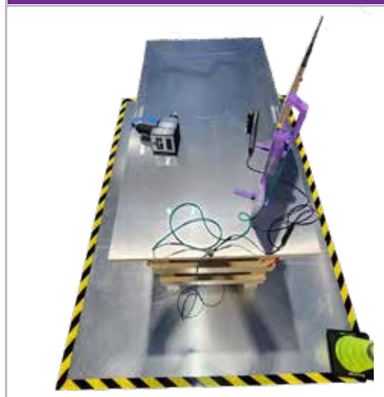
30KV AD TIP
Discharge tip 30 mm diameter for improved air discharge testing up to 30 kV

FAST RISE TIME TIP
Reduces the rise time of the ESD-pulse to 0.3ns for reliability

AC MAINS ADAPT.
Power supply replaces the rechargeable battery pack for continuous testing

ESD ACCESSORIES

ESD TEST TABLE



Modular Test Table System

ESD Table is made from all wood with no metal fasteners. Aluminum ground plane (Horizontal Coupling Plane-HCP) is placed on to top, has 1/4"-20 grounding thumb screw. Isolation spacer 0.5mm included. Picture shows system with additional accessories.

- Standard size 0.8 x 1.6 x 0.8H per IEC 61000-4-2
  - Custom sizes available for other standards
- Comes with 2m 1MΩ (2x 470kΩ) resistor wire for grounding
- Isolation spacer of 0.5mm thickness included. (Other thickness on request)
- Options for copper or galvanized HCP
- Table ships flat, legs are attached with wood pegs, rubber mallet supplied
- Options
  - Vertical Coupling plane (VCP)
  - Modular, Floor Ground Plane
  - ESD Static dissipation Brush
  - Braided Grounding Strap. 10'

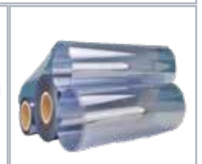
ESD TABLE KIT
Kit includes table, HCP, Bleeder wire, 0.5mm isolation

VCP
Vertical Coupling plane w/ stand and earth cable 2x 470 kΩ.

RESISTOR
Earth cable w/ 2x 470 kΩ resistors

PET 4000
ESD Verification Target 2Ω (4GHz) to verify ESD wave form

ESD BRUSH
Static Dissipation Brush with bleeder resistors in handle + end of wire



ISOLATION
ESD isolation support 0.5mm or 1mm thickness

ONYX HOLDER

ESD BALANCER

ESD-SENSE — ESD CHECK

- Quick Go / No-Go check for ESD
- IEC 61000-4-2 ESD (Electro Static Discharge)
- Improve your quality with an easy check before each test sequence

ESD ISLAND JIG — ISO 10605

- Copper system on Hard PPHE
- Offered in 3 pieces for easy shipping
- Low impedance connections

INDUSTRIAL IEC/ANSI

AXOS 5 ±5 kV

Multi Waveform Generator

The most versatile and easy to use multifunction generators on the planet!

- 7" touch screen display unit
- Compact Multi Generator
- Including Burst, Surge and Power Fail Simulator
- **±5 kV** pulses
- Including 16A 1-Phased de-/coupling network
- D.U.T. and EFTG outputs on the front
- Many accessories (mag-field, voltage variations, 3 phase,...)

Standard	Pulse	Levels	Option	Accessories
IEC 61000-4-4	Burst 5/50ns	**±0.2 -** 5kV	EFT/Burst	
IEC 61000-4-5	Surge 1.2/50 µs, 8/20 µs	**±0.2 -** 5kV / **±0.1** - 5 kA	Surge	
IEC 61000-4-9	Pulsed Magnetic Field		Surge	MSURGE-A Coil
IEC 61000-4-11	AC Voltage dips/variations	264V 16A AC/DC	Voltage Dips	DIP 116 (or manual transformer)
IEC 61000-4-29	DC Voltage Dips	264V 16A AC/DC	Voltage Dips	DC sources

Optional Accessories: Control Software and Report Generator,
AC Magnetic Immunity 50/60Hz IEC 61000-4-8 see MAG 10000

AXOS 8 ±7 kV

Multi Waveform Generator

The most versatile and easy to use multifunction generators on the planet!

- 7" touch screen display unit
- Compact Multi Generator, Easy Upgrade
- Including Burst, Surge, RingWave, 10/700 Telecom, and Power Fail Simulator
- **±7 kV** pulses
- Including 16A 1-Phased de-/coupling network
- **IEC/ANSI coupling**
- D.U.T. and EFTG outputs on the front
- Many accessories

Standard	Pulse	Levels	Option	Accessories
IEC 61000-4-4	Burst 3/50 ns	**0.2 -** 5 kV	EFT/Burst	
IEC 61000-4-5	Surge 1.2/50 µs, 8/20 µs	**±0.2 -** 7 kV / ±0.1 - 3.5 kA	Surge	
IEC 61000-4-5, ITU	Surge 10/700 µs	**±0.2 -** 7 kV	Telecom Wave	TW 8
IEC 61000-4-9	Surge 10/700 µs		Surge	MSURGE-A Coil
IEC 61000-4-11	AC Voltage dips/variations	264V 16A AC/DC	Voltage Dips	DIP 116 (or manual transformer)
IEC 61000-4-12, IEEE C62.41	Ring Wave 100 kHz	**±0.2 -** 7 kV	Ring Wave	
IEC 61000-4-29	DC Voltage Dips	264V 16A AC/DC	Voltage Dips	DC sources

ACCESSORIES

HAEFELY
Current and voltage – our passion

IP4B

Capacitative coupling clamp for coupling EFT to screened I/O lines built according to IEC 61000-4-4.

HI200-CE

Magnetic loop antenna built per IEC 61000-4-9 pulse mag immunity requirements.

DIP 116

Automatic Dips Transformer 16 A 40/70/80% for setting dip voltage. According to IEC 61000-4-11.

TW 8

Telecom Wave Impulse Module 10 / 700 µs (with AXOS8 only) ITU K.20, K.21, K. 44, K. 45, IEC 61000-4-5 Ed.3.0 - Fig A.2 Fig A.3

VTM 15000

Isolation Tests to 14kV 12, 40, & 500Ohm output. Specified in IEC 60060-1, IEC 60335-1, IEC 61010-1 and other IEC/EN standards

VTM 15000/05

Isolation Tests to 14kV, 0.5J 500Ohm output. Specified in IEC 62052, IEC 60255-5 and other IEC/EN standards

EFT/BURST VER.SET

EFT Verification/Calibration kit per IEC 61000-4-4, including loads and voltage dividers for easy uses with 400MHz scope.

PDP 8000

Differential Probe 1000:1 for Surge for measurement open voltage pulse and shorted current pulse **CP 101** Current Probe required

TRANSDUCER PLATE

Capacitative clamp Verification/Calibration kit. Includes plate, adapter, and support required per IEC 61000-4-4.

AXOS SWITCH

Automated Switching Switch Axos Accessories without having to manual switch cables

CDNs

32 AMP 3 PHASE

Automatic 3P - CDN
480V, 32 Amps
5kV EFT, 7kV Surge & Ring
IEC & ANSI Coupling

FP-COMB 63/690-1

Automatic 3P - CDN
690V, 63 Amps
5kV EFT, 7kV Surge & Ring
IEC & ANSI Coupling
Complies to Lower Current lvls

FP-COMB 125/690-1

Automatic 3P - CDN
690V, 125 Amps
5kV EFT, 7kV Surge & Ring
IEC & ANSI Coupling
Complies to Lower Current lvls

FP-COMB 125/690-2

Upgrade to 1000VDC

FP-COMB 200/690-1

Automatic 3P - CDN
690V, 200 Amps
5kV EFT, 7kV Surge & Ring
IEC & ANSI Coupling
Complies to Lower Current lvls

FP-COMB 200/690-2

Upgrade to 1000VDC

FP-EFT 100M2

Manual EFT 3P - CDN
690V, 100 Amps
8kV EFT
IEC & ANSI Coupling

FP-SURGE 100M2

Manual 3P - CDN
690V, 100 Amps
8 kV Surge, 8 kV Ring
IEC & ANSI Coupling

PCD 121

Coupling for 4 Symmetrical lines
6.6 kV Surge
IEC 61000-4-5

PCD 122

Coupling for 4 Symmetrical lines
6.6 kV 10/700 Telicom Surge
IEC 61000-4-5, ITU

PCD 126A

Coupling for 4 Asymmetrical lines
6.6 kV Surge & Ring Wave
IEC 61000-4-5, IEC 61000-4-12

DEC 5

Decoupling for 4 Symmetrical Lines
6.6 kV Surge, Telicom & Ring Wave
IEC 61000-4-5, ITU, IEC 61000-4-12
Decoupling: 20 mH Inductor

DEC 6

Decoupling for 4 Symmetrical Lines
6.6 kV Surge, Telicom & Ring Wave
IEC 61000-4-5, ITU
Decoupling: Resistors 200 Ω

DEC 7

Decoupling for 4 Asymmetrical Lines
6.6 kV Surge & Ring Wave
IEC 61000-4-5, IEC 61000-4-12
Decoupling: 20 mH Inductor

TEST HIGHER LEVELS!

HAEFELY
Current and voltage – our passion

PSURGE 30.2

Modular 30 kV / 30 kA Surge Test System

The PSURGE 30.2 is designed to generate a broad variety of surge impulses. Impulse modules can be exchanged quickly allowing PSURGE 30.2 to be used for different applications. Impulse module type is detected by the system software.

- Combination wave according IEC 61000-4-5
- Safety tests as defined e.g. in IEC 61010
- Telecom system tests according ITU K series
- Surge tests as described e.g. in IEC 60060-1 and ANSI C62.41
- Component test as described e.g. in IEC 60664 and IEC 61643-1
- Many IEC & EN Product standards
- FP-SURGE 3010 Single phase CDN, Combination wave only (Shown, rack on right):
  - 480 V AC 110 V DC
  - 10 A
  - 2 x 9 µF / 1 x 18 µF
  - External synchronization
- Includes Warning Lamp, Emergency stop, Manual, Mains cable

Specs	PS30-CW	PS30-8x20	PS30-10x350	PS30-10x1000
Impulse type	Combination wave	Current	Current	Current
Voltage front time	1.2 µs ± 30%	not defined	not defined	not defined
Voltage decay time	50 µs ± 20%	not defined	not defined	not defined
Voltage undershoot	≤ 30%	not defined	not defined	not defined
Voltage amplitude range	3 ... 30 kV	3 ... 15 kV	3 ... 15 kV	3 ... 15 kV
Impulse repetition	6/min max V	2/min max I	2/min max I	2/min max I
Output impedance	2 Ω	0.5 Ω	12 Ω	37 Ω
Current front time	8 µs ± 20%	8 µs ± 20%	10 µs ± 20%	10 µs ± 20%
Current decay time	20 µs ± 20%	20 µs ± 20%	350 µs ± 20%	1000 µs ± 20%
Current undershoot	≤ 30%	≤ 20%		
Current amplitude range	1.5 ... 15 kA	6 ... 30 kA	240 ... 1200 A	80 ... 400 A

PEFT 8010 ±7.3 kV

EFT / Burst Test System IEC/EN 61000-4-4

The PEFT 8010 instrument contains all the features expected from a top quality EFT generator.

PEFT 8010 can either be operated by the front panel keys in a stand-alone manner or be controlled by PC via RS232 or IEEE 488 as part of a complete EMC test system.

MAG 1000 1100A/M

Power Frequency Magnetic Field Equipment

Meet all the requirements of IEC 61000-4-8 in one system
Easy Setup Easy quick testing

1 - 120 A/m Continuous, 1 min - 8 hour
100 - 1100A/m Sort Duration, 1 - 3s
Set 50Hz & 60Hz without external source

REAL-TIME EMI RECEIVER

EMSCOPE = 2 RECIEVERS + LISN

9kHz - 30MHz (110MHz Option)

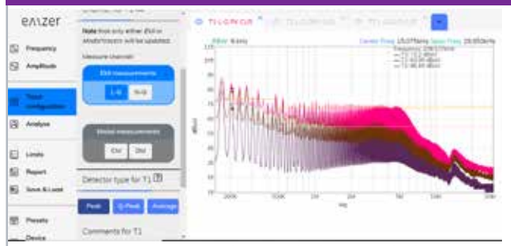
2x Real-Time EMC Receivers
Measure Line and Neutral simultaneously
Measure Common and Differential mode simultaneously

- Detectors: PEAK, AVG, QP
- RBW: 200Hz, 9 kHz,120 kHz **CISPR**
  1 kHz & 10 kHz **MIL**
- Integrated Pre-amp and Transient limiter
- Measure whole span at once, Dwell 1 - 15 seconds
- LISN:
  - 50 Ω || (50 µH + 5 Ω) / 250 µH (CISPR)
  - 16Amps, 325Volts, DC-60Hz
  - Artificial hand (510 Ω + 220 pF / 4 mm banana)
- Use Receivers with any LISN, Current clamp, probe,...
- Ethernet/USB and fiber optically isolated
- Access Software through any web brouser

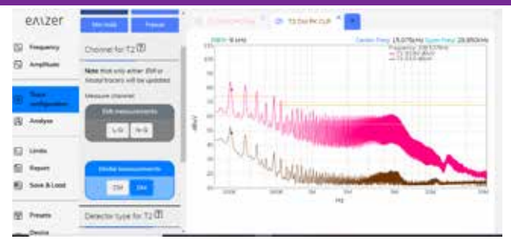
EMSCOPE Options:

UPGR-110	Enhance frequency range from 9 KHz-30 MHz to 9 KHz-110 MHz
UPGR-OSC	Additional software license for Time Domain Analysis (Oscilloscope mode)
Fiber/USB Converter	Fiber optic converter to plug EMSCOPE directly to USB port (Ethernet to fiber optic Converter standard)
EUT SOCKET	Standard socket is US. Specify other: EU, UK, ...

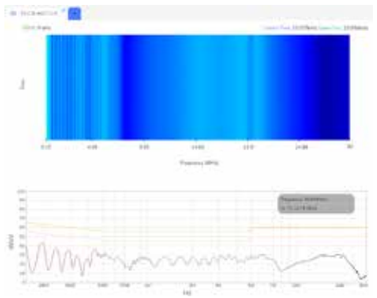
EMBEDDED SOFTWARE FEATURES



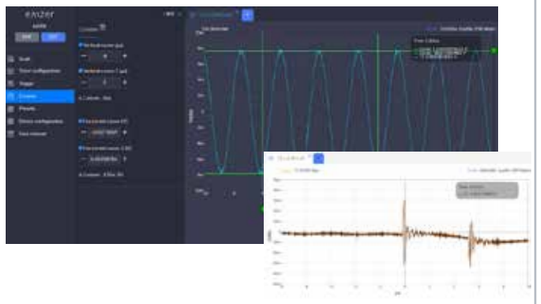
Setup measurements for each line and detector with limit lines. Save, compare, and report.
Measure real-time:
(Line + Neutral) * (Peek + AVG + QP) = 6 traces



Only receiver capable of simultaneous modal measurements: Common Mode (CM) and Differential Mode (DM). Design filtering correctly saves $



Water fall display over time. See how your product changes emissions over time, and in different modes of operation.



Optional Scope, see transients and emissions in the time domain. A very useful tool for trouble shooting and eliminating unwanted emissions.

EMSCOPE-RX2

Frequency: 9 kHz – 30MHz (Optional 110 MHz)

Same features as the EMSCOPE without the built in LISN. The 2 channel receiver can be used with other LISNs if:

- Higher power/current rating is required (more than the standard 16A)
- MIL-STD LISNS
- ISO/Automotive 5µH LISNS

EMSCOPE-RX4 4 CHANNEL RECEIVER FOR 3PHASE

Frequency: (9*)150 kHz – 30MHz (Optional 110 MHz)

Use with external LISNs for 3 phase applications as well as single phase. Measure up to 4 lines simultaneously. Measure CM and DM simultaneously for all lines.

***9kHz in 2 receiver mode, 150kHz in 4 receiver mode**

EMSCOPE-RX4-LZ2 4 CHANNEL RECEIVER FOR 3-P

Frequency: (9*)150 kHz – 30MHz (Optional 110 MHz)

Same 4 channel receiver as EMSCOPE-RX4 but includes a single phase 16 amp LISN. The built in LISN can be utilized for the more common single phase testing. When 3 phase testing is required, the system can be hooked up to a 3 phase LISN ***9kHz in 2 receiver mode, 150kHz in 4 receiver mode**

EMSCOPE Options:

UPGR-110	Enhance frequency range from 9 KHz-30 MHz to 9 KHz-110 MHz
UPGR-OSC	Additional software license for Time Domain Analysis (Oscilloscope mode)
Fiber/USB Converter	Fiber optic converter to plug EMSCOPE directly to USB port (Ethernet to fiber optic Converter standard)
EUT SOCKET	Standard socket is US. Specify other: EU, UK, ...

LIZN

Frequency: 9 kHz - 30 MHz

16-A single-phase dual-port line impedance stabilization network
LIZN is a new Line Impedance Stabilization Network fully compliant to CISPR 16-1-2 that facilitates the simultaneous measurement in both lines and the extraction of common- and differential-mode

EMZ10-200M TRANSIENT LIMITER

Frequency: 9 kHz - 200 MHz

High Power 5 W transient limiter up to 200 MHz to protect the instrument
10dB ±1dB Attenuation
Type N (f) RF Connections

PCB BOARD SCANNER

EMScanner, EMC DESKTOP SCANNER

150kHz - 8GHz, 3.75 mm

Scan and find your emissions fast!
Nothing is faster, solid-state switching runs through an array of sensors while Spectrum analyzer scans.

- Frequency: 150 kHz to 8 GHz
- Antenna array: 1,218 (42 x 29)
- Spatial resolution: Probe spacing of 7.5 mm (effective 3.75 mm)
- Scan area: L 31.6 cm x W 21.8 cm (L 12.44" x W 8.58")
- Frequency accuracy: accuracy of the spectrum analyzer
- Probe to probe uniformity: +/- 3 dB accuracy
- Measurement plane isolation: > 20 dB
- EMViewer2.0 Software
- Compatible with any spectrum analyzer with SCPI Commands
  - additionally: Keysight N99XX, Anritsu MS20XX, Keysight, Rohde, Anritsu, RIGOL (DSA only), Siglent, SignalHound BB Series & SA Series

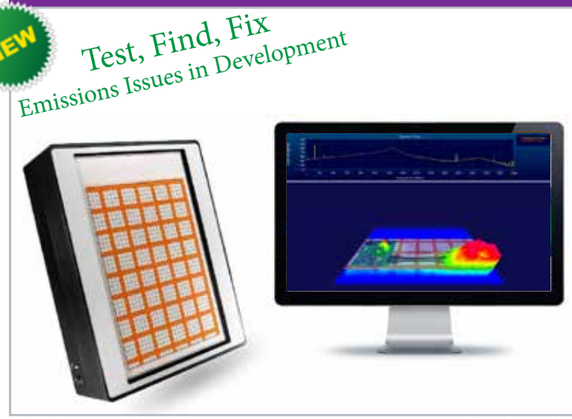
Contact us for Packages:

- **Keysight** FieldFox N9935B or any other
- **Anritsu** MS2080A or any other
- **Signal Hound** BB60C or any other
- **Rohde & Schwarz** FSH8 or any other
- **w/ Desktop Chamber** IG550-B

Education Bundle EDUKit, Signal Hound BB60 or Keysight N9935B

- Five EMI/EMC demo boards (specially designed for education)
- 10 Experiments - 9 EMI and 1 NFC
- Manual for Demo Board and experiment explanations
- Slides for the professor with theoretical material from Prof. Arturo Mediano, University of Zaragoza, Spain.
- Cables and accessories

EMScannerR, HIGH RESOLUTION, EMC DESKTOP SCANNER



150kHz - 8GHz, 0.60mm

Scan and find your emissions fast!
Nothing is faster, solid-state switching runs through an array of sensors while Spectrum analyzer scans. Array shifts for finer resolution scanning

- Frequency: 150 kHz to 8 GHz
- Antenna array: 1,218 (42 x 29)
- Spatial resolution: Probe spacing up to 0.06 mm
- Scan area: L 31.6 cm x W 21.8 cm (L 12.44" x W 8.58")
- Frequency accuracy: accuracy of the spectrum analyzer
- Probe to probe uniformity: +/- 3 dB accuracy
- Measurement plane isolation: > 20 dB
- EMViewer2.0 Software
- Compatible with any spectrum analyzer with SCPI Commands
  - additionally: Keysight N99XX, Anritsu MS20XX, Keysight, Rohde, Anritsu, RIGOL (DSA only), Siglent, SignalHound BB Series & SA Series

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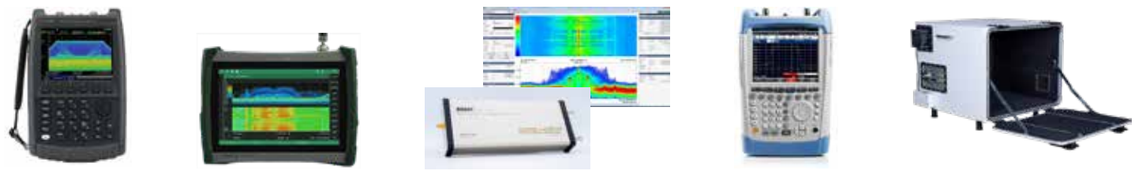
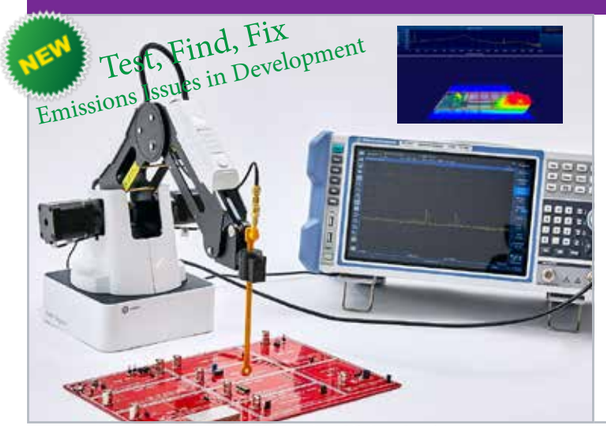
- **Signal Hound** BB60C or any other
- **Rohde & Schwarz** FSH8 or any other
- **w/ Desktop Chamber** IG550-B



EMProbe, EMC DESKTOP ROBOTIC SCANNER



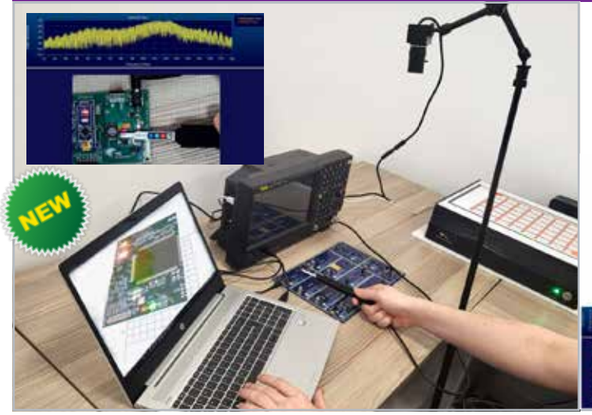
up to 18GHz, 7.5-0.2mm

Scan and find your emissions fast!
no limits, 3D scanning, large components, arm size based on PCB size,

- Frequency: up to 18 GHz
- Antenna array: programmable
- Spatial resolution: Probe spacing down to 0.2 mm
- Scan area: Open, size robotic arm for your needs
- Frequency accuracy: accuracy of the spectrum analyzer
- EMViewer2.0 Software
- Compatible to any spectrum analyzer with SCPI Commands
  - additionally: Keysight N99XX, Anritsu MS20XX, Keysight, Rohde, Anritsu, RIGOL (DSA only), Siglent, SignalHound BB Series & SA Series

EMProbe Slider Option
- The EM Probe system can be customized for larger projects. Larger arms and sliders are available, let us know more about your needs

NFPKit = EMC PROBE SET + CAMERA + SOFTWARE = INSANITY



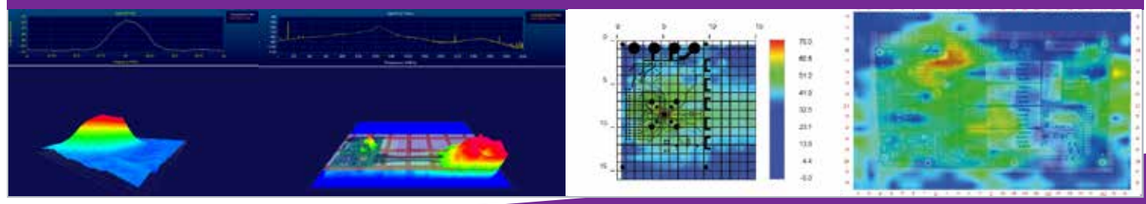
up to 18GHz

Scan and find your emissions fast!
"Near Field Probe Set ON Steroids!"
See you emissions in 3D

- 5 Probe Set
  - w/ Camera Tracking
- Camera
- Camera Stand
- EMViewer2.0 Software

- Educational Bundle available

EMVIEWER 2.0 SOFTWARE ADVANCED EASY TO USE



ANTENNA MEASUREMENT

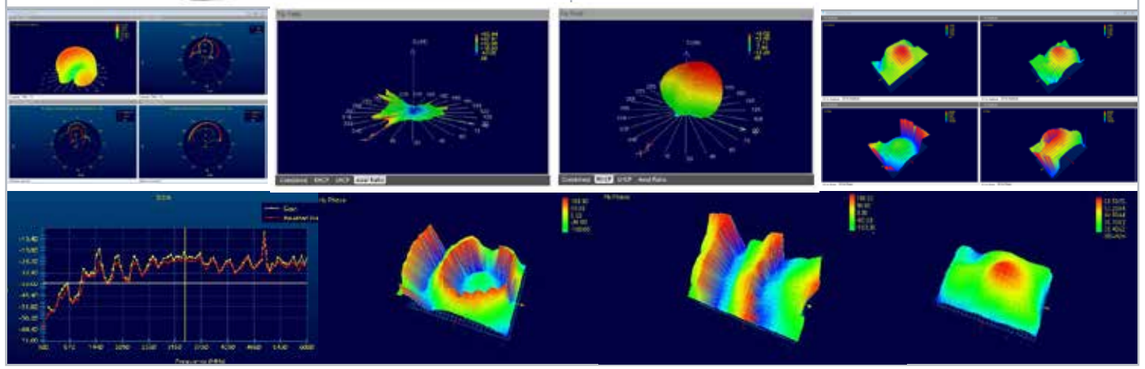
RFScanner, ANTENNA PATTERN MEASUREMENT

300 MHz - 6 GHz, 2D & 3D Patterns

Measure near field, calculate far field pasterns with accuracy.

The power of a chamber on your desk!

- Cartesian and Polar Plots
- Amplitude, Phase and polarization
- EIRP & TRP
- Graph S11
- Calculate gain and Efficiency
- Circular Polarization: RHCP, LHCP, & Axial
- Scan time Seconds
- Max Radiator Size: L 16 cm x W 10 cm (L 6.30" x W 3.94")
- Modulation formats: GSM / CDMA / WCDMA / Wi-Fi / WiMAX / LTE, Bluetooth, RFID, GPS, Custom antenna
- Compatible with Network Analyzers
  - Most of the common Keysight & R&S VNAs.



SYSTEM INTEGRATIONS AND 19" RACKS

Offering equipment integrations into 19" racks for desk top or floor standing. Custom fixtures and product mounting. PC mounting, grounding, cooling fans, drawers, power distribution,.... Install existing equipment, purchase with new system or a combination of new and used, Contact us with your requirements.

CE Mark System
Harmonics and Flicker
EFT , Surge, Dips, Variations
RF Conducted immunity

ISO Close proximity testing

ISO BCI Setup

AC POWER MEASUREMENTS

HARMONICS AND FLICKER

IEC 61000-3-2, IEC 61000-3-3

- 16 bit USB based data acquisition – works with Laptops & Desktop PC's
- Very accurate Windows-7, 8, 10 compatible power analyzer with data storage
- Advanced reporting, data storage & replay features
- Control for most power sources incl. Ametek©, Pacific Power©, Teseq©, etc.
- ISO-17025 Accredited Calibration with detailed data available
- Built-in Reference Impedance per IEC TR 60725 available
- Small form factor works with 120 & 220/230 public power supply

H&F SINGLE AND 3 PHASE

Systems up to 75Amps w/ Flicker Impedance

Compliant too:
- IEC 61000-3-2 Ed. 3.2 & Ed. 5.0
- IEC 61000-3-3 Ed. 1.2 and 3.0
- IEC 61000-3-11 Ed. 1 & 2
- IEC 61000-3-12 Ed. 1 &
- Including: GB/T 14549 for China, NMX-J-550/3-2 for Mexico, JIS-C 61000-3-2 : 2019 for Japan, and GB 17625.2-2007 for China

Series	Power	Flicker Reference Impedance	EUT Connection
HFa-1S	1p 16 amp 350V		IEC plug
HFa-1-16-Ref	1p 16 amp 350V	IEC 60725 Reference Impedance 16amp	Schuko and universal plug
HFa-3-16-Ref	3p 16 amp 350V (500V opt.)	IEC 60725 Reference Impedance 16amp	Schuko and CEE Norm - Red 3 Phase 5 Pin Plug (3P+N+E)
HFa-3-35-Ref	3p 35 amp 350V (500V opt.)	IEC 60725 Reference Impedance 35amp	Schuko and CEE Norm - Red 3 Phase 5 Pin Plug (3P+N+E)
HFa-3-75-Ref	3p 75 amp 350V (500V opt.)	IEC 60725 Reference Impedance 75amp	Schuko and CEE Norm - Red 3 Phase 5 Pin Plug (3P+N+E) for >40amps screw terminals

Matching AC source can be quoted or ordered separately

Reference impedance is tailored to the programmable power supply used. Please let us know the make and model
Optional systems can further include testing for: IEC 61000-4-11, -4-34, -4-13, -4-14, -4-17, -4-27, -4-28, ...

HARMONICS AND FLICKER

35 kVA and 50 kVA, 3-Phase, Split Phase

- IEC/EN 61000-3-2 Harmonic current emissions (≤16A per phase)
- IEC/EN 61000-3-3 Voltage fluctuations & flicker (≤16A per phase)
- IEC/EN 61000-3-11 Flicker testing (16A–75A per phase)
- IEC/EN 61000-3-12 Harmonic current emissions (16A–75A per phase)
- Required components
  - TC.FLK75.2WR.S – Flicker Impedance Network
  - TC.ACS.30.528.4WR.S / TC.ACS.50.528.4WR.HC – Regenerative AC Power Supplies
  - Power Analyzer – Essential for All Testing
  - ACSControl Software

- Ability to add full compliant Immunity Standards:
  - IEC/EN 61000-4-11, -13, -14, -27, -28, and -34 standards.
  - Required add ons
    - TC.VSE Voltage Slope Enhancer
    - ACSControl Software

TRANSIENT CHECK & EMC

VDIPS-SENSE DIPS CHECK

- Quick Go / No-Go check for Voltage dips testing
- IEC 61000-4-11 Dips/Drops & Variations
- Improve your quality with an easy check before each test sequence

TRANS-SENSE EFT CHECK

- Quick Go / No-Go check for EFT/Burst Pulse
- IEC 61000-4-4 EFT/Burst
- Improve your quality with an easy check before each test sequence

SURGE-SENSE SURGE CHECK

- Quick Go / No-Go check for Surge pulse
- IEC 61000-4-5 Surge (combination Wave)
- Improve your quality with an easy check before each test sequence

ESD-SENSE ESD CHECK

- Quick Go / No-Go check for ESD
- IEC 61000-4-2 ESD (Electro Static Discharge)
- Improve your quality with an easy check before each test sequence

CAB1001 INRUSH COMPENSATOR

- IEC 61000-4-11 Dips/Drops & Variations
- Meet the 500Amp inrush requirement with any power source
- Unique staggered and soft switch in this ensures that any down-line protection devices do not trip due to inrush

STATIC DISSIPATION BRUSH

- Designed to meet section 7.2.4.1 of EN 61000-4-2: 2009
- Carbon fiber 6/7 µm diameter with a Density of 60,000 filaments/cm
- 2 x 470 kOhm 10 kV, located in the brush handle and 30 cm from the cable end termination
- 4 mm Banana connector with 4mm to a ring termination adapter

COIL SETS

COIL SETS

IEC 61000-4-39, IEC 60601-1-2

- CAB4-3912 - Transmit loop 9 kHz - 150 kHz (also meets RS 101)
- CABLSLF - Loop Sensor Low Frequency 9 kHz - 150 kHz
- CAB134k2 - Matching Network for 134.2 kHz, IEC 60601-1-2, AIMS
- CAB4-3910 - Transmit loop 150 kHz - 26 MHz
- CABLSHF - Loop Sensor High Frequency 150 kHz - 26 MHz
- CAB1356 - Matching Network for 13.56 MHz, IEC 60601-1-2, AIMS
- Includes:
  - Verification report, Manual, Transit Case
  - Thumb screws for attaching loop sensors to loop transmitters
  - Attached 5cm spacer for test distance and level verification

COIL SET 4-39_9K-150K EN 61000-4-39

- IEC 61000-4-39 Immunity to close proximity fields 9 kHz - 150 kHz
- Meets the requirements of IEC 60601-1-2, 30 kHz @ 8A/m, 134.2 kHz @ 65 A/m
- Meets requirements or **MIL-STD-461 RS101, ISO 11452-8**, +
- Included both Tx and Rx loops

COIL SET 4-39_150K-26M EN 61000-4-39

- IEC 61000-4-39 Immunity to close proximity fields 150 kHz - 26 MHz
- Meets the requirements of IEC 60601-1-2, 13.56 MHz @ 8.5A/m
- Included both Tx and Rx loops

CABLSLF LOOP SENSOR LOW FRQ.

- IEC 61000-4-39 Immunity to close proximity fields 9 kHz - 150 kHz
- Meets requirements or MIL-STD-461 RS101 + others
- BNC Connector

CABLSHF LOOP SENSOR HIGH FRQ.

- IEC 61000-4-39 Immunity to close proximity fields 150 kHz - 26 MHz
- BNC Connector

CAB134K2 NETWORK 134.2 KHZ

- Matching Network for 134 kHz
- Matched 50Ω amplifier to transiting loop
- Reach levels with less power
- Type N Connectors to attach directly to transmit loop

CAB1356 NETWORK 13.56 MHZ

- Matching Network for 13.54 MHz
- Matched 50Ω amplifier to transiting loop
- Reach levels with less power
- Type N Connectors to attach directly to transmit loop

DO160 & DEF-STAN GENERATORS

CABDO160CR RTCA DO160 SEC 19

Voltage Spike, Chatering Relay

- Meeting **RTCA DO 160 §19.3.5** and **Boeing D6-16050-4 §7.5.2** requirements
- ±600 V burst amplitude
- 0.2–10 µs spike width
- 50–1000 µs burst duration
- Intuitive 7" touch display

DCS05 TEST GENERATOR

- Defense Standard 59-411 DCS05
- NEMP and Switching Level Generator
- 0.5, 1, 2, 3, 5, 10, 15, 35, 50 MHz, up to 100 A into 10 Ω load
-

DCS05 TEST CLAMP AND 10 OHM JIG

The test clamp and Jig have been designed specifically to Compliment Model DCS05 Test Generator. The 10 Ohm jig has it's own internal load that is it's impedance verified up to 50 MHz and is capable of continuous use at NEMP test levels. A suitable pulse attenuator is supplied with the clamp for testing to some of the lower switching levels.

DCS06 TEST GENERATOR

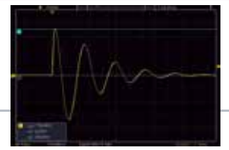
- Defense Standard 59-411 DCS06
- 100kHz Dampened pulse (Ringwave)
- 1200V open circuit level, 1000V into Clamp with 5Ω load
- Asynchronous or synchronizes up to 800Hz

DCS06 TEST CLAMP

Model DCS06 Clamp is designed and tuned for optimal operation in the 100 kHz frequency range and provides efficient coupling of the Defence Standard 59-411 DCS06 pulse to the EUT at voltages up to 1 kV (single turn output) and 4 kV (4 turn output). A single turn monitor loop is provided for pulse amplitude measurement during test.

DCS12 TEST GENERATOR

- Defense Standard 59-411 DCS12
- Testing of DC, Single and three-phase equipment
- There are three fixed outputs: 600 V, 750 V, and 2500 V
- 15.9 kHz ±10 %, 10.9 kHz ±10 %



12 POSITION RELAY MONITOR

FOR HARSH EM ENVIRONMENTS

The relay monitor is used to monitor the status of up to 12 relay contacts. It continuously monitors each contact and reports the status (open / closed) on a small touch screen. When a contact changes, a radial indicator is checked to show a change has occurred, This change is also highlighted with a single audible beep.

MIL & CUSTOM PROJECTS

CAB 2:1 TRANSFORMER

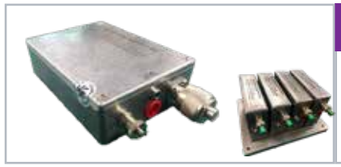
- Defense Standard 59-411 DCS05
- NEMP and Switching Level Generator
- 0.5, 1, 2, 3, 5, 10, 15, 35, 50 MHz, up to 100 A into 10 Ω load
-

0.5 Ω & 1 Ω SHUNT RESISTORS

- 200 Watts, 0.5Ω ±1% or 1Ω ±1%
- Used in many MIL-STD and Automotive standards
- High Precision, Low Inductance
- Isolated BNC Connection to measure across resistor

CABCISPR2532A, 32 AMP, 5µH LISN

- 5µH LISN for CISPR 25, DEF-STAN, DO-160, state your requirements when ordering
- 48 Volts, 32 Amps
- Compact size 80x80x120mm
- Includes: 50Ohm Termination, Calibration Adapter, Shorting Termination



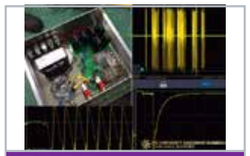
CABCISPR2515A, 15 A 5µH LISN

- 5µH LISN for CISPR 25, DEF-STAN, DO-160, state your requirements when ordering
- 48 Volts, 15 Amps
- Very Compact size 35x80x120mm, mounting plate, 4 units
- Includes: 50Ohm Termination, Calibration Adapter, Shorting Termination

CUSTOM HELMHOLTZ & LOOPS

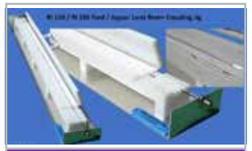
Built per request: Size, Field, Frequency

- Built per Request
- Square or circular (shown)
- Made with adjustable spacing or stationary
- Built for easy storage, or mobility, or both
- We can supply Couples or complete system with
  - Sources, Air Blowers
  - Control panels
  - Safety protections, heat, overload,...



FORD
CI 220 and RI 130

FORD
CI 250 trigger



FORD JIG
RI 130 and RI 150

ISO 10605
ESD Jig

THE CONFORMITY ASSESSMENT BUSINESS
COMPLIANCE DELIVERED

INDIRECT LIGHTNING

ECAT LTS

DO-160 SEC 22,17 / MIL-STD-461-CS117

Modular Level 3-5 system

The ECAT LTS is configured as a basic test system available as a Level 3, Level 4, or Level 5 tester. MIL-STD-461G CS117 requires a level 5 system and a DCVI-1 clamp. All test systems feature Single stroke, Multiple Stroke, Pin Injection and Multiple Burst test capability integral to the system controls

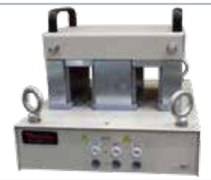
- Modular - Get ONLY the Pulses you need
- Made In the USA
- Easy setup and use
- Module rentals available (3rd Party)
- Simple upgrade Path from Lv 3 to 5
- DO160, Section 22 Indirect Lightning, PIN injection & 17 Voltage spikes
- MIL-STD-461G, CS117 Indirect Lightning
- Boeing: D6 - 16050-5, 06-16050-4, NH-90 Airbus: ABD0100-1.2-E, -F, -G
- WF 1, 2, 3(1MHz/10MHz), 4, 5A, 5B, WF6

Model	Type	Pulse	Levels
F-LTS-x	Base System		3, 4, or 5
D561-Lx	Module	WF1, WF4, WF5A	3, 4, or 5
D562-Lx	Module	WF2	3, 4, or 5
D563A-Lx	Module	WF3, 1 MHz and 10 MHz	3, 4, or 5
D564-Lx	Module	WF5B	3, 4, or 5
D569-Lx	Module	WF6	3, 4, or 5
D568-L5	Module	WF5A for Airbus/Boeing	5
D570	Module	DO-160G, Section 17, Voltage Spikes	All
LTS-L5 Test Kit	Accessories	2x DCI-1A, 1x: DCI-1A, DCHV-1, DPI-1, D5KV, D111-1, D591-1, D201X	

MODULES

D561, D562, D563A, D564, D569

- Full and 1/2 modules for the various pulse wave forms
- User interchangeable
- Modules can be rented



DCI-1A — CABLE INDUCTION COUPLER

WF1, 4, 5A, 5B

- Cable Induction Coupler for WF1, 4, 5A, 5B
- Aperture: 3.8 cm x 5.1 cm (1.5 in x 2 in)
- Weight: 13 kg (29 lb)

DCHV-1 & DCV-1 — CABLE INDUCTION COUPLER

WF3, 6 & WF2

- DCHV-1, Cable Induction Coupler for WF3, 6
- DCV-1 Cable Induction Coupler for WF2 (use 2 for Level 5)
- Aperture: 3.8 cm x 5.1 cm (1.5 in x 2 in)

PIN INJECTION SET

DPI-1, Probe accessory kit suitable for all Waveforms to 5KV

- Probe accessory kit suitable for all Waveforms to 5KV

DO160 SECTIONS

DO-160 SEC 15 SET — RTCA DO160 SEC 15

Magnetic Effect Full Kit

- RTCA DO 160 Section 15 Full compliance Kit
- Magnetic Compass with better than 1deg Accuracy
- Magnetometer **HS 3D-SENS50T1** Hall-Sensor, Zero-Gauss Chamber
- Flexible Measuring tape, Non-Mitalic
- EPS Foam Support for Compass, Transit Case for easy storage

HS 3D-SENS50T1

Measuring DC fields, such as the earth's magnetic field

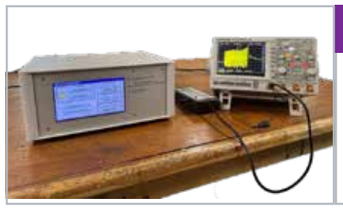
- Part of above Kit, Purchase separately for easy base line measurements

← ECAT LTS — RTCA DO160 SEC 17

MGA 1033 — RTCA DO160 SEC 18 & 19

Low Frequency Immunity testing <150kHz

- Meeting **RTCA DO 160 §18.0** and **RTCA DO 160 §19.3.1-19.3.4** requirements
- Required Accessories. Transformers: MGA_CT_B50, MGA_ISS19
- 20Arms, 120A-m, 170Vrms, 5400V-m
- Also meets MIL-STD-461 CS101, RS101, CS109



CABDO160CR — RTCA DO160 SEC 19

Voltage Spike, Chatering Relay

- Meeting **RTCA DO 160 §19.3.5** and **Boeing D6-16050-4 §7.5.2** requirements
- ±600 V burst amplitude
- 0.2–10 µs spike width
- 50–1000 µs burst duration
- Intuitive 7" touch display

RADIO FREQUENCY SUSCEPTIBILITY — RTCA DO160 SEC 20

- Offering antennas, Antenna arrays, Amplifiers, Cables, Turnkey Setups, BCI setups

TS-CS114-CS115-CS116

Turnkey System for Conducted Susceptibility

See Page 9

MIL-STD-461G, DO160 Sec 20 BCI System

RADIO FREQUENCY EMISSIONS — RTCA DO160 SEC 21

- Offering antennas, LISNs, Current Clamps, Cables, Turnkey Setups Se Pages

← ECAT LTS — RTCA DO160 SEC 22

ONYX 30 — RTCA DO160 SEC 25

Electrostatic Discharge Simulator

See Page 20

MIL-STD-461G, DO160 Sec 25 Compliant, 2Ω Target & ESD Voltage meter available

LOW NOISE AMPLIFIERS

Standard Bench Top
Type N (f)

SE version connects directly to Antenna or receiver (specify connector configuration)

Pre-Amplifiers 1 & 3 GHz

High Quality protected power supply, High P1dB, Low noise figure

Model	Frequency	Gain	NF	P1dB	Notes
EMC9135	9 kHz - 1 GHz	35 dB	2.5 dB	+13 dBm	Optional Pulse ESD Protector
EMC9145	9 kHz - 1 GHz	45 dB	2.5 dB	+13 dBm	Optional Pulse ESD Protector
EMC1150	10 kHz - 1 GHz	50 dB	2.5 dB	+13 dBm	Optional Pulse ESD Protector
EMC330N	20 MHz - 3 GHz	30 dB	5 dB	+10 dBm	Optional Pulse ESD Protector
EMC001330	10 kHz - 3 GHz	30 dB	6 dB	+14 dBm	Optional Pulse ESD Protector
EMC001340	10 kHz - 3 GHz	40 dB	6 dB	+14 dBm	Optional Pulse ESD Protector

Each unit can be offered as a bench top unit or with a remote power supply (SE)

Standard Bench Top
Type N (f)

SE version connects directly to Antenna or receiver (specify connector configuration)

Pre-Amplifiers 6 & 8 GHz

High Quality protected power supply, High P1dB, Low noise figure

Model	Frequency	Gain	NF	P1dB	Notes
EMC03640	30 MHz - 6 GHz	40 dB	2.5 dB	+10 dBm	Optional Pulse ESD Protector
EMC01640AP	10 MHz - 6 GHz	40 dB	2.5 dB	+15 dBm	Optional Pulse ESD Protector
EMC1640	500 MHz - 6 GHz	40 dB	2.5 dB	+10 dBm	Optional Pulse ESD Protector
EMC003835B	30 MHz - 8 GHz	35 dB	3.0 dB	+10 dBm	EMC003835SE Remote PS

Each unit can be offered as a bench top unit or with a remote power supply (SE)

"B" Version Bench Top
Type N (f)

"SE" version connects to Antenna or Mast Boom

Pre-Amplifiers 18 GHz

High Quality protected power supply, High P1dB, Low noise figure

Model	Frequency	Gain	NF	P1dB	Notes
EMC0031830B	30 MHz - 18 GHz	30 dB	3.0 dB	+15 dBm	EMC00031830SE Remote PS
EMC051835B	0.5 - 18 GHz	35 dB	3.0 dB	+10 dBm	EMC051835SE Remote PS
EMC051845B	0.5 - 18 GHz	45 dB	3.0 dB	+15 dBm	EMC051845SE Remote PS
EMC118A45B	1 - 18 GHz	32-45 dB	10 dB	+20 dBm	EMC118A45SE Remote PS

Each unit can be offered as a bench (B) top unit or with a remote power supply (SE)

"B" Version Bench Top
Type N (f)

"SE" version connects to Antenna or Mast Boom

Pre-Amplifiers 26 GHz

High Quality protected power supply, High P1dB, Low noise figure

Model	Frequency	Gain	NF	P1dB	Notes
EMC12630B	1 - 26.5 GHz	30 dB	4.0 dB	+13 dBm	EMC12630SE Remote PS
EMC12635B	1 - 26.5 GHz	35 dB	4.0 dB	+15 dBm	EMC12635SE Remote PS
EMC012645B	0.1 - 26.5 GHz	45 dB	4.5 dB	+10 dBm	EMC012645SE Remote PS

Each unit can be offered as a bench (B) top unit or with a remote power supply (SE)

"B" Version Bench Top
Type N (f)

"SE" version connects to Antenna or Mast Boom

Pre-Amplifiers 40 GHz

High Quality protected power supply, High P1dB, Low noise figure

Model	Frequency	Gain	NF	P1dB	Notes
EMC184040B	18 - 40 GHz	40 dB	5 dB	+8 dBm	EMC184040SE Remote PS
EMC184045B	18 - 40 GHz	45 dB	3 dB	+8 dBm	EMC184045SE Remote PS
EMC184055B	18 - 40 GHz	55 dB	3 dB	+8 dBm	EMC184055SE Remote PS

Each unit can be offered as a bench (B) top unit or with a remote power supply (SE)

Use preamplifier to:
- Compensate for Cables losses at high frequencies
- Compensate for high antenna factors
- Increase the sensitivity of receivers and spectrum analyzers
- Read smaller RF and Microwave signals
- Increase your usable dynamic range
- Place near the measurement instrumentation or close to the antenna

Built in AC input
Ground detection safety
circuit

COMB GENERATORS

EMC Instruments Co ,Ltd.

CE Comb Generators 400 MHz

Verify LISNs & ISNs

Model	Frequency	Step Freq.	Connector
CG-10/500	10 kHz - 30 (400) MHz	10 & 500 kHz	IEC320 C14, RJ11, RJ45
CG-10/500L	10 kHz - 30 (400) MHz	10 & 500 kHz	IEC320 C14
CG-50/500	50 kHz - 30 (400) MHz	50 & 500 kHz	IEC320 C14, RJ11, RJ45
CG-50/500L	50 kHz - 30 (400) MHz	50 & 500 kHz	IEC320 C14
CG-100/500	100 kHz - 400 MHz	100 & 500 kHz	IEC320 C14, RJ11, RJ45
CG20H10/500	20 Hz - 30 MHz	20Hz, 10 & 500kHz	N (f)

Each unit includes USB charger & wooden case

CE & RE Comb Generators 7.5 GHz

Verify LISNs & RE (OATS/CHAMBERS/TEM/GTEM)

Model	Frequency	Step Freq.	Connector
CG-10L510R	10 kHz - 30 MHz	10 & 500 kHz	IEC320 C14 (power)
	10 MHz - 1 GHz	5 & 10 MHz	SMA, with antenna
CG-10L10100R	10 kHz - 108 MHz	10 & 500 kHz	IEC320 C14 (power)
	10 MHz - 7.5 GHz	10 & 100 MHz	SMA, with antenna
CG-50LR10100R	50 kHz - 108 MHz	50 & 500 kHz	IEC320 C14 (power) BNC
	10 MHz - 7.5 GHz	10 & 100 MHz	SMA, with antenna
CG50/500ML	50 kHz - 30 MHz	50 & 500 kHz	IEC320 C14 (power)
	50 kHz - 30 MHz	50 & 500 kHz	Monopole antenna

Unit includes USB charger

RE Monopole/Loop CombGen 30MHz

Verify RE/ME in Chambers

Model	Frequency	Step Freq.	Connector
CG-50/500R	50 kHz - 30 MHz	50 & 500 kHz	Monopole antenna
CG50/500MLA	50 kHz - 30 MHz	50 & 500 kHz	Monopole + Loop
CG50/500LLA	50 kHz - 30 MHz	50 & 500 kHz	Loop + IEC320 C14

RE Comb Generators 1 GHz

Verify RE (OATS/CHAMBERS/TEM/GTEM)

Model	Frequency	Step Freq.	Connector
CG-01-05	5 MHz - 1 GHz	5 MHz	SMA, with antenna
CG-01-10	10 MHz - 1 GHz	10 MHz	SMA, with antenna
CG-01-25	25 MHz - 1 GHz	25 MHz	SMA, with antenna
CG-01 5/10	5 MHz - 1 GHz	5 & 10 MHz	SMA, with antenna

Each unit includes USB charger & wooden case

RE Comb Generator 7.5 GHz

Verify RE (OATS/CHAMBERS/TEM/GTEM)

Model	Frequency	Step Freq.	Connector
CG08-100R	100 MHz - 7.5 GHz	100 MHz	SMA, with antenna
CG08-10/100R	10 MHz - 7.5 GHz	10 & 100 MHz	SMA, with antenna

Each unit includes USB charger & wooden case

RE Comb Generators 18 & 40 GHz

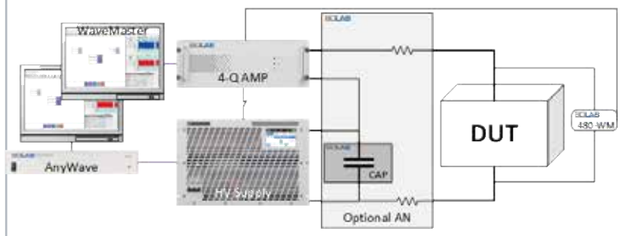
Verify RE (OATS/CHAMBERS/TEM/GTEM)

Model	Frequency	Step Freq.	Connector
CG118-100CF	100 MHz - 18 GHz	100 MHz	SMA, with antenna
CG118-250RF	1 GHz - 18 GHz	250 MHz	Antenna Attached
CG118-250CF	1 GHz - 18 GHz	250 MHz	SMA, with antenna
CG126-250R	1 GHz - 26 (40) GHz	250 MHz	Antenna Attached
CG126-250C	1 GHz - 26 (40) GHz	250 MHz	2.92, with antenna
CG140-1000R	1 GHz - 40 GHz	1 GHz	Antenna Attached
CG140-1000C	1 GHz - 40 GHz	1 GHz	2.92, with antenna

Each unit includes USB charger & wooden case

HV TEST SYSTEMS FOR EV

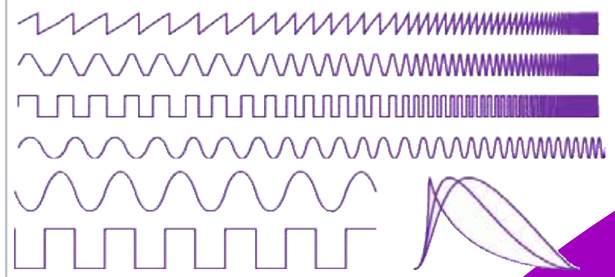
SYSTEMS 500, 1000, 1500, 2000 VOLTS, UP TO 2MW!



Fastest DC Systems Available

Meet the latest and upcoming requirements with one system
LV 123, VW 80300, ISO 21498, NMN 11123, PSA,...

- Complete turnkey system offering
- Or use your existing HV power supply
- High Power Artificial Network, Liquid cooling
- High Power Bi-pass Capacitors, Liquid cooling
- Grow the system as your needs change
  - Just add rack modules in the field
- Quick servicing, pull module and keep testing
- System can produce any wave form on the HVDC accurately
- Not limited by transformer coupling
- Closed loop measurement of ripple current



Systems sized for your needs up to 2MW, 2000V

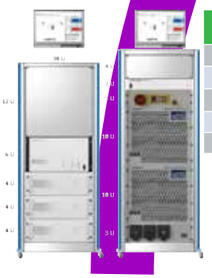
432Amps @ 1000V

	Basic Specifications
4-Quadrent Amp	BLS 220-70R-TS
	12kW, -30..+70, 456Amps
HV Power Supply	G5.RSS.432.1000.1296
	432kW, +1000V @ 432A, (1296 A max)
	Source / Sink Current
Alt. Configuration	2 independent 216A systems to be used independently and brought together when 432 amps is needed

216Amps @ 1000V

	Basic Specifications
4-Quadrent Amp	BLS 160-70R-TS
	6kW, -30..+70, 228Amps
HV Power Supply	G5.RSS.216.1000.648
	216kW, +1000V @ 216A, (648 A max)
	Source / Sink Current

108Amps @ 1000V



	Basic Specifications
4-Quadrent Amp	BLS 130-70R-TS
	3kW, -30..+70, 114Amps
HV Power Supply	G5.RSS.108.1000.324
	108kW, +1000V @ 108A, (324 A max)
	Source / Sink Current

International Support

Modular design allows for easy service.
- If a module fails system can by up and running with out the module with in minutes
- Modules can be shipped and swapped with a short turn around time
- Round the clock support team, supported from US through Absolute EMC.
- Online E-Learning platform for latest standards, and quick expert support
- 2 year warranty

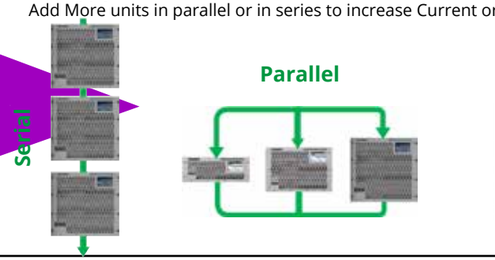
BOLAB SYSTEMS GMBH

Modular Design to scale to your needs

Build your system up over time. Purchase only what you need today then add to the system as your needs change. Never loose your investment from being undersized.

4-Quadrent Amplifier System
Add in 1kW increments to increase current

Power Supply
Add More units in parallel or in series to increase Current or Voltage



- **Series:** Same power modules but different voltage levels can be combined 1000V+500V=1500V
- **Parallel:** different power modules can be combined but same Voltage: 27kW+54kW=81kW
- **Mixed:** Same Power is required for all modules but in series you can still have different voltages.

ARTIFICIAL NETWORK AN-SERIES

LV123, ISO 21498, MBN 11123, VW 80300, IEC 61851-23, & Custom

- Liquid cooled for stable resistance temperature and constant ohmic value.
- True continuous current loading without degradation, ideal for in-the-loop testing during the development stage of HV components.
- 2x tighter tolerance than required in ISO 21498. Accredited DAkkS calibration available upon request.
- Self-monitoring, safe and reliable system
- Optional Built in bypass CAP, Safety in mind to protect DUT and user.

Model	LV123	VW 80300	ISO 21498	MBN 11123	Current
BLS-AN-AB-60	✓	✓			60 Amps
BLS-AN-CD-60			✓	✓	60 Amps
BLS-AN-ABCD-60	✓	✓	✓	✓	60 Amps
BLS-AN-AB-300	✓	✓			300 Amps
BLS-AN-CD-300			✓	✓	300 Amps
BLS-AN-ABCD-300	✓	✓	✓	✓	300 Amps
BLS-AN-AB-600	✓	✓			600 Amps
BLS-AN-CD-600			✓	✓	600 Amps
BLS-AN-ABCD-600	✓	✓	✓	✓	600 Amps
BLS-AN-AB-800	✓	✓			800 Amps
BLS-AN-CD-800			✓	✓	800 Amps
BLS-AN-ABCD-800	✓	✓	✓	✓	800 Amps
	✓	✓	✓	✓	1000+ Amps

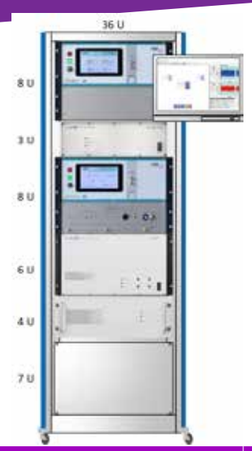
DC HV HIGH POWER SUPPLIES / CHARGING

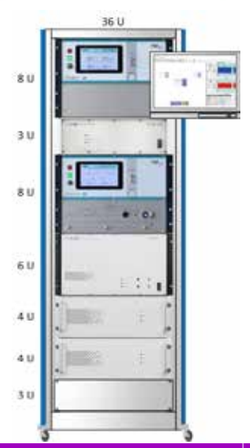
The Fastest Programmable <250µS Rise/Fall

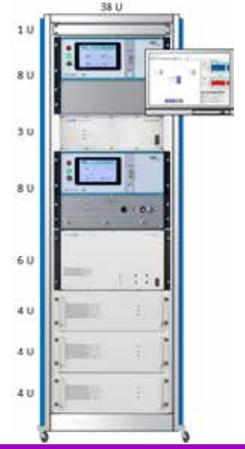
- Powers 9kW up to 2MW
- Current Sink & Source

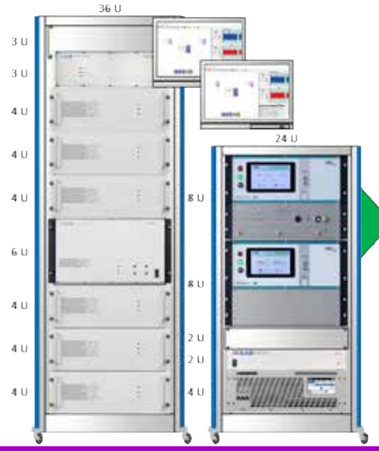
Series	Voltage	Current	Power	Pre-programmed	Control
60-1C	0 - 60 V	± 338 A - 33,333 A	9 kW - 2 MW	WaveMaster	AnyWave
80-1C	0 - 80 V	± 338 A - 25,000 A	9 kW - 2 MW	WaveMaster	AnyWave
160-1C	0 - 160 V	± 338 A - 12,500 A	18 kW - 2 MW	WaveMaster	AnyWave
240-1C	0 - 240 V	± 338 A - 8,333 A	27 kW - 2 MW	WaveMaster	AnyWave
320-1C	0 - 320 V	± 338 A - 6,250 A	36 kW - 2 MW	WaveMaster	AnyWave
500-1C	0 - 500 V	± 54 A - 4,000 A	9 kW - 2 MW	WaveMaster	AnyWave
1000-1C	0 - 1000 V	± 54 A - 2,000 A	18 kW - 2 MW	WaveMaster	AnyWave
1500-1C	0 - 1500 V	± 54 A - 1,333 A	27 kW - 2 MW	WaveMaster	AnyWave
2000-1C	0 - 2000 V	± 54 A - 1,000 A	36 kW - 2 MW	WaveMaster	AnyWave
3000-1C	0 - 3000 V	± 54 A - 666 A	54 kW - 2 MW	WaveMaster	AnyWave

AUTOMOTIVE 12V, 24V, 48V





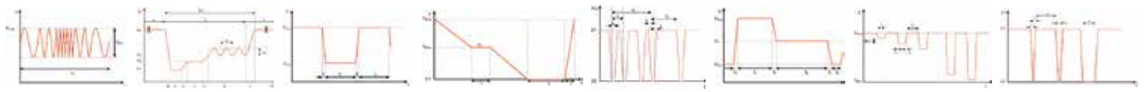


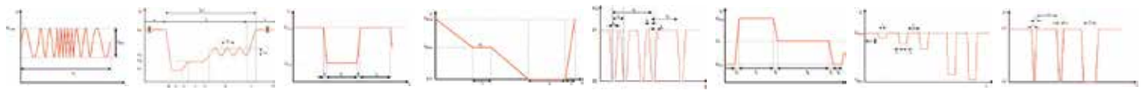


		40 Amp 12V systems 17 Amp -24/48V	76 Amp 12V systems 32 Amp -24/48V	100 Amp 12V systems 49 Amp -24/48V	150 Amp 12V systems 65 Amp -24/48V Systems	200 Amp 12V systems 97 Amp -24/48V Systems	200 Amp @ 48V 12V systems 200 Amp -24/48V Systems
Equipment	**CAR SYS 14**	CAR SYS 14 I, 50 Amp CDN	CAR SYS 14 II, 100 Amp CDN		CAR SYS 14 III, 200 Amp CDN		
	CAR PG2804	CAR PG2804 Load Dump Generator, (ISO 16750-2)			CAR PG2804 Load Dump Generator, (ISO 16750-2)		
	FIS 80-200	FIS 80-200 Fast Interruptions Switch, High Power: 80V/200Amp, Tr/Tf <100ns, I/O Switch: 32x 60V/2A			FIS 80-200 Fast Interruptions Switch, High Power: 80V/200Amp, Tr/Tf <100ns, I/O Switch: 32x 60V/2A		
	4 Quadrant Amp*	BLS 110-70R-TS -30 V ... +70 V | 1 kW 200kHz (500kHz Small Signal) +18 V: +40 A (100A <500ms) +27 V: +40A +70 V: +17 A	BLS 120-70R-TS -30 V ... +70 V | 2 kW 200kHz (500kHz Small Signal) +18 V: +76A (190A <500ms) +27 V: +76 A +70 V: +32A	BLS 130-70R-TS -30 V ... +70 V | 3 kW 200kHz (500kHz Small Signal) +18 V: +114 A (285A <500ms) +27 V: +114 A +70 V: +49 A	BLS 140-70R-TS -30 V ... +70 V | 4 kW 200kHz (500kHz Small Signal) +18 V: +152A (380A <500ms) +27 V: +152 A +70 V: +65 A	BLS 160-70R-TS -30 V ... +70 V | 6 kW 200kHz (500kHz Small Signal) +18 V: +228A (570A <500ms) +27 V: +228A +70 V: +97 A	BLS 160-70R-TS -30 V ... +70 V | 6 kW 200kHz (500kHz Small Signal) +18 V: +228A (570A <500ms) +27 V: +228A +70 V: +97 A
	Software	WaveMaster Fully integrated Standards Libraries: ISO 7637-2, ISO 7637-3, ISO 16750-2, FMC 1278, CS.00244, CS.00246 (48V), ISO 21780 (48V), LV124, LV148,...			WaveMaster Fully integrated Standards Libraries: ISO 7637-2, ISO 7637-3, ISO 16750-2, FMC 1278, CS.00244, CS.00246 (48V), ISO 21780 (48V), LV124, LV148,...		
	Added Capability	Note: A power supply can be integrated in series with the 4-Q amplifier, enabling operation within Voltage Range 1 (18V), and accommodating full current at 48V DUT levels. This setup is similar to the 200Amp configuration.➔					+AnyWave & DC Supply G5.RSS.9.80.338 80V/225A Supply Fast 250uS Rise/Fall Bypass Capacitor required

* 4-Quadrent Amplifier and Power Supplies can all be upgraded i the future to expand power.
You never need to start over.

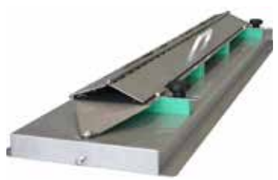
*Systems can also be flexible to have independent systems used on their own and when a large higher power DUT needs to be tested the systems can be brought together to give more power.





ISO 7637-3 Coupling and Verification

CCC Capacitative Coupling Clamp



ICC Inductive Coupling Clamp

DCC Direct Coupling Method

BCK 400 Burst Cal Kit

Calibration Loads

CAR CAL Kit

Transient Emissions

ISO 7637-2 Par 4.3
ECE R10.06

Switching Transients

ISO 7637-2 Annex F (Ford)
Pulse 1 A1, A2-1, A2-2, C-1, C-2

Safety Accessories

Foot Trigger
Emergency Stop
Warning Lights

ARBITRARY WAVEFORMS

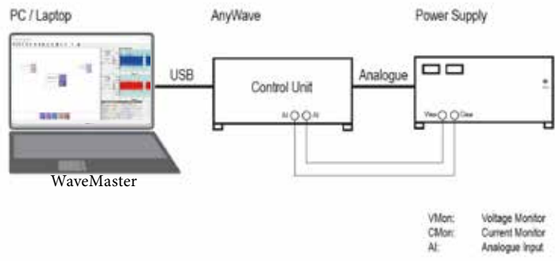
AnyWave

AnyWave Advanced Hardware

Same Advanced Technology built into each Test system is available as a stand alone controller. Combined with WaveMaster Software, anything is possible.

- 2.85MS/s Output sampling rate
- 2 channels 16Bit resolution
- 300 kS/s Input sampling rate
- 2 buffer system for endless uninterrupted pulses
  - No loss of fidelity, alway maximum resolution
- Trigger inputs / outputs for real time actions
- (starting waveform / activating measurement)

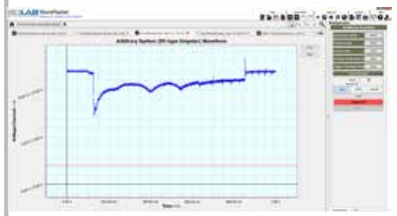
WaveMaster



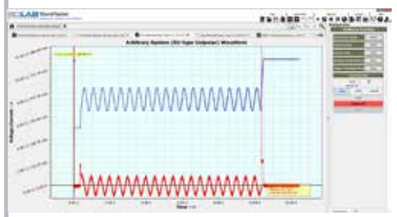
WaveMaster Advanced Software

The WaveMaster Software complements the test systems and AnyWave offering with an easy to use interface, while maintaining expert control.

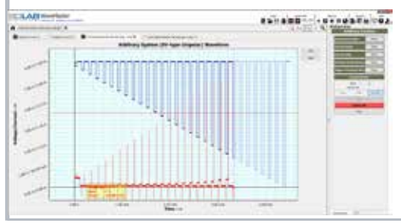
- Gain direct access to a responsive in-house software design team
- Importing Real Waveforms (e.g. from Oscilloscopes)
- Complete Standard Waveform Libraries
  - Updates available for download
- Protocol/Test Reports with Recorded Data
- DLLs for Python, LabView, CANoe, C#, C++, ANSI C, etc.
  - Auto code Generators
- Easy to use graphic waveform editor and tabular input
- Reference waveform and data acquisition with live graphics
- See real-time measured current and voltage output
- Optional Software control of HILO/TEST generators for EFT, MicroPulse, Load Dump, (WF 1, 2a ,3a, 3b, 5a, & 5b)
- Contact us to see a live Web Demo of the system in action



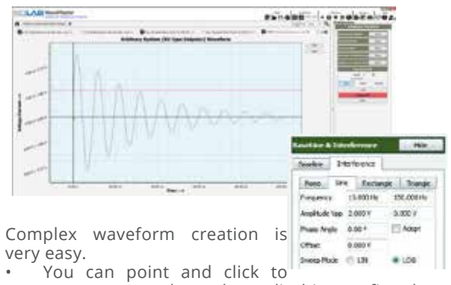
Import waveforms from other sources such as Oscilloscope



Synchronize 2 wave forms to 2 different power sources, (ex. FORD CI 230)



Measure and compare voltage and current to the generated wave form. In this example Blue (voltage) follows the voltage waveform precisely and red (current) is shown in comparison



Complex waveform creation is very easy.

- You can point and click to create a wave shape then edit this to refine the parameters.
- You can define segments and parameters individually
- You can copy/paste and create in a table format
- Create testing loops to modify waveform parameters over a stepped range

4-QUADRANT AMPLIFIERS

BLS-XXX-XXR 4-QUADRENT AMPLIFIERS

Voltage amplifiers and Current amplifiers

Features:

- DC - 500 kHz bandwidth DC
- Systems up to 54kW avalible
- DC up to 1 MHz (small signal -3 dB)
- Output voltage 35 V / 70 V / 75 V
- Rise / fall time up to 100 V/µs
- Analogue control input 0 ... ±10 V for control of voltage and current
- Monitor outputs for measured voltage and current values
- Modularly extendable via master-slave mode
- Parallel and Series Connections for two or more units
- -TS option turns any amplifier into a test system, Including: measurement, ARB, SW

Models	Voltage Min	Voltage Max	Max Current (Inrush)	Output Power	Speed (Small Signal)	19" rack hight
BLS-105-35R	-30 V	+35V	15 A (40 A)	400 W	200 kHz (1 MHz)	3 U
BLS-110-35R	-30 V	+35V	38 A (100 A)	1000 W	200 kHz (1 MHz)	4 U
BLS-120-35R	-30 V	+35V	76 A (190 A)	2000 W	200 kHz (500 kHz)	14 U
BLS-130-35R	-30 V	+35V	114 A (285 A)	3000 W	200 kHz (500 kHz)	18 U
BLS-140-35R	-30 V	+35V	152 A (380 A)	4000 W	200 kHz (500 kHz)	22 U
BLS-150-35R	-30 V	+35V	190 A (475 A)	5000 W	200 kHz (500 kHz)	26 U
BLS-160-35R	-30 V	+35V	228 A (570 A)	6000 W	200 kHz (500 kHz)	30 U
BLS-180-35R	-30 V	+35V	304 A (760 A)	8000 W	200 kHz (500 kHz)	2 x 22 U
BLS-200-35R	-30 V	+35V	380 A (950 A)	10,000 W	200 kHz (500 kHz)	2 x 26 U
BLS-220-35R	-30 V	+35V	456 A (1,140 A)	12,000 W	200 kHz (500 kHz)	2 x 30 U
BLS-250-35R	-30 V	+35V	570 A (1,425 A)	15,000 W	200 kHz (500 kHz)	3 x 26 U
BLS-280-35R	-30 V	+35V	684 A (1,710 A)	18,000 W	200 kHz (500 kHz)	3 x 30 U

Models	Voltage Min	Voltage Max	Max Current (Inrush)	Output Power	Speed (Small Signal)	19" rack hight
BLS-105-70R	-30 V	+70 V	19 A (40 A)	400 W	200 kHz (1 MHz)	3 U
BLS-110-70R	-30 V	+70 V	38 A (100 A)	1000 W	200 kHz (1 MHz)	4 U
BLS-120-70R	-30 V	+70 V	76 A (190 A)	2000 W	200 kHz (500 kHz)	14 U
BLS-130-70R	-30 V	+70 V	114 A (285 A)	3000 W	200 kHz (500 kHz)	18 U
BLS-140-70R	-30 V	+70 V	152 A (380 A)	4000 W	200 kHz (500 kHz)	22 U
BLS-150-70R	-30 V	+70 V	190 A (475 A)	5000 W	200 kHz (500 kHz)	26 U
BLS-160-70R	-30 V	+70 V	228 A (570 A)	6000 W	200 kHz (500 kHz)	30 U
BLS-180-70R	-30 V	+70 V	304 A (760 A)	8000 W	200 kHz (500 kHz)	2 x 22 U
BLS-200-70R	-30 V	+70 V	380 A (950 A)	10,000 W	200 kHz (500 kHz)	2 x 26 U
BLS-220-70R	-30 V	+70 V	456 A (1,140 A)	12,000 W	200 kHz (500 kHz)	2 x 30 U
BLS-250-70R	-30 V	+70 V	570 A (1,425 A)	15,000 W	200 kHz (500 kHz)	3 x 26 U
BLS-280-70R	-30 V	+70 V	684 A (1,710 A)	18,000 W	200 kHz (500 kHz)	3 x 30 U

Models	Voltage Min	Voltage Max	Max Current (Inrush)	Output Power	Speed (Small Signal)	19" rack hight
BLS-105-75R	-75 V	+75V	19 A (40 A)	500 W	200 kHz (1 MHz)	3 U
BLS-110-75R	-75 V	+75V	40 A (100 A)	1000 W	200 kHz (1 MHz)	4 U
BLS-120-75R	-75 V	+75V	76 A (190 A)	2000 W	200 kHz (500 kHz)	14 U
BLS-130-75R	-75 V	+75V	114 A (285 A)	3000 W	200 kHz (500 kHz)	18 U
BLS-140-75R	-75 V	+75V	152 A (380 A)	4000 W	200 kHz (500 kHz)	22 U
BLS-150-75R	-75 V	+75V	190 A (475 A)	5000 W	200 kHz (500 kHz)	26 U
BLS-160-75R	-75 V	+75V	228 A (570 A)	6000 W	200 kHz (500 kHz)	30 U
BLS-180-75R	-75 V	+75V	304 A (760 A)	8000 W	200 kHz (500 kHz)	2 x 22 U
BLS-200-75R	-75 V	+75V	380 A (950 A)	10,000 W	200 kHz (500 kHz)	2 x 26 U
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BLS-250-75R	-75 V	+75V	570 A (1,425 A)	15,000 W	200 kHz (500 kHz)	3 x 26 U
BLS-280-75R	-75 V	+75V	684 A (1,710 A)	18,000 W	200 kHz (500 kHz)	3 x 30 U

Options	Description
BLS 100I4	Internal 4 Channel Isolation Amplifier • Bandwidth 290 kHz (-3dB) • For Potential Separation of analog Inputs and Outputs of the Amplifier .
BLS 100VR	Adjustable Internal Resistor 0 ... 200 mOhm
BLS 100AC-OVP	Over Voltage Protection for the serial operation of a high voltage DC power supply and a 4 quadrant amplifier system.
BLS 100K	Compensation network to run as current amplifier Programed board based on load characteristics up to 5 different loads per board (boards are user swappable)
BLS 100S	Sensing (0 V / 0,5 V / 1 V / 2 V) standard in systems > 1 KW
BLS 100CS200	Current sensor standard in systems > 1 KW

AUTOMOTIVE GENERATORS

CAR-SYS 14 — EFT/BURST, MICRO-SEC, & CDN

Easy front panel control, w/ 7" color touch-panel display. The CAR-SYS 14 allows the generation of transient immunity test pulses, #1, #2a and #3. It contains a coupling decoupling network (CDN), triggered load switch, an Ethernet interface board, and an integrated fast pulse voltage divider to measure impulses.

- ISO 7637
- Pulse 1: 1-5/2000µs, 600 V
- Pulse 1: 1-5/1000µs, 600 V
- Pulse 2a: 1 / 50µs, 600 V
- Pulse 3: 5/100 ns, 800 V

Model	Description	Power Amp	Power µ-switch	Load Dump	Transient Emissions
CAR-SYS 14 I	50 Amp CDN	CAR-AWG 1200	CAR-PFS 80 I	PG 2804	CAR-TE 21 I
CAR-SYS 14 II	100 Amp CDN	CAR-AWG 3000	CAR-PFS 80 II	PG 2804	CAR-TE 21 II
CAR-SYS 14 III	200 AMP CDN	CAR-AWG 6000	CAR-PFS 80 II	PG 2804	CAR-TE 21 II

Optional Accessories: HILO CAR-Remote Software, CDN 2012, CAR ICC, CAR Cal Kit, BCK 400 F

CAR-PG 2804 — LOAD DUMP SIMULATOR

Easy front panel control, w/ 7" color touch-panel display. PG 2804 includes generation of pulses #5 / Test A and Test B. It is designed to be connected to the power supply interface of the CAR-TESTER, or use on its own with available CDN.

- Load Dump Generator
- ISO 16750-2 (ISO 7637)
- Pulse #5 / Test A / Test B
- Ri = 0.5 / 1 / 2 / 4 / 8 Ω

Model	Description	Rise Time	Fall Time	Clamping Level "B"
CAR PG 2804	Load Dump Changed capacitor	10 ms	50-400 ms (5 steps)	set in 22 V Steps
CAR PS-LD	Load Dump Amplifier based	12-20 ms	40-100 ms	Variable

Optional Accessories: HILO CAR-Remote Software, CAR Cal Kit, CAR LD CoBo 50A or 100A

CAR-PFS 80 — POWER FAIL SWITCH < 1 µs

Easy front panel control, w/ 7" color touch-panel display. The CAR-PFS-80 is an automotive power fail simulator, designed for performing fast voltage dips and drops (micro-interruptions) faster than 1 µs according to standard requirements, mainly from vehicle manufacturers.

- Voltage dips and interruptions
- Rise-/ fall times <1µs
- Battery voltage: 80V DC
- Battery current: 50A, 100A
- IO line switching 2A, 70V, <10 µs
- Option for additional relay switches

Model	Description	Power Amp 4quad	or Power Supply		
CAR-PFS 80 I	50 Amps	CAR-AWG 1200	CAR-PS 66-55		
CAR-PFS 80 II	100 Amps	CAR-AWG 3000	CAR-PS 66-110		

Optional Accessories: HILO CAR-Remote Software, CAR PFS RCAL Kit

CAR-TE 21 I/II

CAR-TE 14 I/II/III

CAR-TE 14/21 — TRANSIENT EMISSIONS

Easy control, w/ 7" color touch-panel display. The CAR-TE 21 is used to check the transient transition behavior when switching loads on the vehicle's electrical system. It consists of two triggered circuit breakers (electronic and mechanically), an artificial network (LISN), and a control unit.

- ISO 7637-2, CISPR 25, CISPR 16-1-2
- Triggered load switch:
  - Mechanical & Electronic
- 50 / 100 Amp, 800V
- Shunt resistors 10, 20, 40, 120 Ω
- Life-Time Use Counter

Model	Description	Power Amp 4quad	or Power Supply
CAR-TE 21 I	50 Amps	BLS-110-70R	CAR-PS 66-55
CAR-TE 21 II	100 Amps	BLS-130-70R	CAR-PS 66-110
CAR-TE 14 I	50 Amps	BLS-110-70R	CAR-PS 66-55
CAR-TE 14 II	100 Amps	BLS-130-70R	CAR-PS 66-110
CAR-TE 14 III	200 Amps	BLS-160-70R	CAR-PS 66-220

Optional Accessories: HILO CAR-Remote Software

HV AUTOMOTIVE GENERATORS

ISO 7637-4 SYSTEM

ISO 7637-4 Emissions and Immunity Pulse A & Pulse B

Designed for testing passive and active components and devices:
- Transient Emission Test
- Immunity Test –Pulse A & Pulse B
- Compact Construction, Customer Friendly Control
- 1,500 V Capability
- Secure (Voltage Control, Earthing Switch), room to grow

Accessories: CAR-Remote, Coupling balun, Emergency Stop, External Warning lights

CAR-AN-HV — HV ARTIFICAL NETWORK

CAR-HVC: HV Control unit, with touch screen, 7" capacitive. Switchable load for high voltage battery. Residual voltage monitoring with ground switch. Switchable Capacitor 100µF

CAR-AN4: HV Artificial Network. 2x artificial network; According to ISO 7637-4 50Ω termination

CAR-CN — HV COUPLING TRANSFORMER

Frequency: 30Hz – 300kHz **1800V / 50 or 100 Amps**

CAR coupling network is used to couple, according ISO 7637-4:2020, the required sinusoidal disturbances into the DUT. This transformer also facilitates DC isolation of the LF generator from the DUT.

CAR-AWG 75 — HIGH FREQ. SIMULATOR

Frequency: 100kHz - 250MHz **75W**

CAR arbitrary waveform generator 75 is a compact EMC testing system for creating sinusoidal disturbances on high voltage supply lines of vehicles per test pulse A of ISO 7637-4:2020.

CAR- AWG 1200 — LOW FREQ. SIMULATOR

Frequency: 1Hz - 300KHz **70V / 40Amps**

CAR arbitrary waveform generator 1200 is a compact EMC testing system for creating sinusoidal disturbances on high voltage supply lines of vehicles as of ISO 7637-4:2020 test pulse B.

CAR-PS1500 — HV BATTERY SIMULATOR

15kW, 100V/µs **600V / 30A, 1500V / 10A**

The CAR PS 1500 is a high voltage power supply for the HILO CAR-TEST-SYSTEM. It is controllable on the front panel or via HILO-Remote software.
- Can be stacked in parallel for use up to 100Amps!

CAR CNB1 — COUPLING BALUN

7637-4 pulse A line-to-line-coupling

CAR coupling balun transformer CAR-CNB1 is used for immunity testing against line-to-line coupled fast transients a balun according to e.g. ISO/ 7637-4:2020

DAMPED OSCILLATORY WAVE

IPG 2554

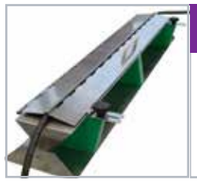
Damped Oscillatory Wave (DOW)

Easy front panel control, w/ 7" color touch-panel display. The IPG 2554 allows the generation of damped oscillatory wave (DOW) immunity test pulses, covering both slow and fast waveforms per the requirements of IEC 61000-4-18.

- Versatile and upgradeable
- Different configurations possible
- External data line CDN 5404
- Internal 16 A / 400 V, 3-phased coupling/ decoupling network (690V option)
- Common and differential mode
- Integrated monitor port 100:1 voltage divider

Model	Description	Max Levels	Repetition rate	
IPG 2554	100 kHz, 1, 3, 10, 30 MHz DOW	3 kV Slow, 4 kV fast	400 Hz Slow, 5 kHz Fast	
IPG 2554 Slow	100 kHz, & 1 MHz DOW	3 kV	400 Hz	Upgradeable to add fast wave forms
IPG 2554 Fast	3, 10, 30 MHz DOW	4 kV	5 kHz	Upgradeable to add slow wave forms

Optional Accessories: HILO Remote Software, EFTC-2012, CDN 5404



EFTC 2012

Capacitative coupling clamp For coupling EFT to screened I/O lines built according to IEC 61000-4-4.

CDN 5404

Manual CDN for up to 4 lines
5 kV Ringwave, 5 kV DOW
4 lines up to 250V/4A, for 8 lines
2x CDN 5404 can be used

IPG 2553

Magnetic DOW

Easy front panel control, w/ 5" color touch-panel display. The IPG 2553 allows the generation of magnetic damped oscillatory wave (DOW) immunity test pulses, per the requirements of IEC 61000-4-10. Includes radiating loop.

- Magnetic damped oscillatory wave (DOW)
- Frequency: 100 kHz or 1.0 MHz
- Repetition rate: 40 Hz and 400 Hz
- Test Level: 10 A/m - 100 A/m

Optional Accessories: HILO Remote Software

COMBINATION WAVE

PG 10-504 — 10 kV / 5 kA

Surge — **Voltage: 1,2/50 µs; Current: 8/20 µs**

10kV Combination Wave generator meeting the requirements of IEC 61000-4-5 and IEC 60060. Includes a 7" color touch-panel display and monitor ports for both voltage and current waveforms.

Model	CDN 10416	CDN 10432	CDN 10463	CDN 104125	CDN 104200	CDN 10216
3*480V, 10 kV	16 Amp	32 Amp	63 Amp	125 Amp	200 Amp	Single phase

Option for 690V and ANSI coupling Optional: HILO Remote Software, CDNs for data lines, IMP8, PA 503, 505

PG 12-804 — 12 kV / 6 kA

Surge — **Voltage: 1,2/50 µs; Current: 8/20 µs**

12kV Combination Wave generator meeting the requirements of IEC 61000-4-5 and IEC 60060. Includes a 7" color touch-panel display and monitor ports for both voltage and current waveforms.

Model	CDN 12416	CDN 12432	CDN 12463	CDN 124125	CDN 124200	CDN 12216
3*480V, 12 kV	16 Amp	32 Amp	63 Amp	125 Amp	200 Amp	Single phase

Option for 690V and ANSI coupling Optional: HILO Remote Software, CDNs for data lines, IMP8, PA 503, 505

PG 24-2500 — 24 kV / 12 kA

Surge — **Voltage: 1,2/50 µs; Current: 8/20 µs**

24kV Combination Wave generator meeting the requirements of IEC 61000-4-5 and IEC 60060. Includes a 7" color touch-panel display and monitor ports for both voltage and current waveforms. Shown with PA 504 protective cover.

Optional: HILO Remote Software, CDNs for data lines, IMP8, PA 503, 505

CAPACITOR TESTERS

IPG 809 — 8 kV

Capacitor Tester
1.7/46 µs, 8 kV, 9 J
Capacitor range: 0.1-27 nF
Acc. IEC 60384-14, EN 132400, VDE 0565 etc

PG 6-401 — 6 kV

Capacitor Tester
1.6/47 µs, 6 kV, 400 J
Capacitors: 34, 47, 68, 100, 150, 220, 330, 470 nF
Acc. IEC 60384-14, EN 132400

PG 10-150 — 10 kV

Capacitor Flammability Test
AC Adjusted 0-300V 16 Amps
Impulse storage: 3 µF, 0.5-10 kV
Acc. IEC 60384-14

TELECOM GENERATORS

IPG 620 / 1050 / 1272

High Voltage Pulse Generator 6kV / 10kV / 12 kV

Lightning surges 1.2/50 µs according to IEC 60. Pictured with PA 503 protective cover.

Model	Waveform	Voltage	Energy	Standards
IPG 620	1.2/50 µs	0.3-6 kV	20 J	ITU-T: K12, K17, k22, k44
IPG 1050	1.2/50 µs	0.3-10 kV	50 J	ITU-T: K12, K17, k22, k44
IPG 1272	1.2/50 µs	0.3-12 kV	72 J	ITU-T: K12, K17, k22, k44

Optional: HILO Remote Software, CDN 504/8 sym, PA 503, 505

PG 5-200-1 & -2

High Voltage Pulse Generator 5kV

Lightning surges 1.2/50 µs according to IEC 60 & Switching surges 10/700 µs.

Model	Waveform	Voltage	Energy	Standards
PG 5-200-1	10/700 µs	0.2-5 kV	200 J	ITU-T: K12, K17, k20
PG 5-200-2	10/700 µs	0.2-5 kV	200 J	ITU-T: K12, K17, k20
	1.2/50 µs	0.2-5 kV	10 J	

Optional: HILO Remote Software, CDN 504/8 sym, PA 503, 505

PG 6-364 / 10-1000

High Voltage Pulse Generator 6kV / 10 kV

Model	Waveform	Voltage	Energy	Standards
PG 6-364	10/700 µs	0.2-6.3 kV	360 J	ITU-T: K12, K17, k20
	1.2/50 µs	0.2-6.3 kV	20 J	
	Option: 0.5/700, 1/700, 0.5/1000, 1/1000, & 100/700 µs pulses			
PG 10-1000	10/700 µs	0.5-10 kV	1000 J	ITU-T: K12, K17, k20
	1.2/50 µs	0.5-10 kV	50 J	

Optional: HILO Remote Software, CDN 504/8 sym, PA 503, 505

PG 12-1440 / 14-1960 / 20-4000

High Voltage Pulse Gen. 12 kV / 14kV / 20 kV

Model	Waveform	Voltage	Energy	Standards
PG 12-1440	10/700 µs	0.2-12 kV	1400 J	ITU-T: K17, k20, k22, k44
	1.2/50 µs	0.2-12 kV	70 J	
PG 14-1960	10/700 µs	0.2-14 kV	1960 J	ITU-T: K17, k20, k22, k44
	0.5/700 µs	0.2-14 kV	1960 J	
PG 20-4000	10/700 µs	1-20 kV	4000 J	ITU-T: K17, k20, k22, k44

Optional: HILO Remote Software, CDN 504/8 sym, PA 503, 505

IPG 255 8 kV

Isolation Tester 1.2/50 µs, 8kV
Testing of watt-hour meters, relays, etc. w/PA 503 cover

Acc. IEC 20255, EN 61036, ...

Optional: HILO Remote Software, PA 503, 505

IPG 506 5kV

Front Chopped Wave Generator
Measurements for:
DC Spark-over Voltage: 640V
Impulse Spark-over Voltage: 5kV
Acc. ITU-T, K12; w/PA 503 cover

Optional: HILO Remote Software, PA 503, 505

IPG 506-SYM 5 kV

Symmetric Front Ch. Wave Gen
Of 3-Pole Gas Discharge Tubes
DC Spark-over Voltage: 640V
Impulse Spark-over Voltage: 5kV
Acc. ITU-T, K12; w/PA 503 cover

Optional: HILO Remote Software, PA 503, 505

PIG 1500

Power Induction Generator
Testing of telephone equipment
0-1500 Veff, 600Ω or 200Ω

Acc. CCITT K20

Optional: HILO Remote Software, PA 503, 505

PG 6-432

Lifetime test of SPDs
10/700 µs, 2*100A, 430 J
10/1000 µs, 2*100A, 430 J

Acc. ITU-T: 12TR 1,K17, K20

Optional: HILO Remote Software, PA 503, 505

PG 6-500

Surge Voltage/Current Gen.
Testing 2 or 4 wire Telecom
2/10 µs, 5kV / 100 or 500A

Acc. GR-1089-CORE Fig 4.2

Optional: HILO Remote Software, PA 503, 505

PG 2-750

Surge Current Generator
10/160 µs, 4 line, 100A
10/560 µs, 2 line, 100A
Acc. FCC Part 68, ANSI/TIA-968
Option:10/1000 µs, per GR-1089

Optional: HILO Remote Software, PA 503, 505

PG 4-641

Surge Current Generator
10/160 µs, 480A

Acc. FCC Part 68, ANSI/TIA-968

Optional: HILO Remote Software, PA 503, 505

HIGH CURRENT PULSE

EMC 2015

Modular Pulse Generator

Easy front panel control, w/ 7" color touch-panel display. The EMC 2015 has been designed for dielectric testing of electric components, over-voltage protectors and electronic circuits acc. IEC, VDE etc. The basic version generates impulse currents with waveform 8/20 µs up to 25 kA. In addition, various other plug-ins are also available.

- Versatile and upgradeable
- Purchase modules as you need them
- PA 503 protective cover included
- Many plugins available for your application
- Easy pulse setup and reporting

Model	Pulse Type	Pulse	Max Level	Energy
EMC 2015	Current (standard)	8/20 µs	25 kA	1500 J
	Current Plug-in	10/50 µs	5 kA	1500 J
	Current Plug-in	10/350 µs	600 A	1500 J
	Current Plug-in	10/700 µs	300 A	1500 J
	Current Plug-in	10/1000 µs	200 A	1500 J
	Combination Wave Plug-in	1.2/50 µs & 8/20 µs	2x10 kV & 2x10 kA	1500 J, per VDE 0845-2
	Varistor Test Plug-in	8/20 µs	3 kA	250 J
	Voltage Plug-in	10/700 µs	10 kV	

Optional Accessories: HILO Remote Software

HIGH CURRENT PULSES

- 7"/5" color touch panel display
- Well engineered setup and ease of use
- Protective safety covers available
- Many different options available to fit your needs

Model	Pulse	Max Level	Energy	Size
PG 6-200	8/20 µs	5 kA	200 J	4U table top + Protective cover
PG 6-400	8/20 µs	10 kA	400 J	4U table top + Protective cover
PG 6-2402	8/20 µs	2x 25 kA	2400 J	10 U Table top + Protective cover
PG 10-10000	8/20 µs	2x 50 kA	10000 J	1/2 rack + Protective cover
PG 20-7000	8/20 µs	50 kA	7000 J	Full rack w/test chamber built-in
PG 20-10000	8/20 µs	70 kA	10000 J	Full rack w/test chamber built-in
PG 20-14000	8/20 µs	100 kA	14000 J	Full rack w/test chamber built-in
PG 10-2500	10/700 µs	500 A	2500 J	Full rack w/test chamber built-in
PG 20-4000	10/700 µs	500 A	4000 J	Full rack w/test chamber built-in
PG 10-4000	10/1000 µs	500 A	4000 J	Full rack w/test chamber built-in
PG 10-8000	10/1000 µs	1 kA	8000 J	Full rack w/test chamber built-in
PG 10-6000	10/50 µs	10 kA	6000 J	Full rack w/test chamber built-in
PG 10-7000	10/350 µs	2.5 kA	7000 J	Full rack w/test chamber built-in
PG 10-12500	10/350 µs	5 kA	12500 J	Full rack w/test chamber built-in
PG 20-25000	10/350 µs	10 kA	25000 J	Full rack w/test chamber built-in
PG 5-4500	1.5/5000 µs	2x 125 A	4500 J	1/2 rack + Protective cover

Optional Accessories: HILO Remote Software

VOLTAGE ISOLATION

DIELECTRIC TESTING — UP TO 24KV

Lightning Surge — 1.2/50 µs

High voltage pulse generator meeting the requirements of IEC 60060. Includes 7" color touch-panel display, and monitor ports for both voltage and current waveforms.

Model	Pulse	Max Level	Energy
IPG 605	1.2/50 µs	6 kV	5 J
IPG 620	1.2/50 µs	6 kV	20 J
IPG 1012	1.2/50 µs	10 kV	12 J
IPG 1050	1.2/50 µs	10 kV	50 J
IPG 1218	1.2/50 µs	12 kV	18 J
IPG 1272	1.2/50 µs	12 kV	72 J
IPG 2025	1.2/50 µs	20 kV	25 J
IPG 2436	1.2/50 µs	24 kV	36 J

Optional: HILO Remote Software, PA 503, PA 505

INSULATION Ω MEASUREMENT — 12 kV

IPG 1201 — Measure 0.5 - 20 MΩ

Impulse generator meeting the requirements of IEC 60065. Includes 7" color touch-panel display and monitor ports for both voltage and current waveforms. The value of the insulation resistance is measured and reported.

Model	Resistance	Level	Energy
IPG 1201	0.5 - 20 MΩ	0.2 - 12 kV	0.072 J

Optional: HILO Remote Software, PA 503, PA 505

SOLAR PANEL — 10 / 12 / 20kV

Surge — 1.2/50 µs

Impulse voltage tests of solar modules (photo-voltaic panels) with the standard surge voltage waveform 1.2/50 µs according to IEC 60060-1/2 up to 20 kV acc. to. IEC 61730-1/2 / EN 61730-1.

Model	Pulse	Max Level	Energy	Capacitance
PG 10-200	1.2/50 µs	10 kV	250 J	0 - 183 nF
PG 12-360	1.2/50 µs	12 kV	360 J	0 - 183 nF
PG 20-100	1.2/50 µs	20 kV	100 J	10 - 183 nF

Optional: HILO Remote Software, CCK, CCK 20

AC/DC VOLTAGE ISOLATION

AC TEST EQUIPMENT — UP TO 50 kV

Electrical Insulation

Testing the electrical insulation of components and power systems with AC levels. Ramp/step up voltage levels while current is monitored for leakage.

Model	Volt Ramp	Level	Current	Test Cabinet
AC Tester 6	0.1 - 10 kV/sec	10 kV	100 mA	Table top, PA504 incl.
HVTS 30-20	0.24 - 30 kV/sec	0.2 - 30 kV	1 - 20 mA	19" Rack
HVTS 30-40	0.24 - 30 kV/sec	0.2 - 30 kV	1 - 40 mA	19" Rack
HVTS 50-10	3 - 50 kV/sec	2 - 50 kV	1 - 10 mA	19" Rack

Optional: HILO Remote Software, rack can be fitted with integrated protective test bay

DC TEST EQUIPMENT — UP TO 20 kV

Electrical Insulation

Testing the electrical insulation of components and power systems with DC levels. Ramp/step up voltage levels while current is monitored for leakage.

Model	Volt Ramp	Level	Current	Test Cabinet
HTS 20-5	0.1 - 10 kV/sec	0.2 - 20 kV	0.1 - 5 mA	Table top, PA503 option
HTS 20-10	0.1 - 10 kV/sec	0.2 - 20 kV	0.1 - 10 mA	Table top, PA503 option

Optional: HILO Remote Software, PA503 or PA 505

SAFETY TEST COVERS

PA 502
440 x 180 x 300 mm

PA 503
400 x 140 x 300 mm

PA 504
460 x 300 x 550 mm

PA 505
400 x 250 x 400 mm

For High Voltage testing of components, prevents accidental contact, with ground rod, safety disable switch, and warning lights

PU SWITCH UNIT

User defined switch unit for easy DUT switching and production testing. Automates and saves time.

HCC HV CAP CHARGE

High Voltage Capacitor charging unit
Multiple units available
From 4 - 60 kV and 400 - 20 mA

IPG 250 PULSE CAL

Impulse generator for calibration purposes. Step response measurement. rise time <3ns

HV MEASUREMENT

HVM 2015

High Voltage Pulse Measurement

HVM 2015 can measure high voltage pulses up to 10kV or optional 20kV. Expanded up to 300kV with external HVT###RCR voltage dividers. Voltage dividers work manually as well.

	HVT 10 RCR	HVT 20 RCR	HVT 40 RCR	HVT 80 RCR	HVT 120 RCR	HVT 160 RCR	HVT 240 RCR	HVT 300 RCR
DC voltage	11 kV	22 kV	40 kV	80 kV	120 kV	160 kV	240 kV	300 kV
AC voltage	8 kV	15 kV	30 kV	60 kV	90 kV	120 kV	180 kV	230 kV
Pulse Voltage	20 kV	40 kV	100 kV	160 kV	200 kV	250 kV	360 kV	480 kV
Divider Ratio	1000:1	2000:1	2500:1	5000:1	5000:1	5000:1	5000:1	5000:1
Picture	A.	A.	B.	C.	D.	D.	E.	E.

ISM & WSM CURRENT SHUNTS

High Current Measurement Shunts

ISM - current measuring resistor for high pulse currents
WSM - current measuring resistor for high AC currents

Series	Versions	Peak	RMS	Resistance	Bandwidth
ISM Series	18	3 - 100 kA	8-1600 A	25 µΩ - 200 mΩ	2 - 200 MHz
WSM Series	12	10 - 150 kA	0.01-15 kA	4 µΩ - 0.6 mΩ	30 kHz - 1.5 MHz

VOLTAGE DIVIDER

Used for easy Pulse measurement to connect directly to a scope.

Model	Description
CDN 5463	12 kV, 10MHz, 100:1
CDN 7463	12 kV, 10MHz, 1000:1

SURGE CALIBRATION

Kit includes Voltage divider PVD 10-3 and Current shunt PSM 10-2. Used for pulse measurement.

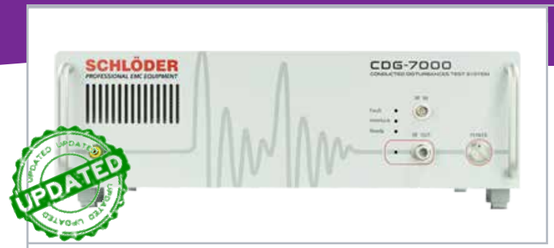
Model	Description
SCK 105	12 kV / 10 kA, 10MHz
SCK 105 InBox	Same but in a housing

ULTRASONIC DETECTOR

Excellent acoustic directivity of the USD can be used to find Partial discharge in the field.

Model	Description
USD 3801	Laser Sight for Night use
USD 3802	Visual Sight for Daytime

RF CONDUCTED IMMUNITY



CDG 7000 4 kHz-400 MHz

Conducted Immunity Turnkey

Newest CI system for meeting many standards including IEC 61000-4-6, ISO 11452-4, MIL-STD-461G CS114, DO-160 BCI, and many more. The versatility of the system to meet so many standards provides the best value in the industry.

- RF signal generator, a RF-power amplifier, a 3-channel RF voltmeter and a directional coupler
- Frequency range (signal generator/power meter) 4 kHz - 1200 MHz
- HELIA 7 - Basic software included enables extensive reporting functions and EUT monitoring, (HELIA 7 - BCI required for BCI testing)
- Simple expansion with external amplifier via 2nd generator output
- SCPI command set enables easy integration into own software systems
- Temperature measuring input, e.g. for monitoring and displaying the BCI clamp temperature or DUT
- Input for external pulse modulation
- Configurable, digital 8-channel user port
- Warranty 3 years

Model	Amp Frequency	Amp Power	Test level	Standards
CDG 7000-25	100 kHz - 250 MHz	25 Watts	10V with 80% mod	Basic IEC 61000-4-6
CDG 7000-75	100 kHz - 400 MHz	75 Watts	30V with 80% mod, 200mA	IEC, ISO (full levels)
CDG 7000-75-10	10 kHz - 250 MHz	75 Watts	30V with 80% mod	IEC, MIL,
CDG 7000-E	4 kHz - 1000 MHz	User Provided	200 watts (500 watts option)	IEC, MIL, ISO (full levels)

Optional Accessories: EM Clamps, BCI Clamps, Calibration fixtures, Attenuators, CDNs, BCI Software. All Coax cables provided with each setup.

ACCESSORIES

CDN EMCL-20/35

EM Clamp for cable diameters 20mm or 35mm

CDN EMCL-NW_10

Matching Network 10 kHz - 150 kHz for extending the range of CDN EMCL-20 and CDN BCI-P1

CDN ABCL-20

Decoupling Clamp 20mm According to IEC 61000-4-6

CDN BCI-P1

Clamp Bulk Current Injection (BCI) with Calibration Set, 1 MHz - 400 MHz

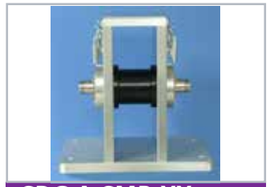
CDN BCI-P1_MT-1

Clamp Bulk Current Injection (BCI) & matching transformer with Calibration Set, 4 kHz - 400 MHz

CDG CMP-45 / 46

Current Monitoring Probe 10kHz - 400MHz

Model	Used for
CDG CMP-45	Hinged clamp
CDG CMP-46	Closed clamp



CDG A CMP-XX

Calibration Jig for each BCI or monitor probe

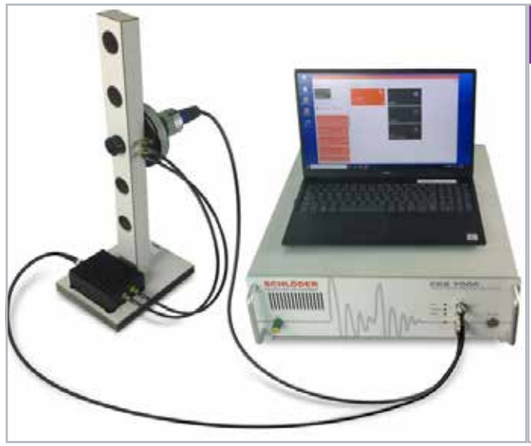
Model	Used for
CDN A BCI-P1	CDN BCI-P1
CDG A CMP-45	CDG A CMP-45
CDG A CMP-46	CDG A CMP-46

CDNS

Many CDNs to match your application

Model	Description
CDN M1, M2, M3	Mains (earth)
CDN M4, M5	Mains
CDM AF#	Non-Balanced
CDN T#	Balances pair
CDN S#	Shielded
CDN USB/HDMI/Firewire/....	

MAGNETIC IMMUNITY



CDG 7000-75-10

IEC 60601-1-2 / IEC 61000-4-39 Turnkey

In combination with the CDG 7000-75-10 and a complete set for the corresponding frequency range, international standards (IEC 60601-1-2 ED. 4.1 / IEC 61000-4-39) for testing medical devices for electromagnetic compatibility can be carried out. These complete sets include a radiating loop, a loop sensor, the matching network for the impedance and a corresponding stand for the loops.

- 30 kHz at 8 A/m, 134.2 kHz at 65 A/m, 13.56 MHz at 7.5 A/m
- 9 kHz - 150 MHz at 1, 3, 10, & 30 A/m
- 150 kHz - 26 MHz at 0.1, 0.3, 1, & 3 A/m
- Additionally RF conducted immunity to IEC 61000-4-6 can be met with appropriate accessories.
- HELIA 7-MGA Software included
- Configurable, digital 8-channel user port
- Warranty 3 years

SET 9KHZ-150KHZ -1-2/-4-39

Coil set RL-120 & LS-040 incl. stand and matching network

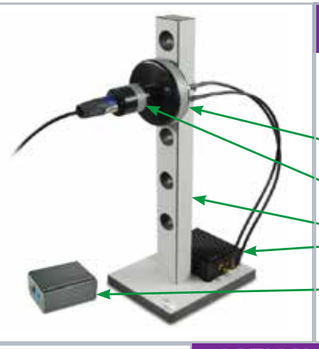
IEC 60601-1-2 Ed. 4.1 (30 kHz, 134.2 kHz) and IEC 61000-4-39 (9 kHz to 150 kHz)

Includes:

- MGA RL 120 – Radiating loop 120 mm as specified in IEC 61000-4-39 for 9 kHz – 150 kHz, IEC / EN 60601-1-2 and MIL-STD-461 / RS101, 3 m cable
- MGA LS 040 – Loop sensor 40 mm
- MGA RL 120 NW – Matching Network for MGA RL 120, matches loop to 50 Ohms of the CDG 7000 amplifier acc. to IEC 61000-4-39 and IEC / EN 60601-1-2 for Immunity to magnetic fields 9 kHz - 150 kHz
- MGA RL 120 Stand – Stand for MGA RL 120 for tests
- Cable set

OPTION: CAPACITOR 1/2W 134.2 KHZ -1-2

Capacitor in housing (resonance matching) for RL-120 with matching network BNC male/ BNC female. When testing for IEC 60601-1-2: 134.2 kHz, 65 A/m, the required power can be halved from 46.3 dBm / 43 W to 43.1 dBm / 20 W with the optional resonance matching. The capacitor in the housing is plugged in front of the matching network.



SET 150KHZ-26MHZ -1-2/-4-39

Coil set RL-100-3 & LS-040-1 incl. stand and matching network

IEC 60601-1-2 (13.56 MHz) and IEC 61000-4-39 (150 kHz to 26 MHz)
Includes:

- MGA RL 100-3 – Radiating loop as specified in IEC 61000-4-39 and IEC / EN 60601-1-2 for 150 kHz – 26 MHz
- MGA LS 040-1 – Loop sensor 40 mm that attaches to MGA RL 100-3 at the correct distance of 50 mm as specified in IEC 61000-4-39 and IEC / EN 60601-1-2
- MGA RL 100-3 stand – for tests in stronger magnetic fields
- MGA RL 100-3 NW-60601 – Matching Network 60601 for MGA RL 100-3, matches MGA RL 100-3 to the IEC 60601-1-2 requirements
- MGA RL 100-3 NW-61000 – Matching Network 61000 for MGA RL 100-3, matches MGA RL 100-3 to the IEC 61000-4-39 requirements
- Cable set

OPTION: PREAMP 150KHZ-26MHZ -4-39

Preamplifier for CDG 7000-75-10 for tests according to IEC 61000-4-39
Sensor coil LS 040-1 provides too low an output level for the CDG 7000 for the lowest standard levels at low frequencies

MAGNETIC IMMUNITY

MGA 1033 DC-250 kHz

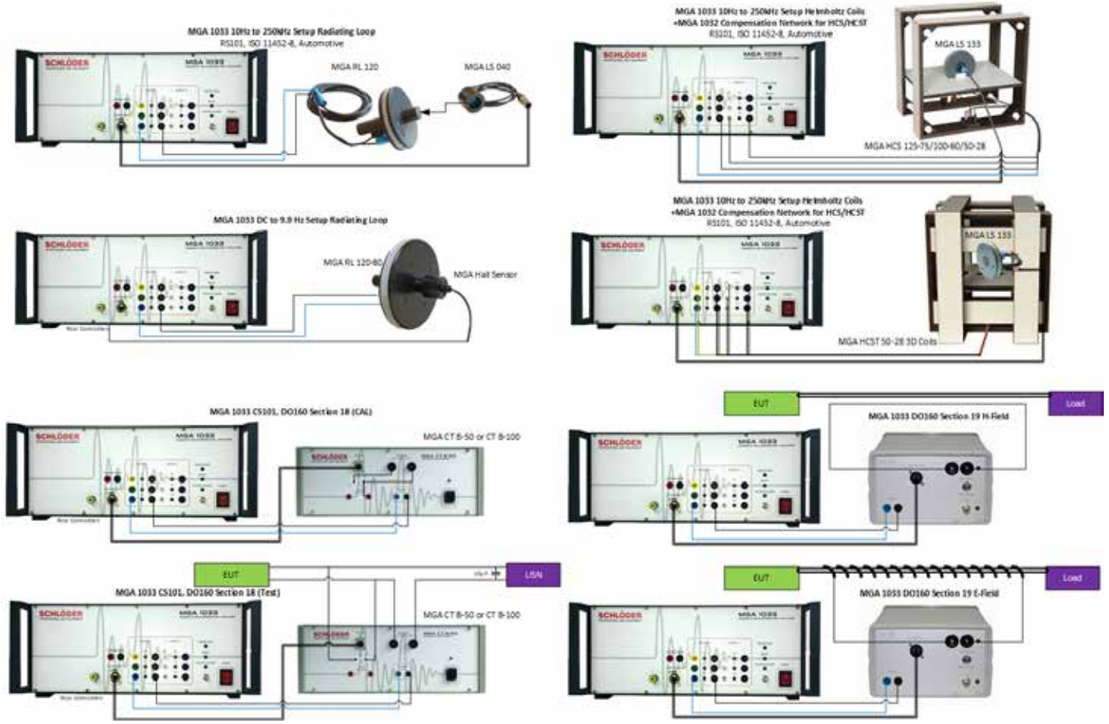
Magnetic Emissions/Immunity Turnkey

The compact magnetic field generator and analyzer MGA 1033 allows susceptibility tests against magnetic fields from DC to 250 kHz according the standard EN 55103-2 and there measurement according to EN 55103-1. In addition, EMC tests are possible according to various standards such as automotive, avionic and MIL-STD.

- Magnetic field tests and measurement DC to 250 kHz
- Complies to all relevant EMC, Automotive and Military Standards
- Magnetic field strength up to 1000 A/m at 1000 Hz
- Fully automated tests with tri-axial Helmholtz coil
- Wide choice of accessories
- Signal generator (DC - 250 kHz)
- Power amplifier with 800 W output power, DC - 1 MHz bandwidth
- Spectrum analyzer (16-bit, 1 MS / s sample rate)
- Self Calibration, Software controlled

Test Standards:
MIL-STD-461E/F, DO 160 Sec 19, IEC/EN 55103-2, IEC/EN 61000-4-8, ISO 11452-8, SAE J1113-2, SAE J1113-22, Ford ES-XW7T-1A278-AC, GM W3097, PSA B21, 7110, Renault 36-00-808, DC-11224, DC 10614 and similar standards.

Furthermore the MGA 1033 allows additional measurements and tests according to MILSTD-461E/F (CE101, CS101, CS109), EN 61000-4-16, IEC/EN 61543 and DO-160 Section19



ACCESSORIES

LS 040

Loop Sensor
40mm Diameter
51 turn
10 Hz - 1 MHz

RL 120

Radiating loop (AC)
120mm Diameter
20 Turns
DC - 500 kHz, 16 Amps

RL 120-80

Radiating loop (DC/Hz)
120mm Diameter
80 Turns
DC - 1 kHz, 16 Amps

RLS 133

Radiating & Sensor Loop
133mm Diameter
36 Turns
DC - 500 kHz, 5 Amps

MGA HCS 50-28

Helmholtz coil 50cm shown with loop sensor RLS 133

MGA HCS 100-60

Helmholtz coil 100cm

MGA HCS 125-75

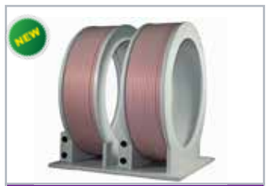
Helmholtz coil 125cm

MGA HCST 50-28

Tri-axial Helmholtz coil for automated 3 axis testing

MGA ISS 19

Coupling Transformer DO-160 Sec 19 automatic test



MGA HCR 50-25

Helmholtz coil 50cm For DC Fields and Hz

MGA BC 500

Feild Coil IEC 55103-2 20 Windings 50cm Diameter

CNs EN 55103-2

EN 55103-2	Description
Figure B.1	Common mode
Figure B.2	Calibration network
Figure B.4	Current transducer

MGA HALL SENSOR

Used with RL 120-80
DC - 9.9Hz
800 A/m - 20 kA/m

MGA CT-50A/C

CS101 Coupling transform-er + differential amplifier for AC decoupling, 50 Amp, 0.5Ω Precision Resistor

LF IMMUNITY TESTING

PGA 1241 DC-300kHZ

Conducted Immunity Turnkey

The power generator PGA 1241 is suitable for EMC testing in accordance with standard IEC / EN 61000-4-16 (Common Mode) and IEC/EN 61000-4-19 (Differential Mode) in the frequency range from DC to 300 kHz.

- For EMC tests according to the standard IEC/ EN 61000-4-16, -19 and IEC/ EN 61543
- Power module with 5A / 250 W or 16A / 800 W
- For 300V short term test of IEC 61000-4-16, PGA 1331 is also required
- Signal generator with DC, sine, triangle and square waveforms
- External source can be added to internal signal
- Use of instrument is open for other low impedance loads. Applications including magnetic immunity with Helmholtz coils
- For testing where current is required (-4-19) any SCPI multi meter can be used
- Includes easy to use software through USB

Model	Frequency	Slew rate	Power	Output Current	Output Voltage
PGA 1241-5A	DC - 1 MHz	100 V/µs	260 Watts	5 Arms / ± 7.5 Apeak	50 Vrms / ± 75 Vpeak
PGA 1241-16A	DC - 1 MHz	100 V/µs	800 Watts	16 Arms / ± 24 Apeak	50 Vrms / ± 75 Vpeak
PGA 1241-PSG 300	External power source, Input for controlling an external voltage source.				

ACCESSORIES

PGA-1331

300V Source
DC, 16.66, 50, & 60 Hz / 1sec
Control with PGA 1240 / 1033

CN 1241-32/125

Switchable coupling network
M2, M3, M4, M5 for AC & DC
Automatic control with PGA 1240

Model	Description
CN 1240-32	32 Amp, 4mm jack
CN 1240-125	125 Amp, 6mm jack

CN 19

Coupling network for differential voltage testing to IEC 61000-4-19 Fig 4

Model	Description
CN 19 U	Voltage testing 16A / 240V
CN 19 I	Current testing 10A / 30 V
CN 19 U-I	Both Current and Volt in one

CNs FOR IEC 61000-4-16

Coupling Network

Offering coupling networks for all AC and DC requirements of your EUT.
DC: **M2, M3** (CN 1241 above)
AC: **M2, M3, M4, M5** (CN 1241 above)
IO: **AF2, AF4, AF8, RJ45, T2, T4, T8**
Isolation Transformer for AC: **IT-06, IT-16, IT-20**

CN 60255-C

Coupling Network
Common Mode
220 Ohm
0,47 µF
300 V

CN 60255-D

Coupling Network
Differential Mode
100 Ohm
(Class A) 0,1 µF
(Class B) 0,047 µF
150 V

ZDIFF 1 OHM

Current shunt
EN 61000-4-19

STAND ALONE GENERATORS

SFT 2400

EFT/Burst 5 kV, 5/50 ns

Stand-alone EFT/Burst simulator. Including EFT network, CDN and easy to use interface. 5 & 100kHz (125kHz)

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, SFT 450-Set Calibration kit, SFT 415 Capacitive clamp, SFT 415-CS Calibration plate.

SFT 1400

EFT/Burst 5 kV, 5/50 ns

Stand-alone EFT/Burst simulator. Including EFT network and CDN. 5 & 100kHz (125kHz max)

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, SFT 450-Set Calibration kit, SFT 415 Capacitive clamp, SFT 415-CS Calibration plate.

SFT 1420

EFT/Burst 4.8 kV, 5/50 ns

Stand-alone EFT/Burst simulator. Including EFT network and CDN. 5 & 100kHz **(2MHz max)**

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, SFT 450-Set Calibration kit, SFT 415 Capacitive clamp, SFT 415-CS Calibration plate.

CWG 2500

Surge 4.4 kV, 1.2/50 µs

Stand-alone combination wave surge simulator. Including surge network, CDN and easy to use interface.

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, CWG 1525/1526-4/1526-10/1528 IO line CDNs, CWG 550/551/553 Connection impedances

CWG 1500

Surge 4.4 kV, 1.2/50 µs

Stand-alone combination wave surge simulator. Including Ringwave network and CDN.

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, CWG 1525/1526-4/1526-10/1528 IO line CDNs, CWG 550/551/553 Connection impedances

PG 01-2000

0.1/200µs 4 - 10kV

Stand-alone voltage pulse generator. Special requirements for VDE (FNN).

Optional Accessories: EMV Soft software, CWG 520/523/524 3-P CDNs, CWG 1525/1526-4/1526-10/1528 IO line CDNs, CWG 550/551/553 Connection impedances

VIS 1700

Voltage Dips/variation.

Stand-alone power line dips, interruptions, and variation system. Requires VIS 740 for dips.

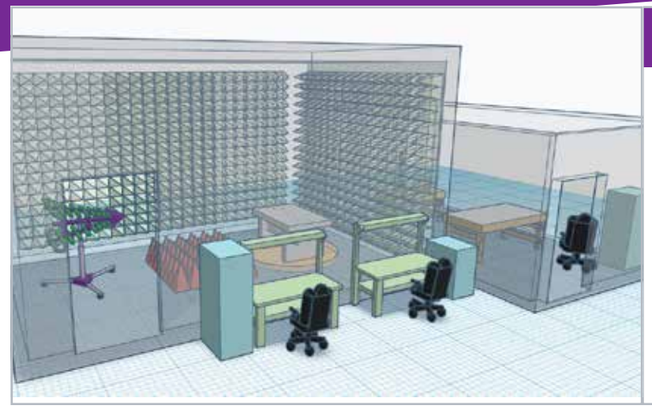
Optional Accessories: EMV Soft software, VIS 740 Dip Transformer

VIS 740

40%, 70%, 80% Transformer

Transformer for setting dip voltage. Connected to VIS 1700.

TURNKEY EMC SYSTEMS



TURNKEY RF SYSTEMS

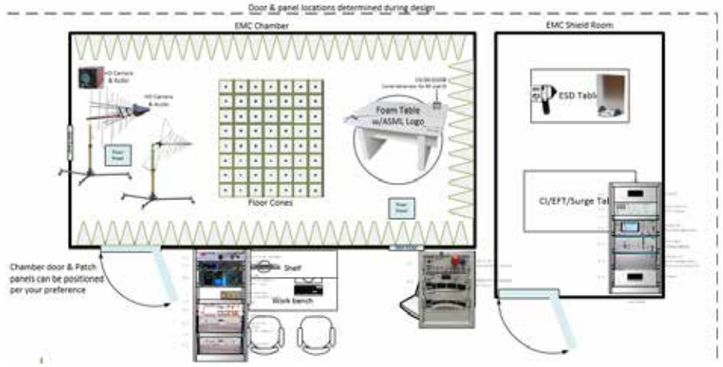
Emissions and Immunity

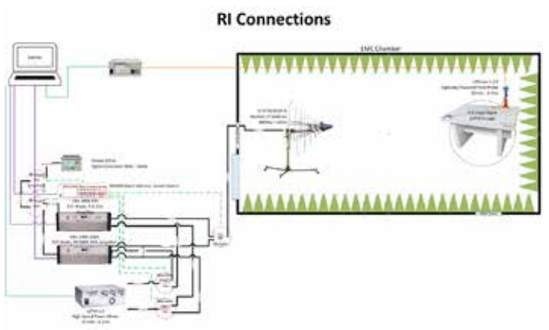
We offer all possible solutions from pre-compliance to full compliant test systems

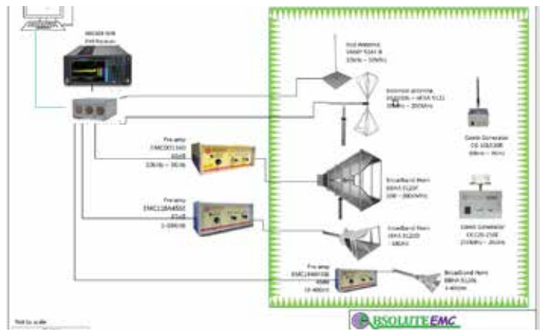
- Designed to fit your budget
- Meet your test standards requirements
- Integrate & use existing equipment
- Commercial IT, medical, Automotive, MIL, Avionics,....
- Detailed proposals, field/loss calculations, Diagrams, includes training and Installation
- Selection of Software and Hardware that fits each best the project

EXAMPLES OF SYSTEM DIAGRAMS

Pre-compliant System for CE/FCC Testing







System designs for:

- MIL-STD-461 200V/m, Full standard...
- Automotive:
  - ISO 11452-2 RI ASLE
  - ISO 11452-8 Magnetic Immunity
  - ISO 11452-4 Bulk Current Injection
  - ISO 11452-9 Immunity to close proximity transmitters
- IEC 61000-4-3, -4-21, ...
- CISPR 32 (EN55032), CISPR 14, CISPR 11...

CISPR SITE VALIDATION

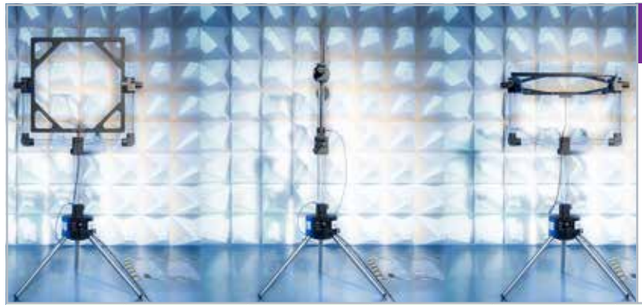
POD SET 1 - 18 GHZ

Site VSWR Dipoles & Positioner

The Precision Omni-directional Dipoles POD 16 and POD 618 are fully compliant to CISPR 16-1-4 for site validation above 1 GHz.

- **POD 16**: 1 GHz - 6 GHz, 3dB bw >65°
- **POD 618**: 6 GHz - 18 GHz, 3dB bw >60°
- Accredited calibration

Set #	POD 16 / 618	Site stand	Flight case	Antenna case	Software	Accredited Cal
MS4	Yes	Automatic	Yes	Yes	CalStan 11	Yes
MS1	Yes	Manual	Yes	Yes	CalStan 11	Yes
MS3	Yes	Manual	Yes	Yes	No	Yes
MS2	Yes	No	No	Yes	No	Yes



PLA SET 9 KHZ-30 MHZ

NSA Method

The PLA set consists of two active, battery powered loop antennas intended for site validation.

- Integrated tripod with laser alignment
- Very low noise floor
- Battery powered

Set #	PLA-T	PLA-R	Antenna Stand	PLA-TC	PLA-DC	Case	Software	Accredited Cal
MS5	Yes	Yes	Yes	Yes	Yes	Yes	CalStan 11 MNSA Module	Yes

REFRAD X COMB GENERATOR

- 10 kHz - 3 GHz (+LISN adapters RO5 (Inset picture)
- Three switchable frequency settings are available: 10 kHz, 1 MHz, and 5 MHz
- Accredited calibration
- GTEM/TEM correlation to OATS

Set #	RefRad X	Conical Antenna	20dB Att	Transport Case	Accredited Cal	Upgradeable
RR2	Yes	Yes	Yes	Yes	Yes	
RR1	Yes		Yes	Yes	Yes	Yes
RO1	Yes				Yes	Yes
RO5	LISN Adapters	RO5-400	RO5-230	RO5-DC		

REFRAD 18 REFERENCE RADIATOR

- 1 GHz - 18 GHz, 50 MHz (1–4 GHz), 100 MHz (4–8 GHz), 200 MHz (8–18 GHz)
- Accredited calibration
- HI & LO Output
- Direct Coax Connection or 1-18GHz radiator
- GTEM/TEM correlation to OATS

CALSTAN 11 SOFTWARE

- Site VSWR Validation per CISPR 16-1-4
- NSA (Normalized Site Attenuation):
- Semi-Anechoic Chambers (CISPR 16-1-4, ANSI C63.4, Site Reference Method, 9 kHz–1 GHz)
- Fully Anechoic Rooms (CISPR 16-1-4, Site Reference & NSA Method)
- Cable Loss Calibration in accordance with ISO 17025

FIELD PROBES

LSProbe 1.2 — 10 kHz- 8.2 GHz

Laser Powered RF Field Probe

Its standard frequency range is 10 kHz – 8.2 GHz. Best-in-class compensation of linearity, frequency and temperature guarantees accurate measurements from less than 0.1 to at least 1,000 V/m. A dynamic range of 100 dB is achieved for many frequencies, enabling field measurements at more than 10,000 V/m.

Variant	Description	
1.2 E, L1111	10 kHz to 8.2 GHz	1,000 V/m, Sampling 2MS/s
1.2 F, L1112	**10 Hz** to 8.2 GHz	1,000 V/m, Sampling 2MS/s
1.2 G, L1113	10 kHz to 8.2 GHz	**15,000 V/m**, Sampling 2MS/s
1.2 x	x kHz to x GHz	**30,000 V/m**, Sampling 2MS/s

LSProbe 2.0 — 9 kHz- 18 GHz

Laser Powered RF Field Probe — L1120

Its frequency range is 9 kHz to 18 GHz. The Field Probe's six-monopole antenna design ensures isotropic operation at all frequencies.
LSProbe 2.0 Field Probe employs fine-grained compensation of linearity, frequency and temperature, guaranteeing accurate measurements from less than 1 V/m to at least 1 kV/m. A dynamic range of 60 dB is achieved for all frequencies. The detectors can be operated continuously at 500 kSamples/s or in burst mode at 2 MS/s. This enables direct radar pulse measurements and accelerated, frequency sweep-based measurements.

CI250+ UPGRADE — L1005

The CI-250+ is equipped with a 4.3" touch screen and Ethernet interface. It runs the LUMILOOP TCP Server and a simplified GUI. CI-250+ has an internal power supply. Fiber optic connection as well as triggering and synchronization options are unchanged compared to a classic CI-250.
- Can be used to interface with 3 more CI-250

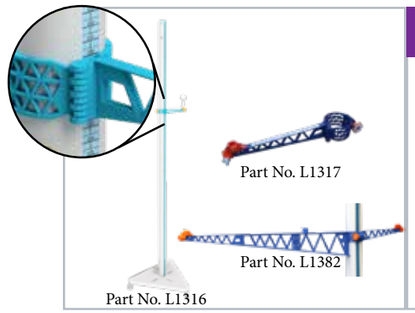
	Accessory	Part No.
	LSProbe 1.2 ISO 17025 Accredited Calibration 10 kHz to 6 GHz	L1201
	LSProbe 1.2 ISO 17025 Accredited Calibration 10 kHz to 8.2 GHz	L1202
	LSProbe Accredited Linearity Test	L1207
	Optical Fiber Extension Cable Xm	L1302(5m), L1303(10m), L1304(15m), L1305(20m), L1321(30m), L1322(50m), L1323(100m)
	Outdoor Optical Fiber Extension Cable XXm	L1334(20m), L1335(30m), L1336(50m), L1337(100m), L1338(200m), L1339(25m)

	Accessory	Part No.
	Cable Drum Small (<100m)	L1331
	Cable Drum Large (>100m)	L1332
	Flexible Probe Stand	L1306
	Sacrificial Cable Kit	L1314
	LSProbe 2.0 ISO 17025 Accredited Calibration 9 kHz to 18 GHz	L1320

FIBER CONNECTOR CLEANING KIT — L1319

- Optical Fiber microscope
- Lint-free cassette cleaner wipes
- Unfilled isotropy alcohol (IPA) pipette bottle
- Spare FC/ST dust caps and two E2000 locking caps

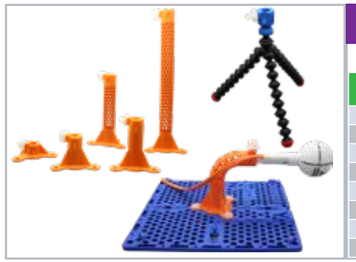
PROBE ACCESSORIES



FLOOR PROBE STAND

Optimized for IEC 61000–4-3 16 point field homogeneity

- The lightweight floor probe stand is metal-free, has very low absorption, and a height of 2.45m above ground.
- The probe can be adjusted variable at any angle in the height needed from 0.2 m – 2.53 m.
- A ruler shows the exact LSProbe height above ground. The floor probe stand has lockable swivel castors and base features slots for repeated alignment.
- The Floor Probe stand is equipped with a single probe holder. Additional Probe Mounting Bracket are available on demand.
- Additionally, the floor probe stand is optimized for IEC 61000–4-3 16 point field homogeneity validation.



TABLETOP PROBE STAND

Part #	Description
L1307	Base Plate
L1308	100mm Mounting Pole
L1309	125mm Mounting Pole
L1310	150mm Mounting Pole
L1311	200mm Mounting Pole
L1312	300mm Mounting Pole
L1326	77 mm, 90° Mounting Pole Ideal for 154 mm TEM Cell measurements
L1306	Flexible tripod probe-stand ~ 150 mm to 220 mm above surface

PROBE PACKAGES

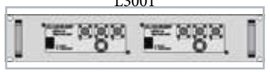
LSFrame Systems

LSFrame is LUMILOOP's solution for straight-forward and reliable integration of one or more LUMILOOP products in a LAN-controlled, standard 19-inch form factor appliance. Configurations are only limited by your imagination. 4, 8 , 10, up to 20 probe systems can be configured.

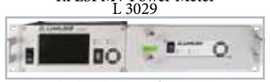
Part #	Description
L3101	4x Probes, LSProbe 1.2, Variant E
L3105	4x Probes, LSProbe 2.0
L3106	4x Probes, LSProbe 1.2, Variant E, CI250+
L3108	4x Probes, LSProbe 2.0, CI250+
L3103	8x Probes, LSProbe 1.2, Variant E
L3107	8x Probes, LSProbe 2.0

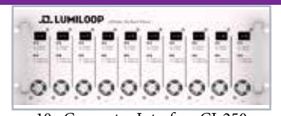
RACKMOUNT ACCESORIES

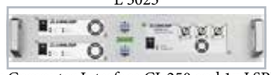

LSFrame 1.0 Product Integration Frame Basic
L3001

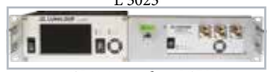

2x LSPM Power Meter
L 3025


1x LSPM+ Power Meter
L 3029


1x CI-250+ and CI-250
L 3027


10x Computer Interface CI-250
L 3023


2x Computer Interface CI-250 and 1x LSPM
L 3023


1xCI-250+ and 1x LSPM
L 3028


1x CI-250+ with blind panel
L 3026


2x Computer Interface CI-250
L 3022


10x E2000 Coupler
L3021


19" Case for Product Integration
L 3011

POWER METERS

LSPM 1.0 POWER METER

9kHz - 6 GHz (usable to 12 GHz) **Up to 3 channels**

High-Speed Power Meter is high-speed, high accuracy, and high dynamic range RF Power Meter. Compensation of linearity, frequency, and a dynamic range of 90dB is achieved for many frequencies.

Part #	Description
L2101	LSPM 1.0 Power Meter (9 kHz - 6 GHz), Single-Channel
L2102	LSPM 1.0 Power Meter (9 kHz - 6 GHz), Dual Channel
L2103	LSPM 1.0 Power Meter (9 kHz - 6 GHz), Triple-Channel

Option for rear connectors

LSPM 1.0+ POWER METER

9kHz - 6 GHz (usable to 12 GHz) **Up to 3 channels**

High-Speed Power Meter is high-speed, high accuracy, and high dynamic range RF Power Meter. Compensation of linearity, frequency, and a dynamic range of 90dB. **4.3" touchscreen and Ethernet Interface**

Part #	Description
L2104	LSPM 1.0+ Power Meter (9 kHz - 6 GHz), Single-Channel
L2105	LSPM 1.0+ Power Meter (9 kHz - 6 GHz), Dual Channel
L2106	LSPM 1.0+ Power Meter (9 kHz - 6 GHz), Triple-Channel

Option for rear connectors

LSPM 2.0 POWER METER

9kHz - 26.5 GHz **Up to 3 channels**

High-Speed Power Meter is high-speed, high accuracy, and high dynamic range RF Power Meter. Compensation of linearity, frequency, and a dynamic range of 80dB is achieved for many frequencies.

Part #	Description
L2111	LSPM 2.0 Power Meter (9 kHz - 26.5 GHz), Single-Channel
L2112	LSPM 2.0 Power Meter (9 kHz - 26.5 GHz), Dual Channel
L2113	LSPM 2.0 Power Meter (9 kHz - 26.5 GHz), Triple-Channel

Option for rear connectors

LSPM 2.0+ POWER METER

9kHz - 26.5 GHz **Up to 3 channels**

High-Speed Power Meter is high-speed, high accuracy, and high dynamic range RF Power Meter. Compensation of linearity, frequency, and a dynamic range of 80dB. **4.3" touchscreen and Ethernet Interface**

Part #	Description
L2114	LSPM 2.0+ Power Meter (9 kHz - 26.5 GHz), Single-Channel
L2115	LSPM 2.0+ Power Meter (9 kHz - 26.5 GHz), Dual Channel
L2116	LSPM 2.0+ Power Meter (9 kHz - 26.5 GHz), Triple-Channel

Option for rear connectors

	Accessory		Part No.
	LSPM 1.0/1.1 ISO 17025 Accredited Calibration (9 kHz - 8.2 GHz)		L2201(single), L2202(Duel), L2203(Triple)
	LSPM 2.0/2.1 ISO 17025 Accredited Calibration (9 kHz - 26.5 GHz)		L2211(single), L2212(Duel), L2213(Triple)
	LSPM Accredited Calibration, Additional DaKKs Certificate		L2204

LASER POWERED PM

LSPM 1.1 POWER METER

9kHz - 6 GHz (usable to 12 GHz) **Up to 3 channels**

The LSPM 1.1 Power Meters are laser-powered, three channel, high speed, high accuracy and high dynamic range RF Power Meters. Single and dual channel versions are available as well.

Part #	Description
L2107	LSPM 1.1 Power Meter (9 kHz - 6 GHz), Single-Channel
L2108	LSPM 1.1 Power Meter (9 kHz - 6 GHz), Dual Channel
L2109	LSPM 1.1 Power Meter (9 kHz - 6 GHz), Triple-Channel

LSPM 2.1 POWER METER

9kHz - 26.5GHz **Up to 3 channels**

The LSPM 1.1 Power Meters are laser-powered, three channel, high speed, high accuracy and high dynamic range RF Power Meters. Single and dual channel versions are available as well.

Part #	Description
L2117	LSPM 2.1 Power Meter (9 kHz - 26.5 GHz), Single-Channel
L2118	LSPM 2.1 Power Meter (9 kHz - 26.5 GHz), Dual Channel
L2119	LSPM 2.1 Power Meter (9 kHz - 26.5 GHz), Triple-Channel

CI250+ UPGRADE L1005

The CI-250+ is equipped with a 4.3" touch screen and Ethernet interface. It runs the LUMILOOP TCP Server and a simplified GUI. CI-250+ has an internal power supply. Fiber optic connection as well as triggering and synchronization options are unchanged compared to a classic CI-250.
- Can be used to interface with 3 more CI-250

LSAOL RF Link 9 kHz - 6 GHz

Laser powered link

Great solution for RE measurements to remove any coax cable losses. High dynamic range of > 80dB. Integrated 2W power source for powering an extremal Pre-amp.

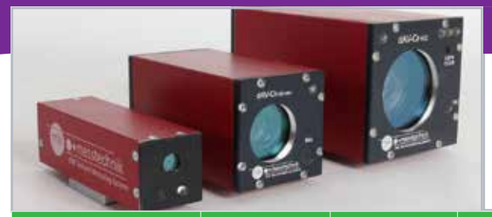
Model	Description
LSAOL 1.0	Laser Powered RF Link, 9kHz - 6GHz w/5-12VDC 2W power source
LSAOL 1.1	Laser Powered RF Link, 9kHz - 6GHz

LSMux - RF Multiplexer

Switch Matrix 12:2 or 36:4 **10 Watts**

LSMux 1.0 RF Multiplexers are relay-based signal switches available as 12:2 and 36:4 models, supporting the switching of 12 or 36 RF inputs to two or four RF outputs. The multiplexers are qualified up to 6 GHz with higher frequency options available upon request.

FIBER-OPTIC CAMERAS



dAV-Cr-HD — CAMERA

Fiber-optic, EMC Hardened HD Camera

The dAV-Cr-HD cameras are designed using the latest state of the art technology to build a high quality robust camera. Only 1 fiber is used for video and communication, making setup easy and hassle free. Each camera also has audio microphone as standard. Battery pack is housed separately to keep camera small.

Model	Description	Zoom	Optical	Sensor	Resolution	Lux	Mic	Power
dAV-Cr-HD-µ	micro size	0x	16x	1/2.45"	1920x1080	6	Yes	Battery/AC
dAV-Cr-HD-mini	Medium size	10x		1/3"	1920x1080	0.5	Yes	Battery/AC
dAV-Cr-HD	Full featured	10, 20, or 30x	32x	1/2.8"	1920x1080	0.5	Yes	Battery/AC
dAV-Cr-4K	Full featured	18x	12x	1/1.8" CMOS	3840x2160p30		Yes	Battery/AC

Optional: -HiRF further hardened for higher fields then 300V/m, 30x zoom for HD, Pan/tilt, ED-43 hand held external display, mounting...

MK-MOTION

Motion Detection Software

The mk-motion analyses video images of a test object to detect deviations between target and actual behavior. The mk-motion motion detection software is thus an optimal support for your EMC technician in his daily requirements.

- Video capture has a high bandwidth demand and requires a powerful work station
- Basic license up to **4** image areas; Upgraded license up to **16** image areas can be monitored
- Options: Triggered Recording, OCR of text and numbers, Streaming to the network

PT-02/03 — PAN/TILT

Fiber-optic Controlled Pan/Tilt

The same fiber that controls the camera will control the PT-02/03. Positioning stops can be set with buttons on the unit.

Model	Description
PT-02	Chamber wall mount when it is not handled frequently
PT-03	Rugged for mobile use on tripod and in vehicle

OPTO-LWIR — INFRARED

Infrared Camera System

The infrared camera opto-LWIR was developed specifically for EMC tests. In high field strengths with directional antennas (fire protection), an overload of the DUT or the absorbers can be detected early.

The opto-LWIR camera is built into a closed aluminum housing which is also available in an IP 44 version (suitable for OATS). The IR picture of the DUT is transmitted with max. 60 fps in a measuring range of -20° C to +150° C. The temperature deviation is less than +/- 2.5° C. Optics and resolution (640x480 and 384x288 resp.) are customized. The transmission of the receiver to the PC is via an USB 3.0 interface (IR data) and ethernet (temperature sensors and camera control).

CAMERA MOUNTING OPTIONS

Each Application is Unique

Offering standard and custom solutions to match any application.

Model	Description
Monopod-wood	Floor standing, easy install, quick release clamps
Tripod-mini	Small tripod for bench-top use
Tripod-170	Classic tripod for mobile use, wheels optional
Wallmounts	Permanent mounting to chamber wall/ceiling
Seatbox	Sits on seat to monitor dashboard
Headrest mount	Locks to head rest to view dashboard

dAV-Rr-HD — RECEIVER

Video Audio Receiver — Up To 4 or 8 Channels

The basic version of the dAV receivers is the dAV-Rr which has an integrated loudspeaker with adjustable volume, an output for stereo transmission, and HDMI and BNC connectors for Video OUT.

Model	Description
dAV-Rr-HD-TT	Table-top housing 1-4 or 1-8 channels
dAV-Rr-HD-19"	Rack-mount housing 1-8 channels
dAV-R	Single channel receive (no camera control)

dAV-Rmrr 19" — SWITCH MATRIX

Video Audio Receiver — Up To 20 or 40 Channels

A 20x20 OR 40x40 A/V switch matrix with LC-display, as well as two loudspeakers are integrated by default. With the remote control at the front of the receiver, you can control the functions of the camera and move the pan/tilt unit.

Model	Description
dAV-Rmrr 19" 20	Rack-mount 20 channels
dAV-Rmrr 19" 40	Rack-mount 40 channels

RECEIVER ADD ONS

Quad-combiner, HD Recording, +options

Model	Description
-dAV Quad 4k	Combines 4 HD channels into a 4k output
-dAV HDrec	HD recorder of one or multiple channels
-dAV-R options -ccs	Software control w/ pan-tilt-zoom (USB)
-dAV-R options ethernet	pan-tilt-zoom over network
-dAV-R option -osd	Allow 3rd party software to output to screen (freq,test#,...)
-dAV-R option -stream	Allow stream software onto network and take snap shots

dAV-Rrc-Joy — JOYSTICK

Bench-top Joystick Pan/Tilt/Zoom Control

Extends the function of the receiver to an easier to use desktop panel. It connects and is powdered by the receiver. A software program is also available for PC control.

Model	Description
dAV-Rrc-Joy	Control up to 8 cameras w/ pan-tilt-zoom
dAV-Rrc-Joy-matrix	Control up to 16 cameras w/ pan-tilt-zoom

dAV-TRX — INTERCOM

Bidirectional Audio Intercom System

The dAV-TRX system is used for the bidirectional optical transmission of AV signals at EMC tests (intercom). The dAV-TRX transceivers have an integrated microphone, a connector for an external microphone, and for an external (passive) loudspeaker (optional).

AUTOMOTIVE LINKS

ETHERNET LINKS T1

Automotive Ethernet T1

There are many chip-sets and technologies used for different automotive manufacturers. These chips sets all have their little differences and many times having the right chip-set matters for constant data transfer.
Many choose to use the known chip-set for this reason.

- Rosenberger HSD connectors for robust EMC
  - Other options available
- Conversion networks to standards
- Each unit is battery powered (internal)
- Options for different cables/connections
- Options for rack-mount and multiple channels

Model	Type	Chip-set	Connector
optoLAN 100Base-T1 88Q1010	100Base-T1	Marvell® 88Q1010	Rosenberger HSD
optoLAN 100/1000Base-T1 88Q2112	1GBase-T1 & 100BaseT1	Marvell® 88Q2112	Rosenberger HSD
optoLAN 100/1000Base-T1 89887	1GBase-T1 & 100BaseT1	Broadcom© BCM89887©	Rosenberger HSD
optoLAN 100Base-T1 BCM89811	100Base-T1	Broadcom© BCM89811©	Rosenberger HSD
optoLAN 100Base-T1 BCM89811-88Q1010	100Base-T1	88Q1010® & BCM89811©	Rosenberger HSD
optoLAN 100Base-T1 TJA1100-MAX	100Base-T1	NXP© TJA1100©	Rosenberger HSD
-BroadR-Reach media converter HSD	100Base-T1	Converter	Rosenberger HSD
-BroadR-Reach GB media converter HSD	1GBase-T1	Converter	Rosenberger HSD

Compatible

Note: new chip-sets are always being implemented with the changing technologies. Please contact us for your needs.

optoLVDS LINKS

Low Voltage Differential Signaling

optoLVDS is a specialized solution for each application. We can develop and work with you to to match each requirement. This process is streamlined and simple, please contact us.

optoSENT LINKS

Asynchrony SENT Signals 8 Bit, 20 MS/s

The optoSENT system was developed for the transmission of asynchronous SENT signals (Single Edge Nibble Transfer) and exists in two different versions. Options: -o2 = second channel, -2-d bidirectional

optoSPI LINKS

SPI Signals 1Mbit/s

The optoSPI-HS system can be used for the bidirectional optical transmission of SPI signals with transmission rates of up to 1Mbit/s. It consists of two battery supplied transceivers connected to each other with an optical fiber.

optoCAN LINKS

Automotive CAN Bus

The optoCAN system can be used for the bidirectional optical transmission of CAN-signals with transmission rates of up to 10 Mbit/s (model dependent). It consists of two identical battery supplied transceivers connected to each other with an optical fiber.

- FD/HD/LS/SW to meet your needs
- Additional Links Flexray/K-line/LN
- 2x Battery powered transceivers
- Small compact
- Each unit is battery powered
- Optional: rack housing for outside the chamber for up to 8 different or same links

Model	Type	Speed	Connector	Notes
optoCAN-FD	Flexable Data	10 Mbits/s	Sub D9 (f)	Compatible with CAN-HS
optoCAN-FD-mini	Flexable Data	10 Mbits/s	Sub D9 (f)	Smaller housing for less space
optoCAN-FD-5x	Flexable Data	10 Mbits/s	Sub D9 (f) x5	Combine 5 transponders in 1 housing
optoCAN-HS	High Speed	1 Mbits/s	Sub D9 (f)	
optoCAN-LS	Low Speed	125 kbit/s	Sub D9 (f)	
optoCAN-SW	Single Wire	83 lbit/s	Sub D9 (f)	
optoFlex	Flexray Signals	10 Mbits/s	Sub D9 (f)	
optoK	L-Line Signals	30 kbit/s	Sub D9 (f)	
optoLIN	LIN Signals	20 kbit/s	Sub D9 (f)	

opto ChargeCom

CCS, CHAdeMO, GB/T Signals

Control Pilot (PLC), CAN, low-level signals, additional signals (e.g. temperature monitoring and connection/inlet lock signal)
- Bidirectional

optoPSI5 LINKS

PSI5 Signals 50MS/s

The optoPSI5 system can be used for the bidirectional optical transmission of PSI5-signals with transmission rates of up to 50 MS/s. It consists of a transceiver, supplied by batteries, for the connection of a sensor, a simplex-62,5/125µm-multimode optical cable, and a receiver.

optoA2B LINKS

A2B Signals

The optoA2B can be used for the optical transmission of A2B signals. It consists of master and slave which are supplied by internal batteries and which are connected with an optical fiber.

Fiber Link Options

- 5 cell external power pack (4Ah or 10Ah) for run time enhancement
- Various adapter cables and customized solutions
- Push pull charge plug (=> save setup time), becoming standard
- Integrated media converter setup (T1 to Tx)
- Stand alone T1 to Tx media converter
- 19” rack mount solution with up to 13 different optical transceivers
- ST or FC fiber plug
- 3 independent channels in one housing (optoLAN-3xBCM89811) => save cost, time and space in test setup

ANALOG/DIGITAL LINKS

ANALOG LINKS

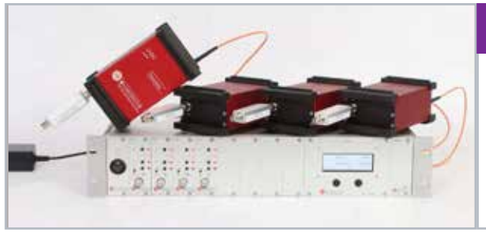
Analog Voltage Signals

The Ux/xx series of analog links can be used for many applications where a voltage signal is needed to be monitored over long distances or in a high electromagnetic environment such as EMC testing.
Filtering is used to maintain good signal quality without EMC effects.

See Page 17 for More Options

Model	No. of Channels	Voltage	Bit	Speed	Connector
U-DC	1 Channel Tx, Multi channel Rx rack-mt	+/-60V input; +/- 6V or +/-12V output	16 bit	40 samples/s	BNC
U1/8	1 Channel	±5 V*	8 Bit	DC - 50 MHz	BNC
U1/12	1 Channel	±15 V*	10 Bit	DC - 10 MHz	BNC
U1/12-1M	1 Channel	±15 V*	10 Bit	DC - 1 MHz	BNC
U2/12	2 Channels	±15 V*	10 Bit	DC - 10 MHz	BNC
U2/12-1M	2 Channels	±15 V*	10 Bit	DC - 1 MHz	BNC
U8/12-1M	8 Channels	±15 V*	10 Bit	DC - 1 MHz	BNC
Ux/14	1-16 Channels	±15 V*	10 Bit	DC - 100 kHz	BNC or SUB-D

*Optional: -Voltage input range can be extended 2:1, 3:1, 5:1, and 10:1 with optional input dividers. Others on request.



U-DC

DC Measurement

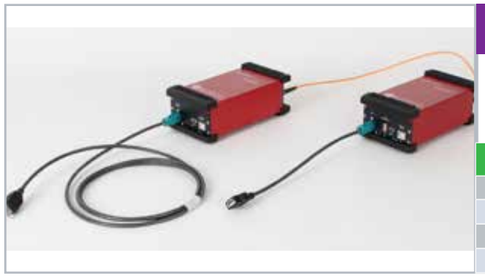
Single Channel remote box 40 Sample/sec
Rack mount receiver with voltage read out, RS232, USB, GPIB
- Up-to 8 channels can be fitted
- Calibrated and designed for direct read of DC voltage.
- Best solution when one needs to read multiple DC readings, otherwise the Ux/14 should be selected

optoTTL LINKS

TTL signal — 40 MS/s

The optoTTL is used for the optical transmission of TTL (Transistor-Transistor Logic) digital signals. Up to 16 digital signals with a sampling rate of 40 MS/s (each channel) can be transmitted.

Model	Description
optoTTL-5-2-u	16 TTL Channels, 3.5 V or 5 V, 100 kHz
optoTTL-12-5-u	16 TTL Channels, 5 V or 12 V, 100 kHz
optoTTL-b-12	16 TTL bi directional Channels, 12 V, 100 kHz



optoUSB / opto1394

High Speed Data — USB 2.0 / 3.0 / IEEE 1394

The two identical transceivers are supplied by internal batteries and connected with an optical fiber.

Model	Description
optoUSB2.0	USB 2.0, 480 MBits/s, 4x USB-A
optoUSB2.0 -RBDIR	USB 2.0, 480 MBits/s, USB adaption, EMI robust
optoUSB3.0	USB 3.0, 5 Gbit/s, not backwards compatible
opto1394	FireWire IEEE 1394, 400 MBits/s, IEEE 1394 connect

optoLAN ETHERNET

Ethernet — 10/100/1000BaseT

The two identical transceivers are supplied by internal batteries and connected with an optical fiber.

Model	Description
optoLAN 100/1000Base-TX	1GBit, 100BaseT, 10BaseT Ethernet, RJ45
optoLAN-100-MAX	100BaseT Ethernet, RJ45
optoLAN-Gb	1GBit, 100BaseT, 10BaseT Ethernet, RJ45

optoRS SERIAL

Serial Interface — RS232 / RS485

The two identical transceivers are supplied by internal batteries and connected with an optical fiber.

Model	Description
optoRS232-HS	RS232 Signals, 116Bits/s
optoRS485	RS485 Signals, 1Mbit/s
optoUART	UART Signals, 1 Mbit/s
optoRS422	RS422 signals, 1 Mbit/s
optoGPIB	GPIB connector (IEEE 488.1)

dAV-x LINKS

Audio/Video Signal Transmission

Model	Description
dAV-a	Digital Audio Unidirectional Link Mono
dAV-b	Digital Audio Bidirectional Link Mono
dAV-v	Digital Video NTSC/PAL Unidirectional Link
dAV-TRX	Chamber Intercom System Mono
opto TMDS-AV	HDMI signals, resolution of up to 2160p30

EMC HARDENED DC SUPPLIES

Power supplies are built to order, many options and configurations are available to meet your needs. The below are just examples. We have a questionnaire to help us narrow down you needs.

BV-10D/12D

+10V DC & -10V DC (10D)
+12V DC & -12V DC (12D)
Regulated, 200mA

BV-12S

+12V DC
Unregulated, 1A

BV-15S

3 to 15V DC
Regulated, 500mA

BV24S

+24V DC
Unregulated, 3A

Note: Many options available for power supplies. Please contact us for your needs

ANTENNA MAST

COMPACT ANTENNA MAST CAM

Polarization: Pneumatic

Model	Description
CAM 4.0-P	1-4 m, 4.5m Mast Height, 8 kg Load
CAM 4.0-P-12kg	1-4 m, 4.5m Mast Height,, 12 kg Load
CAM 6.0-P-12kg	1-6 m 6.5m Mast Height,, 12 kg Load

ANTENNA MAST AM

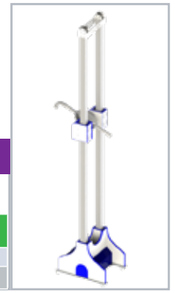
Polarization: Electronic

Model	Description
AM 4.0	1-4 m, 4.6m Mast Height, 10 kg Load
AM 4.0-O	1-4 m, 4.6m Mast Height, 10 kg Load, for OATS (outside)
AM 6.0	1-6 m, 6.6m Mast Height, 10 kg Load

BORE-SIGHT ANTENNA MAST BAM

Polarization: Pneumatic or Electronic

Model	Description
BAM 4.0-P/E	1-4 m, 4.5m Mast Height, 8 kg Load
BAM 4.5-P/E	1-4.5 m, 5m Mast Height,, 12 kg Load



TILT ANTENNA MAST TAM

Polarization: Pneumatic or Electronic

Model	Description
TAM 4.0-E	1-4 m, 4.6m Mast Height, 20 kg Load, Electronic
TAM 4.0-P	1-4 m, 4.6m Mast Height, 20 kg Load, Pneumatic

DUEL ANTENNA MAST DAM

Polarization: Pneumatic or Electronic

Model	Description
DAM 4.0-P	1-4 m, 4.6m Mast Height, 20 kg Load, Pneumatic
DAM 4.0-E	1-4 m, 4.6m Mast Height,, 20 kg Load, Electronic
DAM 6.0-O	1-6 m, 6.6m Mast Height,, 20 kg Load, Electronic

MANUAL ANTENNA Stand MAS

Polarization: Manual

Model	Description
MAS 2.0	0.7-2.0 m, 2.2m Mast Height, 6 kg Load, Manual
MAS 2.0-10kg	0.7-2.0 m, 2.2m Mast Height, 10 kg Load, Manual
MAS 4.0-C	1-4 m, 4.3m Mast Height, 6 kg Load, Manual
MAS 3162-01	1-1.5 m, designed for ETS (EMCO) 3162-01
MAP 2.5-T	0.3-2.5 m, 2.75m Mast Height, 6 kg Load, Manual tilt

PNEUMATIC ANTENNA STD. PAS/ASP

Polarization: Pneumatic

Model	Description
PAS 2.0	0.2-2 m, 2.2m Mast Height, 6 kg Load, Pneumatic polarization
PAS 2.0-10kg	0.2-2 m, 2.2m Mast Height, 10 kg Load, Pneumatic polarization
ASP 1.0/1.8-15kg	1-1.8 m, 1.9m Mast Height, 10 kg Load, Pneumatic polarization

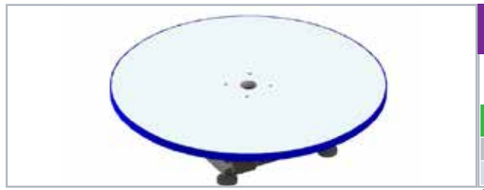
ELECTRICAL ANTENNA STAND EAS

Polarization: Electronic

Model	Description
EAS 1.5	1.5 m, 1.6m Mast Height, 6 kg Load
EAS 1.5-10kg	1.5 m, 1.6m Mast Height, 10 kg Load
EAS 1.0/2.0	1-2 m, 2.4m Mast Height, 6 kg Load
EAS 365-15kg	0.7-1.7 m, 2.2m Mast Height, 15 kg Load

*Customization and variations are always possible.

TURN TABLES



Free Standing PF

Top: integral skin-foam sheets

Model	Description
TT 0.3PF	0.3 Dia., 19cm H, 50kg load
TT 0.8PF	0.8 Dia., 19cm H, 100kg load

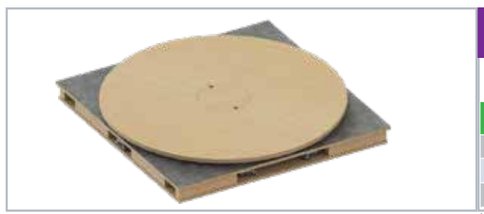
*Customization and variations are always possible.

Free Standing WF

Top: waterproof, laminated and lacquered wood

Model	Description
TT 1.2WF	1.2 Dia., 14cm H, 300kg load
TT 1.5WF	1.5 Dia., 14cm H, 500kg load
TT 2.0WF	2.0 Dia., 14cm H, 500kg load

*Customization and variations are always possible.

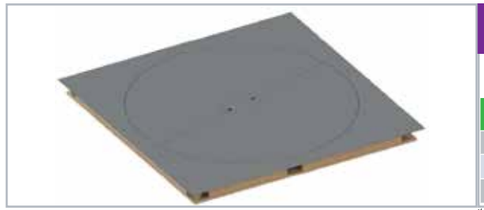


Integration with Floor

Top: waterproof, laminated and lacquered wood

Model	Description
TT 1.2WI	1.2 Dia., 166mm (118mm @ GP) H, 500kg load
TT 1.5WI	1.5 Dia., 166mm (118mm @ GP) H, 500kg load
TT 2.0WI	2.0 Dia., 166mm (118mm @ GP) H, 500kg load

*Customization and variations are always possible.

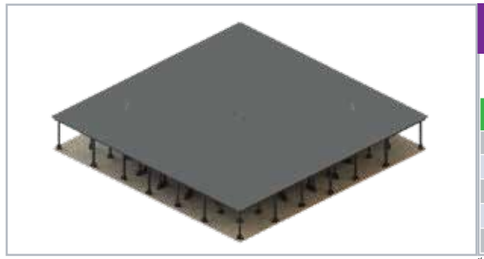


Flush mount with Floor SI

Top: stainless steel

Model	Description
TT 1.2SI	1.2 Dia., 13cm H, 500kg load
TT 1.5SI	1.5 Dia., 13cm H, 500kg load
TT 2.0SI	2.0 Dia., 13cm H, 1000kg load

*Customization and variations are always possible.



HEAVY DUTY TURNTABLES

Top: stainless steel

Model	Description
TT 3.0-3t	3.0 Dia., 40cm H, 3000kg load
TT 4.0-4t	4.0 Dia., 50cm H, 4000kg load
TT 5.0-5t	5.0 Dia., 60cm H, 5000kg load
TT 6.0-10t	6.0 Dia., 80cm H, 10,000kg load
TT 8.0-10t	8.0 Dia., 100cm H, 10,000kg load

*Customization and variations are always possible.

TURNTABLE OPTIONS

- Integrated energy chain
- Integrated slip rings (rotary joints) for continuous rotation
- Integrated exhaust extraction system
- Integrated cooling fan system
- Vehicle charging possibility
- Maintenance hatch
- Higher positioning accuracy
- Open Area designs
- Integrated Dynamo-meter

OTA / CTIA POSITIONING

KE 2.5-R

Tilt Device for radiation measurements on EUTs at horizontal turning axis. Different types of devices can be mounted onto the plate. Clamping bolts are integrated on the tilting plate which allows the fixing and adjustment of cables.

TD 1.5-2KG

For radiation measurements on EUTs, especially mobile phones, with horizontal turning axis.

TD 1.5-10KG

For radiation measurements on EUT, especially mobile phones mounted on a phantom head or laptops, with horizontal turning axis.

OTAP

Over-The-Air Positioner with vertical and horizontal rotation for 3D measurement on handheld wireless devices, mainly mobile phones.
Smooth and independent rotation of test objects in both azimuth and elevation axes.
Different sizes and specifications available

EAP

Electrical Antenna Positioner for high accurate antenna measurement capabilities in both near- field and far-field data acquisition.
Different sizes and specifications available

APL

3-Axes azimuth, polarization and linear positioner
Spherical Great-Circle Cut system for high accurate antenna measurement capabilities for both, near-field and far-field data acquisition, which has 5G NR FR1 / FR2 OTA testing capabilities.
Ideal for Antenna-Under-Test (AUT) like satellite dishes or massive MIMO base station-antennas.

APTL

4-Axis azimuth, polarization, tilt and linear positioner
Spherical Great-Circle Cut system for high accurate antenna measurement capabilities for both, near-field and far-field data acquisition, which has 5G NR FR1 / FR2 OTA testing capabilities.
Ideal for Antenna-Under-Test (AUT) like satellite dishes or massive MIMO base station-antennas
Different sizes and specifications available

APTL & EAP

Combination of a 4-Axes DUT and an antenna positioner.
Spherical Great-Circle Cut system for high accurate antenna measurement capabilities for both, near-field and far-field data acquisition, which has 5G NR FR1 / FR2 OTA testing capabilities.
Ideal for Antenna-Under-Test (AUT) like satellite dishes or massive MIMO base station-antennas
Different sizes and specifications available

SG & TT SYSTEM

High-Precision Spherical Gantry and Turntable
Spherical Great-Circle Cut system for high accurate antenna measurement capabilities for both, near-field and far-field data acquisition, which has 5G NR FR1 / FR2 OTA testing capabilities.
Ideal for Antenna-Under-Test e.g. installed in vehicles
Different sizes and specifications available

LINEAR POSITIONERS

CGR 5.4 & CGR 6.0

The Cable Guide Rails is used for the remotely-controlled positioning of an absorbing clamp along an electric cable. Automatic measurements of the RFI power according to CISPR, EN, ANSI, VCCI and VDE standards are possible.

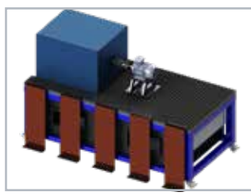
FPP 2.3/1.5

Biaxial Positioner for remote-controlled measurements at defined vertical areas. The system allows automatic measurements of the field homogeneity according to EN61000-4-3 and IEC61000-4-3.

FPP 2.3 M

Manual height adjustment of Sensors.
Other heights and load capabilities available on request.

DYNAMOMETERS



BAVARIAN ENGINE SYSTEM TESTER

BEST 50 & BEST 60

Mobile test stand for installation in electromagnetic absorption chambers in combination with a CISPR test table for component testing according to DIN EN 55025:2018-03 (CISPR 25:2016 + COR1:2017).
- T-slot table surface for easy mounting of the test motor with a working surface of approx. 1.2 m x 1.2 m
- Different adaption sizes available on request
- No gear between loading and test motor

INTEGRATED DYNAMOMETER INTO TURNTABLE

Deigned for your needs up-to 150km/h, 15tons, 2g, 4WD/2WD

For use in anechoic chambers for EMI and EMC measurements
Active axles or free-running rollers, for cars with rear /front - or all wheel drive
Different versions available

FREE-STANDING DYNAMOMETER

Deigned for your needs up-to 120km/h, 5tons, 2g, 4WD/2WD, E-Bike

For use in anechoic chambers for EMI and EMC measurements
Active axles or free-running rollers, for cars with rear /front - or four wheel drive
Independently controllable roller pairs
Different versions available **E-Bike Dyno Available**

CONTROLLERS

NCD$^{V2.0}$

up to 8 devices
GPIB/Ethernet

FCU$^{3.0}$

upt to 4 devices
Ethernet, HSU$^{3.0}$, USBdongle, mcAPP

FCU3.0-S

1 device 2 axis
Ethernet, HSU$^{3.0}$, USBdongle, mcAPP

FCU3.0-S-LITE

1 device 1 axis
Ethernet, HSU$^{3.0}$, USBdongle, mcAPP^{lt}

GTEM CELLS




Model	GTEM 250 F	GTEM 450 / 550 F	GTEM 800	GTEM 1100
General Specs				
Frequency Range	DC - 20 GHz	0.01 - 20 GHz	0.01 - 20 GHz	0.01 - 20 GHz
Septum Height	250 mm,	450 / 550 mm,	800 mm	1100 mm
Vertical Orientation	Optional	Optional	Optional	Optional
Max EUT Size	20 x 20 x 15 cm	35×40×25 / 41x41x30 cm	62 x 62 x 50 cm	75 x 75 x 55 cm
6dB test Volume	8.3 x 8.3 x 8.3 cm	15x15x15 / 18x18x18 cm	26.5 x 26.5 x 26.5 cm	36.5 x 36.5 x 36.5 cm
Typical VSWR	1 : 1.2	1 : 1.2	1 : 1.2	1 : 1.2
VSWR @ Critical Freq.	≤1 : 1.6	≤1 : 1.6	≤1 : 1.6	≤1 : 1.6
Max Input Power	1 kW, (2.5 kW Pulsed)	1 kW, (2.5 kW Pulsed)	1 kW, (2.5 kW Pulsed)	1.5 kW, (2.5 kW Pulsed)
Input Connector	N or 7/16DIN*	N or 7/16DIN*	N or 7/16DIN*	N or 7/16DIN*
Nominal Impedance	50 Ω	50 Ω	50 Ω	50 Ω
Mechanical Specs:				
Window In Door	24 x 14 cm	20 cm Diameter	20 cm Diameter	20 cm Diameter
Outer Dim. LxWxH	125 x 64 x 44 cm	238 x 122 x 83 cm	400 x 220 x 150 cm	500 x 271 x 188 cm
Wheels Trolley	Option	+70 cm	+25 std., +70 cm opt.	+25 cm
Assembly Time	Shipped assembled	Shipped assembled or Kit - 2 days	Shipped assembled or Kit - 3 days	Kit - 3 days
Door Dim. WxH	30 x 20 cm	40 x 40 cm	60 x 60 cm	80 x 80 cm
Weight	~40 kg	~250 kg	~500 kg	~650 kg
Electrical Specs:				
Mains Connector	Fixed CEE (US opt.)	Fixed CEE (US opt.)	Fixed CEE (US opt.)	Fixed CEE (US opt.)
Mains Switch	16A Magneto-thermal	16A Magneto-thermal	16A Magneto-thermal	16A Magneto-thermal
Output Socket (EUT)	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.
Ground Connection	M6 bolt	M6 bolt	M6 bolt	M6 bolt
DC Filter	10A/250V, 2 wire	10A/250V, 2 wire	10A/250V, 2 wire	10A/250V, 2 wire
Channel For Fiber Leads	3 fibers	3 fibers	3 fibers	3 fibers
RF Feed-thru	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f
Absorber				
Standard	Ferrite + RAM	Ferrite + 35cm RAM	51cm EMC Truncated	55cm EMC Truncated
Similar Models		GTEM 400, 450, 500F	GTEM 750, 800F	GTEM 1000, 1100F

*7/16 DIN limits upper frequency range to 7.5 GHz





GTEM 1300	GTEM 1600	GTEM 1800	GTEM 2100	GTEM 2600
DC - 20 GHz	DC - 20 GHz	0.01 - 20 GHz	0.01 - 20 GHz	0.01 - 20 GHz
1300 mm	1600 mm	1800 mm	2100 mm	2600 mm
NA	NA	NA	NA	NA
95 x 95 x 80 cm	110 x 110 x 80 cm	132 x 132 x 100 cm	155 x 155 x 100 cm	200 x 160 x 100 cm
43 x 43 x 43 cm	53 x 53 x 53 cm	58 x 58 x 58 cm	63 x 63 x 63 cm	87 x 87 x 87 cm
1 : 1.2	1 : 1.2	1 : 1.2	1 : 1.2	1 : 1.2
≤1 : 1.6	≤1 : 1.6	≤1 : 1.6	≤1 : 1.6	≤1 : 1.6
1.5 kW, (2.5 kW Pulsed)	1.5 kW, (2.5 kW Pulsed)	1.5 kW, (2.5 kW Pulsed)	1.5 kW, (2.5 kW Pulsed)	1.5 kW, (2.5 kW Pulsed)
N or 7/16DIN*	N or 7/16DIN*	N or 7/16DIN*	N or 7/16DIN*	N or 7/16DIN*
50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
20 cm Diameter	20 cm Diameter	20 cm Diameter	20 cm Diameter	20 cm Diameter
610 x 325.6 x 215.6 cm	710 x 358 x 255 cm	820 x 428 x 283 cm	933 x 480 x 306 cm	1100 x 566 x 361 cm
+25 cm	+25 cm	+25 cm	+25 cm	+25 cm
Kit - 4 days	SKit - 4 days	Kit - 5 days	Kit - 5 days	Kit - 6 days
80 x 120 cm	80 x 120 cm	100 x 160 cm	100 x 160 cm	100 x 160 cm
~1200 kg	~1300 kg	~1600 kg	~2000 kg	~2800 kg
Fixed CEE (US opt.)	Fixed CEE (US opt.)	Fixed CEE (US opt.)	Fixed CEE (US opt.)	Fixed CEE (US opt.)
16A Magneto-thermal	16A Magneto-thermal	16A Magneto-thermal	16A Magneto-thermal	16A Magneto-thermal
16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.	16Aac (L,N,PE) Schuko US adapter incl.
M6 bolt	M6 bolt	M6 bolt	M6 bolt	M6 bolt
10A/250V, 2 wire	10A/250V, 2 wire	10A/250V, 2 wire	10A/250V, 2 wire	10A/250V, 2 wire
3 fibers	3 fibers	3 fibers	3 fibers	3 fibers
2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f	2x SMA, 1x Type N f-f
55cm EMC Truncated	55cm EMC Truncated	55cm EMC Truncated	55cm EMC Truncated	55cm EMC Truncated
GTEM 1250	GTEM 1500	GTEM 1750	GTEM 2000	GTEM 2500

GTEM OPTIONS

VERTICAL

In some cases vertical orientation can be used to reduce foot print and give better use.

SAE PANEL

standards SAE J1752/3 and IEC 61967-2 for testing ICs

TROLLEY 250

Wheeled trolley for floor standing option

PANEL MM

Multimedia Panel
2xUSB, 2xLAN, DB9, +standard

GTEM OPTIONS

MANIPULATOR

EUT rotation through X Y Z
Automatic or Manual

1. AC filter 30A/2 wire (2PH+Ground)
2. AC filter 16A/4 wires (3PH+N+Ground)
3. 9-poles signal filter (DB9)
4. 25-poles signal filter (DB25)
5. RJ11 (RJ9) feed-thru connector
6. RJ45 feed-thru connector
7. Video camera system
8. Technical panel pre-drilled for options
9. Empty Technical panel
10. Channel for fiber optic leads (3 pair)
11. Additional RF feed-thru N-type connector
12. Additional RF feed-thru SMA type connector
13. Electrical safety interlock
14. Indoor LED lighting 10W
15. Gas / Water feed-thru plates
16. Honeycomb panel
17. Fans N.1 12x12cm
18. High current/voltage solutions available

TEM CELLS / CHAMBERS

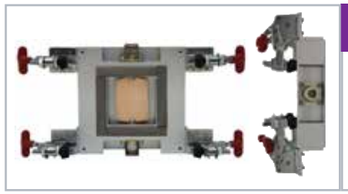
TEM CELL

Transverse Electro Magnetic (TEM)

Transverse Electro Magnetic (TEM) cell or Crawford cell (named after its inventor) is used to generate accurate electromagnetic waves over a wide frequency range: DC (0 Hz) to GHz. EM waves generated in the cell propagate in transverse mode and have the same characteristics as a plane wave. It can be used to calibrate E-field broadband probes for testing radiated E-field immunity as well as for measuring radiated emission from a product with a spectrum analyzer/EMI receiver.

Model	Frequency Range	Plate Height	Dimensions	Max Power	25W Field
TEM 200	DC-200 MHz	30 cm	130 x 70 x 62 cm	1.6 kW CW	118 V/m
TEM 500	DC-500 MHz	10 cm	60 x 30 x 22 cm	1 kW CW	350 V/m
TEM 1000 (shown)	DC-1 GHz	7.3 cm	54 x 45 x 18 cm	750 W CW	475 V/m
TEM 3000	DC-3 GHz	2.35 cm	15 x 8 x 6 cm	400 W CW	1.4 kV/m

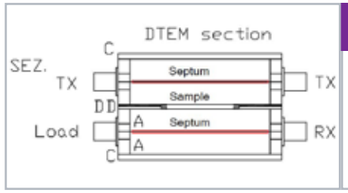
Optionals: Signal and power filtering, SAE setup for IC/PCB, wheeled Trolley for TEM 200, 50Ω loads



TEM 3000, 4000, & 6000

IC Stripline or TEM device

TEM6000 is a 6 GHz IC Stripline TEM Cell that generates the Electro-Magnetic field for testing small devices such as IC's, wireless communication modules, etc. Designed and meets requirements of: IEC 62132-8 : 2012, IEC 61967-2 : 2005, IEC 61967-8 : 2011, and SAE 1752-3



DTEM 500, 1000, 3000, 4000, & 6000

Dual TEM for measuring shielding effectiveness

Dual TEM Cell test fixture is the only one that can separate the electric and magnetic field couples. Both the near-field and the far-field measurements can also be measured by this technique. The Dual TEM Cell System consists of two TEM cells, coupled through an aperture.

TEMZ 5233 DC - 420MHz

E- and H-field Probe Calibration

Closed, unsymmetrical 50 Ohm stripline (also called Crawford TEM Cell or TEM Cell) DC - 420 (600) MHz Crawford TEM Cell or TEM Cell for E-field probe and H-field probe calibration and for immunity testing ISO 11452-3, IEEE 1309 and EN 61000-4-20.

TEMZ 5234 DC - 840MHz

E- and H-field Probe Calibration

Closed, unsymmetrical 50 Ω stripline (also called Crawford-TEM-Cell or TEM Cell), DC - 840 (1200) MHz, for E- and H-field probe calibration and immunity testing of components. The TEMZ 5233 complies to the requirements of ISO 11452-3, IEEE 1309 and EN 61000-4-20.

NEW ITEMS

HA 9252-4067 Standard Horn Antenna

30 – 75 GHz

Gain: typ. 15-18.5 dBi
Antenna Factor: typ. 44..49 dB/m
VSWR: typ. < 1.5
Connector: 1.85 mm

FESP 5133-360 Field Monitoring Coil

10 Hz – 160 kHz

Designed to monitor magnetic fields in the audio frequency range up to 160 kHz using 50 Ω measuring equipment. The FESP 5133-360 comes with 360 turns of RF-litz wire, the low frequency resistance is 45 Ω. A shield helps to supress electric fields.

EMCL 6146 W/ Cal Fixture EM CLAMP

10 kHz ... 1000 MHz

Standards: EN / IEC 61000-4-6
Nominal Impedance: 50 Ω
RF-Input Power: 100 W

FTC 101 B Decoupling Clamp

10 kHz ... 1000 MHz

Companion to the RF-injection clamp EMCL 6146
It is used to increase the decoupling between EM-coupling clamp and auxilary equipment (AE)

CAP 10uF Capacitor for NNBM LISN's

1000 VDC, 640 VAC

CAP 10uF is an optionally available 10 µF capacitor required according to MIL 461 E/F/G and Sec. 17 of the DO-160G standard.

CDT 3200 30 Hz – 250 kHz

Coupling / Decoupling Transformer

testing according to MIL STD 461 (CS101, CS106, CS109), DO 160 (Section 16 and Section 18), ISO 11452-10, Chrysler CS 11809, Ford FMC 1278, DaimlerChrysler DC-1061, EMC-CS-2010JLR V1.1, MIL-STD-704, Mitsubishi ES-X82115, SAE J1113-2, Tata TST/TS/WI/257

Resistor 0.5 Ohm

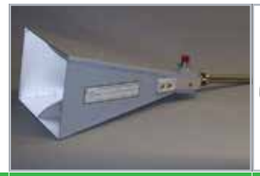
Resistor 0.5 Ohm max. 200 W

Required for many standards including MIL STD 461 CS101

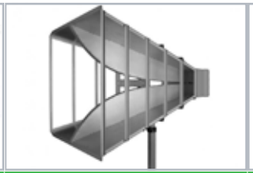
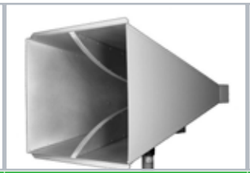
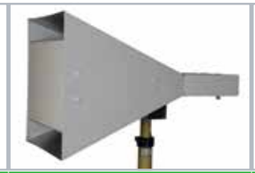
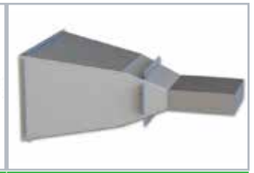
HORN ANTENNAS



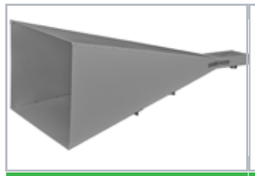

Model	BBHA 9120 A	BBHA 9120 B	BBHA 9120 C	BBHA 9120 D
General Specs				
Frequency Range	1 - 5 GHz	1 - 10 GHz	2 - 18 GHz	1 - 18 GHz
Usable Range	0.8 - 10 GHz	1 - 12 GHz	2 - 20 GHz	0.8 - 18 GHz
Antenna Factor	22 - 32 dB/m	25 - 33 dB/m	O32 -39 dB/m	25 - 44 dB/m
Antenna Gain	6 - 14 dBi	5 - 18 dBi	10 - 16 dBi	5 - 17 dBi
3dB Beamwidth "E"	90° - 10°	≈ 34°	29°	90° - 8°
Power	300 W CW	300 W CW	50 W CW	700-200 W CW
Connector	Type N (f)	Type N (f)	SMA (f)	Type N (f)
Mount	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
Size W x L x H (w/Tube)	245 x 220(408) x 142 mm	184 x 272 (480) x 128 mm	98 x 140 (345) x 69 mm	250 x 195 (408) x 142 mm
Accessories	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM,AA 9203, RA9215, BBV 9718 C



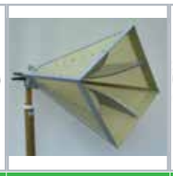

Model	BBHA 9120 LF	HWRD 650 & (HWRD 750)	BBHA 9120 L	HA 9250-12 & (HA 9251-12)
General Specs				Standard Gain Horn
Frequency Range	0.7 - 6 GHz	6.5 (7.5) - 18 GHz	3 - 40 GHz	1 - 2 GHz
Usable Range				0.92 - 2.2 GHz
Antenna Factor	21 - 30 dB/m	31 ... 37 dB/m		11 - 17 (12 - 15) dB/m
Antenna Gain	4 - 19 dBi	16 ... 21 dBi		≈ 20 dBi (max for 1 m)
3dB Beamwidth "E"	60° - 14°	12° - 19°		16° (17° - 11°)
Power	400 W CW	1 kW CW	10 W CW	2 kW CW
Connector	Type N (f)	WRD650D24 (WRD750D24)	SMA , 2.92 (f)	Type 7-16 DIN (f)
Mount	22 mm Tube	Flange	3/8", 1/4"	3/8", M12
Size W x L x H (w/Tube)	270 x 420(620) x 185 mm	124 x 241 x 104 mm		1.3 x 1.9 x 0.98 m (0.72 x 1.84 x 0.96 m)
Accessories	AA 9202, AA9202 POM, AA 9203, RA9215	Opt. Adaptor WRD-N, Opt. WRD tube 22mm	AA 9213, BBV 9719, BBV 9721, AA 9202	HA 9251 designed for best gain at 1m test dist.

BBHA 9120 E	BBHA 9120 F	BBHA 9120 G	BBHA 9120 J	BBHA 9120 K
				FORD/GM radar pulse
0.5 - 6 GHz	0.2 - 2 GHz	0.4 - 2.8 GHz	0.8 - 6.2 GHz	400 MHz - 1.6 GHz
0.5 - 8 GHz				
17 - 28 dB/m	10 - 27 dB/m	14 - 32 dB/m	12 - 20 dB/m	
8 - 16 dBi	11.5 dBi +/-2.5 dB	8 dBi - 18 dBi	min 11dBi (f>1GHz)	600 V/m with <250 watts
80° - 16°	45°	45°	48° .. 11°	
500 W CW	500 W(N) (1.5 kW 7-16)	1.5 kW CW	500 W (N), (1 kW 7-16)	800 W (N), (1.4 kW 7-16)
Type N (f)	Type N (f) (7-16DIN Opt.)	7-16DIN (f)	Type N (f) (7-16DIN Opt.)	N (optional 7/16)
22 mm Tube	Center Mount M12, M10 & 3/8"	Center Mount M12 & 3/8"	Center Mount 3/8" + M12	Flange
314 x 605(820) x 424mm	960 x 950 x 680 mm	550 x 990 x 460 mm	435 x 680 x 440 mm	1.1 x 1.85 x 0.8 m
AA 9202, AA9202 POM, AA 9203, RA9215	PDG 9211	PDG 9211	PDG 9211	AM BBHA 9120 K







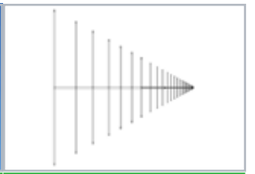

HA 9250-24 & (HA 9251-24)	HA 9250-48 & (HA 9251-48)	HA 9250-818 & (HA 9251-818)	BBHX 9120 LF	BBHX 9120 E	CTIA 0710
Standard Gain Horn	Standard Gain Horn	Standard Gain Horn	Dual polarized	Dual polarized	Dual polarized
2 - 4 GHz	4 - 8 GHz	8 - 18 GHz	1 - 8 GHz	0.7 - 7 GHz	0.7 - 10 GHz
1.9 - 4.6 GHz	3.7 - 9 GHz		0.8 – 10.5 GHz	0.4 – 10 GHz	
17 - 21 (19 - 23) dB/m	23 - 30 (19 - 23) dB/m		20 - 34 dB/m	20 - 34 dB/m	25 - 39 dB/m (f > 1 GHz)
≈ 20 dBi (max for 1 m)	≈ 20 dBi (max for 1 m)	≈ 20 dBi (max for 1 m)	4 - 15 dBi	typ. 6 - 15 dBi	5 - 13 dBi (f > 1 GHz)
16° (17° - 11°)	16° (21° - 12°)		70° - 10°	48° - 11°	75° - 40°
2 kW CW	0.5 kW CW	0.5 kW CW	50 W CW	200 W CW	50 W CW
Type N or 7-16 DIN (f)	Type N or 7-16 DIN (f)	Type N N (f)	Type N (f)	Type N (f)	SMA (f)
3/8", M10	22 mm Tube (3/8" , 1/4")	22 mm Tube (3/8" , 1/4")	22 mm Tube	22 mm Tube	Flange: 6.2mm diam/75mm space
600 x 952 x 446 mm (325 x 965 x 445 mm)	226 x 695 x 303 mm (164 x 492 x 224 mm)		190 x 420(600) x 190 mm	320 x 615 x 320 mm	235 x 200 x 235 mm
HA 9251 designed for best gain at 1m test dist.	HA 9251 designed for best gain at 1m test dist.	HA 9251 designed for best gain at 1m test dist.	AA 9202, AA9202 POM AA 9203, RA9215	AA 9202, AA9202 POM AA 9203, RA9215	Option for 22mm tube

LOG-PERIODIC ANTENNAS



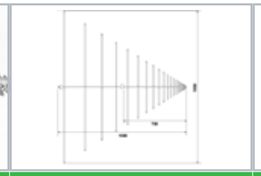
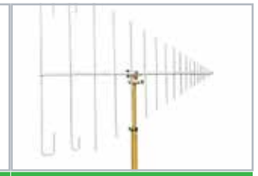
Model	HHALP 9108 A	VULP 9118 A	VULP 9118 B	VULP 9118 C
General Specs				
Frequency Range	250 - 2500 MHz	180 - 1500 MHz	160 - 1500 MHz	100 -1400 MHz
Usable Range		180 - 2000 MHz	160 - 2000 MHz	100 -2000 MHz
Antenna Factor	14 - 33 dB/m	10 - 32 dB/m	10 - 32 dB/m	6 - 28 dB/m
Antenna Gain	6.5 dBi + / - 1.2 dB	Typ. 6.5 dBi	Typ. 6.5 dBi	Typ. 6.5 dBi
3dB Beamwidth "E"	60° - 50°	70° - 43°	70° - 43°	70° - 43°
Power	1 kW CW	1 kW CW	1 kW CW	1 kW CW
Connector	Type N (f)	Type N (f)	Type N (f)	Type N (f)
Mount	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
Size W x L x H (w/Tube)	541 x 490(690) x 35 mm	750 x 640(980) x 80 mm	0.89 x 0.76(1.09)x 0.08 m	1.20 x 1.06(1.39) x 0.08 m
Accessories	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM,AA 9203, RA9215 Available as "Special" with folded elements



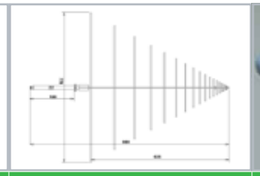
VULP 9118 D	VULP 9118 E	VULP 9118 F	VULP 9118 G	VULP 9118 H
95 - 1500 MHz	75 - 1500 MHz	55 - 1800 MHz	45 - 1500 MHz	30 - 1500 MHz
80 - 1800 MHz	50 - 1500 MHz			26 - 1800 MHz
4 - 33 dB/m	3 - 32 dB/m	2 ... 24 dB/m	0 ... 29 dB/m	-6 ... 31 dB/m
Typ. 6.5 dBi	6.5 dBi + / - 1.2 dB	6.5 dBi + / - 1.2 dB	6 dBi + / - 1.2 dB	6.2 dBi + / - 1.2 dB
75° - 60°	75° - 60°	75° - 60°	75° - 60°	65° - 50°
1 kW CW (1.5 kW 7-16DIN)	1 kW CW (1.5 kW 7-16DIN)	1 kW CW	1 kW CW	2 kW CW (30 MHz)
Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)	Type N (f)	Type N (f)	Type N (f)
Center mount	Center mount	Center mount	Center mount	Center mount
1.87 x 1.94 x 0.08 m	1.87 x 1.94 x 0.08 m	2.15 x 2.27 x 0.08 m	2.53 x 2.67 x 0.08 m	4.85 x 5.12 x 0.38 m
KG 9201 Available as "Special" with folded elements	KG 9201 Available as "Special" with folded elements (pictured)	KG 9201 Available as "Special" with folded elements	KG 9201 Available as "Special" with folded elements	

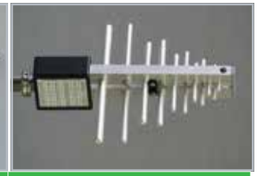


Model	VUSLP 9111	VUSLP 9111 B	VUSLP 9111 E	VUSLP 9111 F
General Specs				Disassembles Easily
Frequency Range	230 - 2300 MHz	200 - 3000 MHz	70 - 3000 MHz	80 MHz ... 3 GHz
Usable Range	200 - 4000 MHz	180 - 4000 MHz	65 - 4000 MHz	75 MHz ... 4 GHz
Antenna Factor	12 ... 32 dB/m	11 ... 33 dB/m	4 ... 35 dB/m	4 ... 35 dB/m
Antenna Gain	7 dBi + / - 1 dB	typ. 7 dBi + / - 1 dB	typ. 6.3 dBi + / - 1.3 dB	typ. 6.3 dBi + / - 1.3 dB
3dB Beamwidth "E"	65° - 45°	65° - 45°	65° - 45°	65° - 45°
Power	1 kW CW (230 MHz)	1 kW CW (<300 MHz)	1 kW CW (<300 MHz)	1 kW CW (<300 MHz)
Connector	Type N (f)	Type N (f)	Type N (f)	Type N (f)
Mount	22 mm Tube	22 mm Tube	Center mount 3/8", M12	Center mount 3/8", M12
Size W x L x H (w/Tube)	650 x 790 x 82 mm	776 x 900 x 82 mm	1.93 x 1.59 x 0.11 m	1.34 x 1.53 x 0.11 m
Accessories	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	KG 9201	KG 9201 , CCA 9111 F

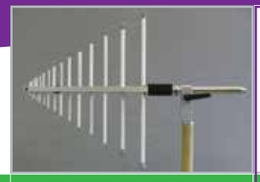


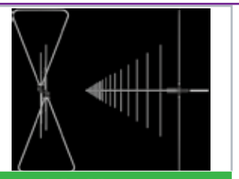




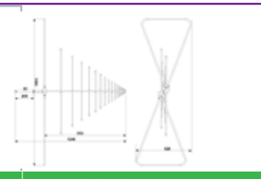
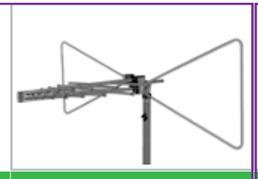
USLP 9142	USLP 9143	USLP 9143 B	ESLP 9145	VUSLP 9111-1000
0.7 - 5 GHz	300 MHz - 7 GHz	200 MHz - 7 GHz	1 - 18 GHz	0.8 - 3 GHz
0.7 - 8 GHz	250 MHz - 8 GHz	180 MHz - 8 GHz	0.7 - 20 GHz	0.75 - 4 GHz
23 ... 38 dB/m	14 ... 43 dB/m	11 ... 44 dB/m	22 ... 50 dB/m	22 ... 34 dB/m
4 ... 7 dBi	typ. 5.8 dBi + / - 1.3 dB	typ. 5.8 dBi + / - 1.3 dB	typ. 6 dBi +/- 1.2 dB	typ. 7 dBi + / - 1 dB
75° - 50°	80° - 30°	65° - 45°	70° - 40°	65° - 40°
1 kW CW (<300 MHz)	200 W (<500 MHz)	200 W (<500 MHz)	20 W CW	300 W (1 GHz)
Type N (f)	Type N (f)	Type N (f)	Type N (f)	Type N (f)
22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
200 x 455 (200) x 40 mm	550 x 430 (686) x 50 mm	778 x 885 x 60 mm	500 x 240 x 40 mm	220 x 460 x 65 mm
AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA 9203, AA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215	AA 9202, AA9202 POM, AA 9203, RA9215

LOG-PERIODIC CONT.



Model	VUSLP 9111-400	XSLP 9142	XSLP 9143	VULB 9162
General Specs	Log-Periodic	Dual Polarized	Dual Polarized	TRILOG
Frequency Range	400 MHz - 3 GHz	30 MHz - 3 GHz	45 - 1500 MHz	30 MHz - 7 GHz
Usable Range	340 MHz - 4 GHz	25 MHz - 4 GHz	50 - 1500 MHz	25 MHz - 8 GHz
Antenna Factor	15 ... 34 dB/m	7 - 35 dB/m	7 - 35 dB/m	7 - 43 dB/m
Antenna Gain	typ. 7 dBi + / - 1 dB	-14 - 7dBi	-14 - 7dBi	Typ. 6.4+/- 1.2 dBi
3dB Beamwidth "E"	65° - 50°	90° - 50°	90° - 50°	90° - 45°
Power	300 W CW (1 GHz)	100 W CW	10 W CW	100 W CW
Connector	Type N (f)	Type N (f)	Type N (f)	Type N (f)
Mount	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
Size W x L x H (w/Tube)	450 x 640 x 70 mm	1.50 x 1.24 x 0.62 m	1.50 x 1.29 x 0.62 m	1.50 x 1.29 x 0.62 m
Accessories	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**

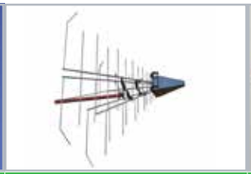




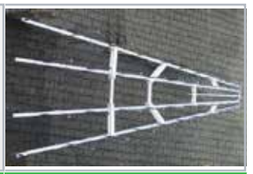
VULB 9163	VULB 9164	VULB 9168	HLX 0810-LHCP	CLSA 0110 - RHCP
TRILOG	TRILOG	TRILOG	Helical antenna	Spiral Antenna
30 MHz - 3 GHz	30 MHz - 3 GHz	30 MHz - 1 GHz	750 - 1050 MHz	1 - 10 GHz
25 MHz - 4 GHz	25 MHz - 4 GHz	25 MHz - 2 GHz	600 MHz...1.1 GHz	0.8 - 11 GHz
7 - 35 dB/m	4 - 37 dB/m	8 - 30 dB/m	typ. 17-20 dB/m	typ. 25 ... 55 dB/m
-14 - 7dBi	-23- 7dBi	-13 - 7dBi	typ. 6 - 12 dBi	typ. -4....+6 dBi
90° - 50°	78° - 45°	90° - 50°	56°-33°	60° - 125°
100 W CW	1 kW CW	10 W CW	300 W CW	60 W CW
Type N (f)	Type N (f)	Type N (f)	Type N (f)	Type N (f)
22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
1.50 x 1.24 x 0.62 m	1.50 x 1.24 x 0.62 m	1.50 x 1.09 x 0.5 m	0.24 x 0.50(+0.2) x 0.24 m	0.24 x 0.50(+0.2) x 0.24 m
AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203	AA 9202, AA9202 POM, AA 9203

STACKED LPDA ANTENNAS




Model	STLP 9128 C	STLP 9128 D	STLP 9128 D SP	STLP 9128 E & SP
General Specs	Stacked Log-Periodic	Stacked Log-Periodic	Stacked Log-Periodic	Stacked Log-Periodic
Frequency Range	200 - 1500 MHz	80 - 3000 MHz	80 - 3000 MHz	80 - 1500MHz
Usable Range	150 - 4000 MHz	65 - 4000 MHz	65 - 4000 MHz	65 - 3000 MHz
Antenna Factor	8 ... 24 dB/m	2 ... 30 dB/m	2 ... 32 dB/m	0 ... 25 dB/m
Antenna Gain	9 ... 10 +/- 1dBi	9 +/- 2 dBi	9 +/- 3 dBi	9 +0.8 / -1.5 dBi
3dB Beamwidth "E"	75° - 60°	75° - 60°	75° - 60°	75° - 60°
Power	1 kW CW (2 kW 7-16DIN)	1 kW CW (2 kW 7-16DIN)	1 kW CW (2 kW 7-16DIN)	1 kW CW (2 kW 7-16DIN)
Connector	Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)
Mount	22 mm Tube	22 mm Tube	22 mm Tube	Center mount 3/8", M12
Size W x L x H (w/Tube)	890 x 930 x 940 mm	1.85 x 1.46 x 2.0 m	1.48 x 1.48 x 1.34 m	2.16 x 1.66 x 1.94 m 1.4 x 1.74 x 1.5 m Sp.
Accessories	AA 9209	AA 9209	AA 9209	AA 9209

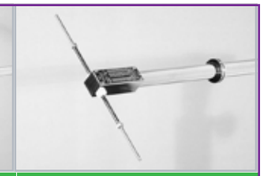



STLP 9128 F	STLP 9129 & Sp	STLP 9148	STLP 9149	STLP 100-500
Stacked Log-Periodic	Stacked Log-Periodic	Stacked Log-Periodic	Stacked Log-Periodic	Stacked Log-Periodic
70 - 1500MHz	70 MHz - 10 GHz	1 - 18 GHz	0.7 - 9 GHz	100 - 500 MHz
55 - 3000 MHz		0.7 - 20 GHz	0.6 - 10.5 GHz	75 - 550 MHz
-2 ... 25 dB/m	2 - 44 dB/m	20 - 49 dB/m	18 - 41 dB/m	-1 - 14 dB/m
9 +0.8 / -1.5 dBi	9 dBi ± 2.3 dB	typ. 8.6 dBi +/- 1 dB	typ. 10.3 dBi +/- 1.5 dB	11.5 dBi +/- 1.1 dBi
75° - 60°	77° - 34°	58 °+/-15°	46 ° +/-10°	53°
1 kW CW (2 kW 7-16DIN)	500 W CW (<1 GHz)	50 W CW	300 W (<1 GHz)	5 kW CW
Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)	Type N (f)	Type N (f)	Type 13/30 female
Center mount 3/8", M12	Center mount 3/8", M12	22 mm Tube	22 mm Tube	22 mm Tube
1.95 x 2.26 x 2.54 m	1.69 x 1.64 x 2.02 m 1.75 x 1.49 x 1.32 m Sp.	200 x 455 (200) x 40 mm	550 x 430 (686) x 50 mm	1.66 x 4.02 x 1.78 m
AA 9209	AA 9209	AA 9202, AA9202 POM, AA 9203, **RA9215**	AA 9202, AA9202 POM, AA 9203, **RA9215**	

DIPOLE ANTENNAS



Model	VHA 9103	UHA 9105	VHAP	UHAP
General Specs	Half-Wave Dipole	Half-Wave Dipole	Precision 1/2 Wave Dipole	Precision 1/2 Wave Dipole
Frequency Range	30 MHz - 300 MHz	300 MHz - 1 GHz	30 MHz - 300 MHz	300 MHz - 1 GHz
Elements	2 sets of telescopic elements	set of telescopic elements	2 sets of telescopic elements	4 sets of telescopic elements
Antenna Factor	-2.1... +18.2dB/m	18 - 31 dB/m	18 - 31 dB/m	27 - 38 dB/m
Antenna Gain	typ.: +1.5 dBi	+ 1 dBi ... +1.8 dBi	typ.: +1.5 dBi	typ.: +1.5 dBi
3dB Beamwidth "E"	78 °	78 °	78 °	78 °
Power	300 W CW (1 GHz)	100 W CW	10 W CW	10 W CW
Connector	Type N (f)	Type N (f)	Type N (f)	Type N (f)
Mount	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
Accessories	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**
	Usually purchased as a set with 2 of each for NSA measurements.		Usually purchased as a set with 2 of each for NSA measurements.	




Model	UHA 9125 C	UHA 9125 D	ILS	TETRA DIPOLE
General Specs	Half-Wave Dipole w/EMI Balun	Half-Wave Dipole w/EMI Balun	Instrument landing systems	TETRA (terrestrial trunked radio) networks
Frequency Range	0.75 - 2 GHz	1.0 - 3 (4) GHz	108 - 118 MHz (LOC, LLC) 320 - 340 MHz (G/S)	340 - 480 MHz
Elements	4 sets of Elements	6 sets of Elements	2 sets of Elements	
Antenna Factor	8 ... 24 dB/m	2 ... 30 dB/m	10 - 19 dB/m	20...23 dB/m
Antenna Gain	typ.: +2.15 dBi	typ.: +2.15 dBi	typ.: +1.5 dBi	typ.: +1.5 dBi
3dB Beamwidth "E"	78 °	78 °	80 °	80 °
Power	100 W CW	100 W CW	17W CW	17 W CW
Connector	Type N (f)(7-16DIN Opt.)	Type N (f)(7-16DIN Opt.)	BNC (f) Opt. Type N (f)	BNC (f) Opt. Type N (f)
Mount	22 mm Tube	22 mm Tube	3/8"	3/8"
Size W x L x H	150 x 358 x 55 mm	150 x 358 x 55 mm	50 x 80 x 55 mm	50 x 80 x 55 mm
Accessories	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**	AA 9202, AA9202 POM, AA 9203, **RA9215, CCA**	CCA	CCA

MONOPOLE ANTENNAS

VAMP 9243 — 9 KHZ - 30 MHZ

Vertical Active Rod Antenna

The active monopole antenna VAMP 9243 consists of a vertical rod and an impedance matching amplifier. The rod has a standard length of 1m & 104 cm (other rod length on request) and can be considered short compared to the wave length in the frequency range 9 kHz-30 MHz

Meets the requirements of many standards such as: MIL-STD-461, CISPR 25

OPT. VT

20 dB plug in divider to measure high field strength

OPT. MIL461F

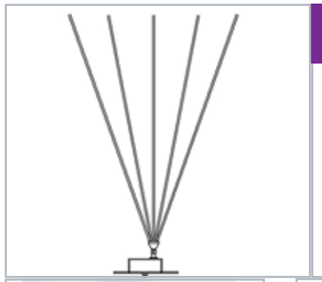
BONDING KIT for MIL-STD requirements. 70 cm Coax, angel bracket, and current blocking ferrite

OPT. CA 9243

Calibration Adapter for VAMP 9243. Matched resistive 6 dB voltage divider with a rod simulation capacitor.

OPT. GP

Aluminum Ground plane, 0.6 x 0.6 m



VAMP 9242 — 10 - 40 MHZ

Vertical Passive Rod Antenna — **20 Watts**

The vertical passive monopole antenna VPMP 9242 is equipped with a 10 mm element fixture to accept several different element types, e.g. telescopic, biconical or collapsible conical elements. In order to improve the efficiency especially at frequencies below 25 MHz, the VPMP 9242 comes with a broadband toroid-transformer.

BNC connector, 3/8" screw mount

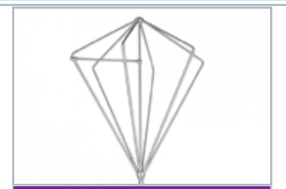
Requires separate purchase of rods:

FBAB 9177

Collapsible-conical element set. 625 mm

FBAL 9178

Collapsible-conical element set. 950 mm



BBA 9106

Biconical element set 660 mm

BBAL 9136

Biconical element set 970 mm

VAMP 9241 — DC - 300 MHZ

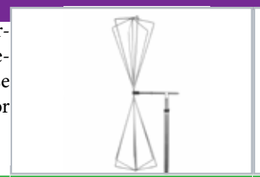
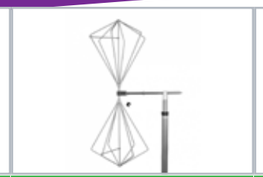
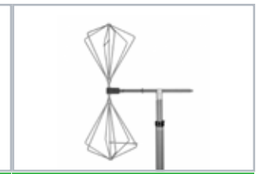
Vertical Passive Rod Antenna — **2 kWatts**

The vertical passive monopole consists of a flat aluminum base plate and a milled aluminum housing which has two N-connectors at the sides and an element clamping fixture on top. The element clamping fixture with a nominal diameter of 10 mm accepts the vertical rod of 0.5 m length, which is included in standard delivery. Optional top loading disc TLD 9241 shown in picture.

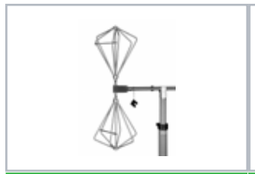
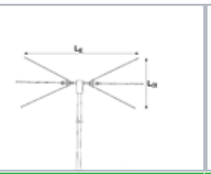
Additional rod elements available: BBA 9106, BBAL 9136, BBAK 9137, BBVK 9138, or collapsible elements FBAL 9177, FBAB 9178, or the telescopic elements of the VHA 9103

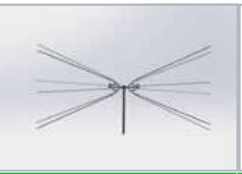
BICONICAL ANTENNAS

Schwarzbeck Biconical antennas are the most versatile on the market. All elements are interchangeable giving further use. If spaces are smaller use smaller elements; when more gain is needed for low frequency testing use larger elements.

		BBAL 9136	BBA 9106	BBAK 9137
		Large	Standard	Shortened
VHA 9103 B	**Frequency Range**	20 - 200MHz, Rx	30 - 300 MHz, Rx	45 - 450 MHz, Rx
	Power	10 W	10 W	10 W
	Connector	Type N(f)	Type N(f)	Type N(f)
	Size (W, D, L_H)	1.94 x 0.57 x 0.53 m	1.32 x 0.52 x 0.53 m	0.94 x 0.35 x 0.53 m
	Mounting	22 mm Tube	22 mm Tube	22 mm Tube
VHBB 9124	**Frequency Range**	20 - 200MHz, Rx	30 - 300 MHz, Rx	45 - 450 MHz, Rx
	Power	10 W	10 W	10 W
	Connector	Type N (f)	Type N (f)	Type N (f)
	Size (W, D, L_H)	1.94 x 0.57 x 0.58 m	1.32 x 0.52 x 0.58 m	0.92 x 0.35 x 0.58
	Mount	22 mm Tube	22 mm Tube	22 mm Tube
HFBA 9122	**Frequency Range**	0.15 - 300 MHz, Rx	0.15 - 300 MHz, Rx	0.15 - 300 MHz, Rx
	Power	10 W	10 W	10 W
	Connector	Type N (f)	Type N (f)	Type N (f)
	Size (W, D, L_H)	1.94 x 0.57 x 0.58 m	1.32 x 0.52 x 0.58 m	0.92 x 0.35 x 0.55 m
	Mount	22 mm Tube	22 mm Tube	22 mm Tube
VHBA 9123	**Frequency Range**	20 - 200MHz, Tx/Rx	30 - 300 MHz. Tx/Rx	30 - 300 MHz. Tx/Rx
	Power	100 W	100 W	100 W
	Connector	Type N (f)	Type N (f)	Type N (f)
	Size (W, D, L_H)	1.98 x 0.57 x 0.58 m	1.36 x 0.52 x 0.58 m	0.96 x 0.35 x 0.58 m
	Mount	22 mm Tube	22 mm Tube	22 mm Tube
VHBC 9133	**Frequency Range**	20 - 200MHz, Tx	30-300 MHz, Tx	
	Power	1 kW	1 kW	
	Connector	Type N (f)	Type N (f)	
	Size (W, D, L_H)	1.94 x 0.57 x 0.58 m	1.32 x 0.52 x 0.58 m	
	Mount	22 mm Tube	22 mm Tube	
VHBD 9134	**Frequency Range**	20 - 200MHz, Tx	30-300 MHz, Tx	
	Power	2.5 kW	2.5 kW	
	Connector	Type N (f) opt7-16 DIN (f)	Type N (f) opt7-16 DIN (f)	
	Size (W, D, L_H)	1.94 x 0.57 x 0.70 m	1.35 x 0.53 x 0.70 m	
	Mount	22 mm Tube	22 mm Tube	
VHBD 9134-4	**Frequency Range**	20-200 MHz, Tx	30-200 MHz, Tx	
	Power	4 kW	4 kW	
	Connector	7-16 DIN (f)	7-16 DIN (f)	
	Size (W, D, L_H)	1.98 x 0.57 x 0.67 m	1.37 x 0.52 x 0.67 m	
	Mount	22 mm Tube	22 mm Tube	
VHBD 9134-10	**Frequency Range**	20 - 210MHz, Tx	30-280 MHz, Tx	
	Power	10 kW	10 kW	
	Connector	13-30 (f) IEC 60169-5	13-30 (f) IEC 60169-5	
	Size (W, D, L_H)	1.98 x 0.57 x 0.67 m	1.37 x 0.52 x 0.67 m	
	Mount	38 mm Tube	38 mm Tube	




BBVK 9138	FBAL 9178	FBAB 9177	BBFA 9146	BBAE 9179/ TRI 0630
Higher Freq	Collapsible (BBAL 9236)	Collapsible (BBA 9106)	Collapsible w/ extension Variable opening	Foldable, optimized for 1-meter testing
60 - 600 MHz, Rx	20 - 200MHz, Rx	25 - 300 MHz		
10 W	10 W	10 W		
Type N(f)	Type N(f)	Type N(f)		
0.72 x 0.26 x 0.53 m	1.96 x 0.9 x 0.53 m	1.25 x 0.6 x 0.58 m		
22 mm Tube	22 mm Tube	22 mm Tube		
60 - 600 MHz, Rx	20 - 200MHz, Rx	30-300 MHz, Rx		
10 W	10 W	10 W		
Type N (f)	Type N (f)	Type N (f)		
0.72 x 0.26 x 0.58 m	1.96 x 0.9 x 0.58 m	1.25 x 0.6 x 0.58 m		
22 mm Tube	22 mm Tube	22 mm Tube		
0.15 - 300 MHz, Rx	0.15 - 300 MHz, Rx	0.15 - 300 MHz, Rx		
10 W	10 W	10 W		
Type N (f)	Type N (f)	Type N (f)		
0.72 x 0.26 x 0.55 m	1.96 x 0.9 x 0.55 m	1.25 x 0.6 x 0.55 m		
22 mm Tube	22 mm Tube	22 mm Tube		
	20 - 200MHz, Tx/Rx	30-300 MHz, Tx/Rx		
	100 W	100 W		
	Type N (f)	Type N (f)		
	1.96 x 0.9 x 0.58	1.25 x 0.6 x 0.58 m		
	22 mm Tube	22 mm Tube		
	20 - 200MHz, Tx	30-300 MHz, Tx	20 - 200 MHz, Tx	20 - 200 MHz, Tx
	1 kW	1 kW	1 kW	1 kW
	Type N (f)	Type N (f)	Type N (f)	Type N (f)
	1.96 x 0.9 x 0.58	1.25 x 0.6 x 0.58 m	0.85-3.95 x 3.70-0.55 x 0.6 m	1.5 x 0.57 x 0.58 m
	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
	20 - 200MHz, Tx	30-300 MHz, Tx	20 - 200 MHz, Tx	20 - 200 MHz, Tx
	2.5 kW	2.5 kW	2.5 kW	2.5 kW
	Type N (f) opt7-16 DIN (f)	Type N (f) opt7-16 DIN (f)	Type N (f) opt7-16 DIN (f)	Type N (f) opt7-16 DIN (f)
	1.96 x 0.9 x 0.70	1.25 x 0.6 x 0.70 m	0.85-3.95 x 3.70-0.55 x 0.6 m	1.5 x 0.57 x 0.70 m
	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
	20 - 200MHz, Tx	30-200 MHz, Tx	30-200 MHz, Tx	30-200 MHz, Tx
	4 kW	4 kW	4 kW	4 kW
	7-16 DIN (f)	7-16 DIN (f)	7-16 DIN (f)	7-16 DIN (f)
	1.96 x 0.9 x 0.67 m	1.25 x 0.6 x 0.67 m	0.85-3.95 x 3.70-0.55 x 0.6 m	1.5 x 0.57 x 0.67 m
	22 mm Tube	22 mm Tube	22 mm Tube	22 mm Tube
	20 - 210MHz, Tx	20-230 MHz, Tx	20 - 230 MHz, Tx	20 - 220 MHz, Tx
	10 kW	10 kW	10 kW	10 kW
	13-30 (f) IEC 60169-5	13-30 (f) IEC 60169-5	13-30 (f) IEC 60169-5	13-30 (f) IEC 60169-5
	1.96 x 0.9 x 0.70	1.25 x 0.6 x 0.70 m	0.85-3.95 x 3.70-0.55 x 0.6 m	1.5 x 0.57 x 0.67 m
	38 mm Tube	38 mm Tube	38 mm Tube	38 mm Tube

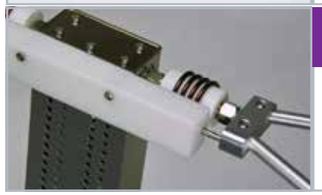
BICONICAL CONT.

BCOI 9180 #W BOOSTER COILS

Booster Coils for High Power Baluns

The booster coils are used to generate highest field strengths in conjunction with a high power balun (e.g. VHBA 9123, VHBC 9133, VHBD 9134, VHBD 9134-4) and radiating elements (e.g. BBA 9106, BBAL 9136, BBFA 9146, BBAE 9179, and others) in the frequency range from 20 MHz to approx. 60 MHz.

The BCOI 9180 5W comes with 5 turns and is standard, also available 4W = 4 turns and 3W = 3 turns. The *Holder Long* is required with BBAE 9179 elements



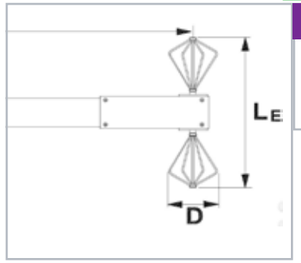
HOLDER LONG

Booster Coils Bracket

Plastic holders to be fixed at a high power balun e.g. VHBA 9123, VHBC 9133,VHBD 9134, VHBD 9134-4. The HOLDER LONG must be assembled to the balun to use BBAE 9179 with booster coils.

			UBAA 9114	UBAA 9115
BBVU 9135	Biconical lg	Frequency Range	20 - 1000MHz, Rx	20 - 1000 MHz, Rx
		Power	5 W	5 W
		Connector	Type N(f)	Type N(f)
		Size (W, D, L_H)	444 x 185 x 540 mm	444 x 185 x 540 mm
		Mounting	22 mm Tube	22 mm Tube
BBUK 9139	Biconical sm	Frequency Range	30 - 1200MHz, Rx	30 - 1200 MHz, Rx
		Power	5 W	5 W
		Connector	Type N (f)	Type N (f)
		Size (W, D, L_H)	330 x 130 x 540 mm	330 x 130 x 540 mm
		Mount	22 mm Tube	22 mm Tube
BAOC 9216	Open Cone	Frequency Range	30 - 1000 MHz, Rx	30 - 1000 MHz, Rx
		Power	5 W	5 W
		Connector	Type N (f)	Type N (f)
		Size (W, D, L_H)	276 x 155 x 540 m	276 x 155 x 540 m
		Mount	22 mm Tube	22 mm Tube
BBOC 9217	Open Cone	Frequency Range	30 - 1000MHz, Rx	30 - 1000 MHz, Rx
		Power	5 W	5 W
		Connector	Type N (f)	Type N (f)
		Size (W, D, L_H)	390 x 230 x 540 mm	390 x 230 x 540 mm
		Mount	22 mm Tube	22 mm Tube

BROADBAND BICONICAL

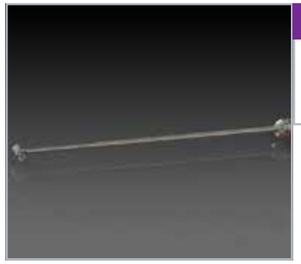


SBA 9113 B

Small Biconical Antenna, Rx and Tx
- 80 MHz - 3 GHz, 20 watts, Type N(f)
- Harmonics measurements acc. to IEC61000-4-3 80-1000 MHz
- 140 x 49 x 560 mm

SB 9113

Small Biconical Antenna, Rx and Tx
- 500 MHz - 3 GHz, 20 watts, Type N(f)
- CISPR16-1-4:2007-02 Ed. 2.0 Site validation above 1 GHz
- 140 x 49 x 560 mm, Mini ver. available



SBA 9112

Small Biconical Microwave Antenna, Rx and Tx
- (1) 3 - 18 GHz, 10 Watts, Type N(f)
- CISPR16-1-4:2007-02 Ed. 2.0 Site validation above 1 GHz
- 190 x 20 x 560 mm, Delivered with transportation case

SBA 9119

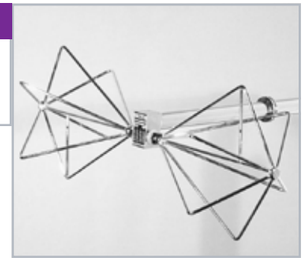
Small Biconical Microwave Antenna, Rx and Tx
- 1 - 6 GHz, 20 Watts, Type N(f)
- CISPR16-1-4:2007-02 Ed. 2.0 Site validation above 1 GHz
- 190 x 50 x 560 mm, Delivered with transportation case

UBA 9116

Biconical UHF Broadband Antenna, Rx and Tx
- (160) 300 -1000 (1100) MHz
- 5 watts, Type N(f)
- 325 x 100 x 520 mm

VUBA 9117

Biconical VHF-UHF Broadband Antenna
- (30) 150 -1000 MHz
- 5 watts, Type N(f)
- 325 x 100 x 520 mm

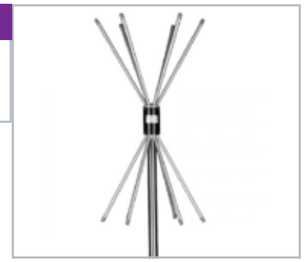


RS 16

Vertical Polarized Microwave Biconical Antenna
- (0,5) 1 - 6 (8,5) GHz, 50 Watts, Type N(f)
- Omni-directional H-plane pattern

RE 1790

Vertical Polarized VHF- UHF Biconical Antenna
- (170) 230 - 1000 (1100) MHz, 200 watts, Type N(f)
- Omni-directional H-plane pattern
- 250 x 250 x 760 mm



RE 4590

Vertical Polarized VHF- UHF Biconical Antenna
- (330) 450 - 1000 (1100) MHz, 200 watts, Type N(f)
- Omni-directional H-plane pattern
- 140 x 140 x 662 mm

RS 0460

Vertically Polarized Symmetrical Biconical Antenna
- 0.4 - 6 GHz, 100 watts, Type N(f)
- Omni-directional H-plane pattern
- 185 x 185 x 370 mm

EFG-03

E-Field Generator
- 10 kHz - 100 MHz, 3.5 kwatts, 7-16DIN(f)
- Can produce extremely high field in-between Elements
- Comes with 3 axis positioner

PASSIVE MAGNETIC, TX LOOP

Model	HFRA 1356	HFRA SF02G	HFRA 5149	HFRA 5152
General Specs	Circular loop antenna	Tunable transmitting loop antenna	Circular loop antenna	Circular loop antenna
Frequency Range	13.56 ±185MHz	10 kHz - 30 MHz	9 kHz - 30 MHz	DC - 3 MHz
Number of Turns	2	1	1	3
Diameter of Loop	250 mm	500 mm	500 mm	250 mm
Input Conversion=1A/m	32 mV / 90 dBµV	Varies w/Freq. <95 dBµV	154 dBµV	
Max Input Short Time	800 mV / 118 dBµV,1 min.	69 - 50 dBm Pulsed	100 watts, 1 min	31.5mA (630mV monitor)
Max Field Center	20A/m , 25 A/m 1min	ISO 14708-3 Class B	1.3A/m, 123 dBµA/m	378 mA/m
Power Input	16 W / 42 dBm	59 - 40 dBm CW	30 W / 35 dBm (100W)	31.5mA (630mV)
Connector	2x BNC (f)	Type N(f)	2x Type N(f)	2x BNC (f)
Mount	3/8" Thread	3/8" Thread	3/8" Thread	3/8" Thread
Size W x L x H	260 x 305 x 80 mm	525 x 800 x 130 mm	515 x 585 x 80 mm	260 x 305 x 80 mm
Accessories		Loop sensor HFRAE 5163(incl.)	including 50 Ohm 20 Watt termination	

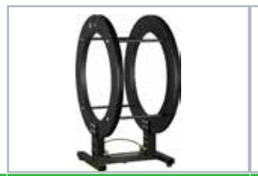
Model	HFRA 5158	HFRA 5159	HFRA 5170	HFRA 5164
General Specs	Circular loop antenna	Circular loop antenna w/2 inputs 50Ω and open	Stacked Log-Periodic	Magnetic, handheld coil IEC 61000-4-39
Frequency Range	0 - 2 MHz	DC - 400 kHz (2 MHz)	0 - 30 MHz	10 kHz - 120 MHz
Number of Turns	10	28	1	3
Diameter of Loop	180 mm	250 mm	250 mm	100 mm
Input Conversion=1A/m			10:1	1 A current = 30 A/m
Max Input Short Time		110 mA	135 mA (1.35V monitor)	12A (5 min.)
Max Field Center		11 A/m, 141 dBµA/m	1.35 A/m, 123 dBµA/m	360 A/m (5 min.)
Power Input	5 Watts	5 Watts	4 Watts	
Connector	2x BNC (f)	3 x BNC	2x BNC (f)	BNC (f)
Mount	3/8" Thread	3/8" Thread	3/8" Thread	Handheld, 3/8" Thread
Size W x L x H	230 x 190 x 80 mm	260 x 305 x 80 mm	160 x 112 x 62 mm	158 x 112 x 45 mm
Accessories				Measurement loop: FESP 5134-1, LoopHolder5164-39, NFCN 1356

HFRA 5153	HFRA 5154	HFRA 5155	HFRA 5156	HFRA 5157
Circular loop antenna	Circular loop antenna	Circular loop antenna	Circular loop antenna	Circular loop antenna
0 - 30 (50) MHz	0.1 - 30 MHz	100 kHz - 100 (300) MHz	DC - 5 (10) MHz	0 - 30 MHz
1	2	1	10	2
180 mm	100 mm	50 mm	50 mm	100 mm
100 mA (1V monitor)	100 mA (5V)	0.44 A (4.4V)	100 mA (50V)	105 mA (48 V)
0.597 A/m, 115 dBµA/m	1A/m, 120 dBµA/m	138.89 dBµA/m	20 A/m, 146 dBµA/m	1A/m, 120 dBµA/m
4 Watts	0.5 W / +27 dBm	2 Watts	5 Watts	5 Watts
2x BNC (f)	2x BNC (f)	2x BNC (f)	2x BNC (f)	2x BNC (f)
3/8" Thread	3/8" Thread	3/8" Thread	3/8" Thread	3/8" Thread
230 x 190 x 80 mm	160 x 112 x 62 mm	105 x 60 x 62 mm	60 x 104 x 62 mm	160 x 112 x 62 mm
		Monitor probe HFS 1546		

FESP 5133-9	FESP 5132	FESP 5133-1330	FESP 5135	FESP 5133
Magnetic, handheld coil	Magnetic, handheld coil MIL-STD-461 RS101, ISO 11452-8, EN 55103, IEC 61000-4-39	Magnetic, handheld coil VG95377	Magnetic loop EN 55103 - 2 A.3.1	Magnetic, handheld coil MIL-STD-461, EN 55103
10 kHz - 3 MHz	0 - 150 kHz	0 - 20 (50) kHz	0 - 300 kHz	0 - 200 kHz
9	20	225	20	36
133 mm	120 mm	126 mm	500 mm	133 mm
1 A current = 10 A/m	1 A current = 100 A/m	1 A current = 858.2 A/m	1 A current = 32.016 A/m	1 A current = 100 A/m
11 A (5 min.)	20 A (5 min.)	20 A	7 A (5 min.)	10 A (5 min.)
380.4 A/m (5 min.)	1500 A/m (5 min.)	17 kA/m (50mm)	224 A/m (5 min.)	1385 A/m (5 min.)
Type N(f)	4 mm Banana	4 mm Banana	4 mm Banana Term.	4 mm Banana (BNC opt)
Handheld	Handheld	Handheld		Handheld
160 x 160 x 200 mm	160 x 160 x 300 mm	190x190x290 mm	500 x 500 x 140 mm	160 x 160 x 300 mm
	Measurement loop: FESP 5134-40, LoopHolder50			




Model	AGEM 5520	HHS 5201-6	HHS 5201-98	HHS 5202-9
General Specs	Air gap electromagnet	Circular Helmholtz Coils	Circular Helmholtz Coils	Circular Helmholtz Coils
Frequency Range	DC	DC - 5 MHz	DC - 200 kHz	DC - 2.5 MHz
Number of Turns	2000 Turns	6 Turns	98 Turns	9 Turns
Diameter of Loop	335 mm	120 mm	84 mm	232 mm
Input Conversion		1 A input = 71.55 A/m	1 A input = 1598 A/m	1 A input = 55.52 A/m
Max Input		12 A continuous	12 A continuous	33 A continuous
Max Input Short Time	20 A 1 min. 5 A > 20 min.	40 A (1 min.)	40 A (1 min.)	55 A (5 min.)
Max Field Center	> 2.2 T	2860 A/m (1 min.) 60 mm	64 kA/m (1 min.)	3053 A/m (5 min.) 116mm
Connector	4 mm Banana (f)	4 mm Banana (f)	4 mm Banana (f)	4 mm (f), 7 mm screw
Size W x L x H	380 x 238 x 410 mm	290 x 220 x 130 mm	290 x 220 x 130 mm	0.20 x 0.25 x 0.39 m
Max DUT Size				11.3 x 11.3 x 11.3 cm




Model	HHS 5206-132	HHS 5210-10 (-100)	HHS 5210-100 2.5	HHS 5212-10
General Specs	Circular Helmholtz Coils	Helmholtz Coils	Helmholtz Coils	Helmholtz Coils
Frequency Range	DC - 30 kHz	DC - 150 kHz (10 kHz)	DC - 10 kHz	DC - 150 kHz
Number of Turns	132 Turns	10 (100) Turns	100 Turns	10 Turns
Diameter of Loop	600 mm	1 m	1 m	1.2 m
Input Conversion	314.2 A/m	15 A/m (145) (Sep. 0.4 m)	145 A/m (CoilDist.0.4m)	12.4 A/m(Coil Dist.0.48m)
Max Input	10 A continuous	10 (9) A continuous	15 A continuous	10 A continuous
Max Input Short Time	15 A (5 min.)	20 (15) A 5 min.	20 A (5 min.)	20 A (5 min.)
Max Field Center	4713 A/m (5 min.)	300 (2183) A/m 5 min.	2900 A/m (5 min.)	250 A/m (5 min.)
Connector	4 mm (f), 7 mm screw	4 mm (f)	4 mm (f)	4 mm (f)
Size W x L x H	0.64 x 0.79 x 0.42 m	1.0 x 1.0 x 0.63 m	1.0 x 1.0 x 0.63 m	1.2 x 1.2 x 0.74 m
Max DUT Size	32.5 x 32.5 x 32.5 cm	260 x 305 x 80 mm	260 x 305 x 80 mm	

HHS 5230-100 DC TO 5 KHZ

Helmholtz-Coil precisely defined fields to SAE J551-17

Typical applications are magnetic immunity testing to whole vehicles according to SAEJ551-17 (Vehicle Electromagnetic Immunity – Power Line Magnetic Fields).

- 100 Turns
- W:2.0 x H:3.10 x B:3.18 m
- 650 A/m (5 min) @ coil Dist. =1.8 m
- Recommended: NFCN 9731-100 compensation Network






HHS 5202-81	HHS 5203-536	HHS 5204-12	HHS 5204-36	HHS 5206-4, (-8)	HHS 5206-16, (-25)
Circular Helmholtz Coils	Circular Helmholtz Coils	Circular Helmholtz Coils	Circular Helmholtz Coils	Circular Helmholtz Coils	Circular Helmholtz Coils
DC - 300 kHz	DC - 2 kHz	DC - 500 kHz	DC - 150 kHz	DC - 1.5MHz (800 kHz)	DC - 500 kHz (300 kHz)
81 Turns	536 Turns	12 Turns	36 Turns	4 (8) Turns	16 (25) Turns
232 mm	256 mm	400 mm	400 mm	600 mm	600 mm
1 A input = 500 A/m	1 A input = 2780 A/m	1 A input = 42.93 A/m	1 A input = 128.8 A/m	1 A = 9.64, (19.23) A/m	1 A = 38.17 A/m
5 A continuous	5 A continuous	30 A continuous	10 A continuous	34 A continuous	33 (28) A continuous
6 A (5 min.)	15 A (5 min.)	60 A (5 min.)	20 A (5 min.)	55 A (5 min.)	55 (46) A (5 min.)
3000 A/m (5 min.) 116mm	42 kA/m (5 min.) 143mm	2500 A/m (5 min.)200mm	2500 A/m (5 min.)200mm	530 (1060) A/m 5 min.	2100 (2700) A/m 5 min.
4 mm (f), 7 mm screw	4 mm (f), 7 mm screw	4 mm (f), 7 mm screw	4 mm (f), 7 mm screw	4 mm (f), 7 mm screw	4 mm (f), 7 mm screw
0.20 x 0.25 x 0.39 m	0.41 x 0.32 x 0.25 m	0.38 x 0.58 x 0.42 m	0.38 x 0.58 x 0.42 m	0.64 x 0.79 x 0.42 m	0.64 x 0.79 x 0.42 m
11.3 x 11.3 x 11.3 cm		21.5 x 21.5 x 21.5 cm	21.5 x 21.5 x 21.5 cm	32.5 x 32.5 x 32.5 cm	32.5 x 32.5 x 32.5 cm





HHS 3D 5213-50	HHS 5213-50	HHS 5213-100	HHS 5215-10 (-100)	HHS 5218-10 (-100)
Helmholtz Coils 3D	Helmholtz Coils	Helmholtz Coils	Helmholtz Coils	Helmholtz Coils
DC - 20 kHz	DC - 20 kHz	DC - 5 kHz	DC - 100 kHz (6 kHz)	DC - 100 kHz (3 kHz)
50 Turns	50 Turns	100 Turns	10 Turns (100 Turns)	10 Turn (100 Turns)
1.32 m	1.3 m	1.3 m	1.5 m	1.8 m
57.7 A/m(Coil Dist.0.48m)	48 A/m(Coil Dist. 0.75m)	100A/m (coil Dist.0.705m)	9.96 (84.2) A/m(sep.0.84m)	6.26 (70.6) A/m (sep.1m)
5 A continuous	5 A continuous	9 A continuous	10 A continuous	10 A continuous
8 A (5 min.)	8 A (5 min.)	15 A (5 min.)	20 A (5 min.)	20 A (5 min.)
390 A/m (5 min.)	390 A/m (5 min.)	1501 A/m (5 min.)	200 (2000) A/m (5 min.)	2000 A/m (5 min.)
4 mm (f)	4 mm (f)	4 mm (f)	4 mm (f)	4 mm (f)
1.4 x 1.4 x 1.3 m	1.36 x 1.36 x 0.9 m	1.46 x 1.36 x 0.91 m	1.5 x 1.5 x 0.9 m	2.00 x 1.91 x 1.27 m

NFCN COMPENSATION NETWORKS




Model	NFCN 9731-100	NFCN 9732-85	NFCN 9732-120	HFCN 9734
Use with Loop	HHS 5230-100	HHS 5206-8	HHS 5210-100	HHS 5206-16 HHS 5204-12 HHS 5202-9
Frequency	DC – 180 Hz	80 - 90 kHz	50 – 60 Hz	DC – 200 kHz
Max Current	8 A	11 A	15 A	32 A

MFPO 9760 & FESP 5410-1 AC

Current Transformer and Pulse Generator IEC 61000-4-8

The MFPO 9760 is a current transformer for the typical mains frequencies of 50 Hz / 60 Hz. It is used to feed the 1 m square induction coil FESP 5410-1. This coil can reach magnetic field strengths of 1000 A/m for short time and 360 A/m continuously in its center.

- 1 turn, 2x FESP 5410-1 can be combined to function as Helmholtz coil
- 360A/m with 400 A continuous [600 A (10 min)]
- >1000A/m for 5 seconds
- High field pulse Pulse 0.5---5 Seconds
- Input 230 V / 50/60 Hz / 16 A (US 5kW Power Transformer Available)

HS 5136

Hall-Sensor, Transverse probe

The hall probe HS 5136 can be used to measure magnetic field strengths for immunity tests according to MIL STD 461 and various automotive standards.

- DC - 1 kHz
- 0 - 9000 A/m, Nominal conversion factor: 1 (A/m)/mV
- 12 VDC ±3 % / 250 mA | Opt. 5136 ZG Zero Degaussing Chamber

HS 3D-SENS50T1

3D Magnetic Field Sensor Head for DC fields

The HS 3D-SENS50T1 is a 3-dimensional magnetic field sensor head for measuring DC fields, such as the earth's magnetic field. Magnetic field values can be measured separately from the x-, y- and z-axis. The HS 3D CONTROL display unit is required to display the measured values.

- Opt. 5136 ZG Zero Degaussing Chamber

HS 3D-CONTROL

The HS 3D-Control is a display unit which can be used to measure the 3-dimensional magnetic field-strength in conjunction with an appropriate sensor. DC Only, Battery operated 16 hr.

CP 9610 DC – 1 MHZ

Galvanic Isolated Current Sensor

Can withstand a maximum voltage of 210 VPK / VDC. The internal resistance of the conductive path is less than 3 mΩ, providing low power loss. The hall transducer is temperature compensated and allows high accuracy over temperature

- Sensing range: -40 A - +40 A
- Battery powered (24h run time) charge via USB

SHUNT 9571 DC – 250 KHZ

Low Inductive Precision High Power Shunt, MIL-STD-461

Ideal for Automotive and MIL-STD requirements to measure low frequency current.

- 2 x 500 mΩ / 400 W
- 1 x 1 Ω / 800 W
- 1 x 250 mΩ / 800 W

ACTIVE LOOP ANTENNAS Rx

Magnetic Field Probes

Active, shielded loop antennas with nearly constant antenna factors over the entire frequency range. It can be used for testing according to CISPR, MIL, FCC, EN, ISO, ANSI, ETSI and many other standards. It can be used for the frequency selective measurement of magnetic fields (or fictive electric field).





Model	FMVB 1512	FMZB 1513	FMZB 1519 B	HMDA 1545	HFS 1546
Type	Active, Shielded hand-held loop antenna	Active, Shielded hand-held loop antenna	Active, Shielded Loop Antenna	Digital, Active, Shielded hand-held loop antenna	Active H-Field-Probe shielded Loop
Frequency	9 kHz - 30 MHz	9 kHz - 30 MHz	9 kHz - 30 MHz	9 kHz - 50 MHz	150 kHz - 400 MHz
Range (IF-BW)	Max: 162 dBµV/m (126 V/m), 110.5 dBµA/m (0.33 A/m)	30-130 dBµV/m (9kHz) 8-130 dBµV/m (200Hz)	30-130 dBµV/m (9kHz) 8-130 dBµV/m (200Hz)	46 - 120 dBmA/m 200µA/m - 1 A/m 3 1/2 digit LCD	-13,5 - 105 dBµA/m
Loop Diam.	150 mm	500 mm	500 mm	150 mm	50 mm
Antenna Factor	20 dB/m	20 dB/m	20 dB/m	+10 dB/m	-4.0 dB/Ωm
Mounting	22 tube x 40 mm	2 x 3/8" Thread	1/4", 3/8" Thread	22 tube x 195 mm	22 tube x 195 mm
Dimensions	165 x 350 x 45 mm	520 x 560 x 60 mm	520 x 585 x 120 mm	150 x 75 x 35mm	610 x 50 x 35 mm
Additional	Attenuation: 0 - 33 dB in 3 dB steps	Optional Case CCA 1613, longer handle			Optional Short version (pictured)
Standard		acc. to CISPR 16	acc. to CISPR 16		

See Page 70 for Magnetic field probes and near field probes

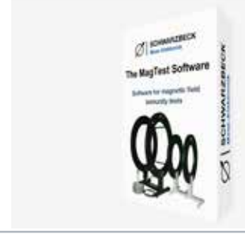
PASSIVE MAGNETIC ANTENNAS Rx

Rx-Loop Antennas Single Turn




Model	HFRAE 5160	HFRAE 5161	HFRAE 5162	HFRAE 5163
Type	VHF Rx Loop	HF Rx Loop	VLF Rx Loop	VLF-VHF Rx Loop
Frequency	1 - 300 MHz	70 kHz - 120 MHz	50 kHz- 30 MHz	9 kHz - 400 MHz
Loop Diam.	50 mm	100 mm	250 mm	50 mm
Antenna Factor	typ. 22.7 +/- 2.5 dB/Ωm typ. 74.2 +/- 2.5 dB/m	28 dB/Ωm nominal 79.5 dB/m nominal	20.5 dB/Ωm nominal 72 dB/m nominal	25 dB/Ωm nominal 76.5 dB/m nominal
Mounting	3/8" Camera thread	3/8" Camera thread	3/8" Camera thread	3/8" Camera thread
Dimensions	104 x 60 x 62 mm			
Connector	BNC(f)	BNC(f)	BNC(f)	BNC(f)
Standard		acc. to CISPR 16	acc. to CISPR 16	

MAGNETIC SYSTEM



MAGTEST SYSTEM 5HZ-1MHZ

Magnetic Immunity Turnkey

The MagTest System is a system to generate magnetic fields and to perform tests regarding the susceptibility against magnetic fields in accordance to military, civil, automotive and manufacturer's standards.

- MBN10284-2,2008-03, VW TL82566:2006-11, VW TL 82566:2006-11, FORD, Stelantis, PSA, Renault, Fiat, ISO 11452-8, MIL STD-461 RS101
- GM9097 AC and Pulsed Magnetic Field
- VOLVO MagTest

LFPA 9733 C — POWER AMPLIFIER

5Hz to 1 MHz

Typical applications are magnetic immunity testing according to automotive standards and MIL-461.

- Its new output stage design allows for higher output in the high frequency range. Additionally it features a galvanically isolated input. Additionally unsymmetrical signals (as defined in GMW 3097) can be processed. RC 9736 needed
- AC: 28Amps, 0.25Ω

RC-9736 — SNUBBER NETWORK

For pulse testing using the LFPA 9733 C and inductive loads, GMW 3097

- 2 Ohm + 4,7 µF, 3kW, DC - 1 MHz

CP 9610 — CURRENT PROBE

Can measure up to 40 A in a frequency range from DC – 1 MHz. It is galvanically isolated and can withstand a maximum voltage of 210 VPK / VDC.

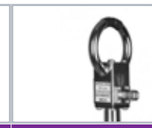
SHUNT 9571 — MEASURING RESISTOR

High power shunt resistor with low inductance. Frequency Range: DC – 250 kHz Resistance values and max. continuous power rating: 2 x 500 mΩ / 400 W; 1 x 1 Ω / 800 W; 1 x 250 mΩ / 800 W;

NFCN 9734 — COMPENSATION NETWORK

Primary function of the compensation network NFCN 9734 is to provide a serial compensation of the inductance of Helmholtz coils

COMMON COILS USED FOR AC



FESP 5132 & FESP 5134-40	FESP 5133-7/41	HHS 5206-4, -16	HHS 5204-12	HFRAE 5163	FESP 5133-9
Circular Screened & Field Monitoring	Circular Screened Coil	Circular Helmholtz Coils	Circular Helmholtz Coils	Passive Magnetic RX Loop Antenna	Circular Screened Coil
5 Hz - 250 kHz	0.01 kHz - 250 kHz	60cm 4 & 16 Turn	40cm 12 Turn	9 kHz - 400 MHz	10 kHz - 3 MHz
AC	VOLVO MagTest	AC	AC	VOLVO MagTest	VOLVO MagTest

COMMON ACCESSORIES USED DC

DC levels can be generated with common DC Supplies in the lab. The bellow accessories allow for pepper setup, field generation, and measurements.

ELKO 9735 — ALUMINIUM ELECTROLYTIC CAP

For the generating of magnetic DC fields Helmholtz-Coils can be driven by laboratory power supplies.

- Suppresses resonance effects cased by power supply regulation circuits

HS 5136 — HALL SENSOR

- DC...1 kHz, 0 ... 7000 A/m (peak)
- Opt. 5136 ZG Zero Degaussing Chamber

FESP 5133-1330 — CIRCULAR COIL

Designed for immunity testing against magnetic fields up to approx. 20 kHz. The coil has 225 turns of Cu-wire on 15 layers. Can Generate High DC Fields

NFCN 9734 — COMPENSATION NETWORK

For conducting magnetic immunity testing according to automotive standards and MIL-STD 461.
Designed to generate high DC magnetic fields

CP 9610 — CURRENT PROBE

Can measure up to 40 A in a frequency range from DC – 1 MHz. It is galvanically isolated and can withstand a maximum voltage of 210 VPK / VDC.

SHUNT 9571 — MEASURING RESISTOR

High power shunt resistor with low inductance. Frequency Range: DC – 250 kHz Resistance values and max. continuous power rating: 2 x 500 mΩ / 400 W; 1 x 1 Ω / 800 W; 1 x 250 mΩ / 800 W;

IEC 61000-4-39 & IEC 60601-1-2 CLOSE PROXIMITY FIELDS

Model	TEMH 6000	HFRA 5164	FESP 5134-1	FESP 5132	FESP 5134-40
Type	TEM Horn Antenna	Radiating Loop	Field Monitoring Coil	Radiating Loop	Field Monitoring Coil
Frequency	380 MHz - 6 GHz	10 kHz - 120 MHz	100 kHz - 300 MHz	DC - 150 kHz	5 kHz - 250 MHz
Loop turns		3	1	20	51
Loop Diam.		100 mm	40 mm	120 mm	40 mm
Current (max)	300 Watts	8A (12A 5min)	20 dB/m	10A (20A 5min)	
Connector	Type N, 22 tube	BNC, 3/8" Thread	BNC	4mm Banana	BNC, 1/4" thread
Dimensions	260 x 300 x 210 mm	158 x 112 x 45 mm	46 x 18 x 95 mm	0.16 m x 0.25 (0.3) m	70 x 31 x 45 mm
Options	Spacer 100	NFCN 1356 Loopholder 5164-39		LoopHolder50	
Standard	IEC 61000-4-39	IEC 61000-4-39 IEC 60601-1-2	Used with HFRA 5164	IEC 61000-3-39, IEC 60601-1-2 ISO 11452-8 MIL 461E RS101 EN 55103 5.18.3.2	Used with FESP 5132


Spacer 100


NFCN 1356


Loopholder 5164-39


Loopholder50

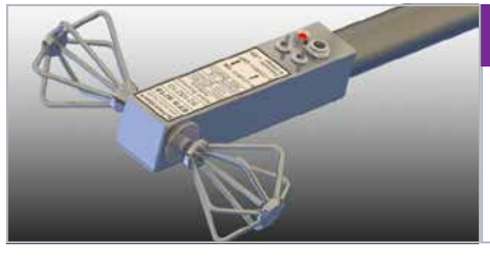
ACTIVE ANTENNA PROBES

FS-SET 7100 B

Near-field Probe Set **9 kHz - 1 GHz**

Full near-field probe kit includes the following:

- HFSL 7101 Magnetic Active Probe, 9 kHz - 30 MHz
- HFSH 7102 Magnetic Active Probe, 4 MHz - 1000 MHz
- EFS 7103 Electric Active Probe, 9 kHz - 1000 MHz
- EW 7110 DC Separator for powering though coax
- ACDC 7110 AC power adapter



EFS 9218

Active Electric Field Probe

- Active electric field probes
- Battery powered ~10hr
- Built-in amplifier
- 9 KHz - 300 MHz
- 12 µV/m - 65 V/m
- Opt. ACS 410, AC Power supply/Battery charger

FSH3D, FSE3D, ...

Field Probes for Handheld Analyzer

Isotropic H/E-Field Antenna for the Rohde & Schwarz handheld spectrum analyzer FSH or the TS-EMF System:

Model	Frequency	Range	
FSH3D	9 kHz - 200 MHz	Magnetic	Active
FSE3D	30 MHz - 3 GHz	E-Field	Active
FSHPH	9 kHz - 300 MHz	Magnetic	Passive
FSHPE	9 kHz - 200 MHz	E-Field	Passive

SW CURRENT MEASUREMENT

Model	SW 9602	SW 9603	SW 9605	SW 9606
Frequency	0.01 - 200 MHz	9 kHz - 150 MHz	9 kHz - 80 MHz	9 kHz - 200 MHz
Wire Diameter	<6.5 mm	<14 mm	<23 mm	<23 mm
Impedance	1 Ohm	1 Ohm	1 Ohm	8 Ω for injection

GENERAL RF PRODUCTS

IGUU 2918

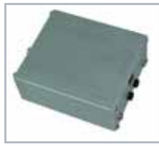
Calibration Pulse Generator for CISPR

For many decades the Schwarzbeck Calibration Pulse Generators have been recognized as world wide standard. Their mechanical relay contacts generate spectrum beyond 1GHz with both high voltage and high precision.

- Pulse range 0.1Hz to 1MHz (Band A/B/C/D)
- Test range: 9 kHz- 1000 MHz
- KU 9618 Coax Switch option easy EUT switching
- GPIB interface

SY 9223 PROFIBUS

SY 9223 Profibus balun adapts a symmetrical signal to a coaxial line. Usually twisted pairs with an impedance of approx. 120 Ω are used to transmit the Profibus signals. The SY 9223 Profibus can be applied to use an existing triaxial wiring.



SY 9223-100, -120B, -135, & -150

CISPR 17

Balun transforms an unsymmetrical signal at a 50 Ω source impedance into a galvanically isolated symmetrical signal at 100 Ω, 120 Ω, 135 Ω, or 150 Ω respectively, impedance in a wide frequency range. BNC to RJ45 Pin 4+5 and 4 mm banana female

SY 9223-CISPR 13

CISPR 13 fig. A.2, 50 Ohm 75 Ohm

The isolation transformer corresponds to the wiring schematics of CISPR 13 Fig. A.2. It is equipped with a 50 Ω female N connector at its input and a female 75 Ω female N-connector at its output.

SY 9223-17-100 & SY 9223-17-0.1

CISPR 17 for filter measurements, 50 Ohm : 100 Ohm & 50 Ohm : 0.1 Ohm

Two wideband transformers are required to transform the typical impedance of measurement devices from 50 Ω to 0.1 Ω or from 50 Ω to 100 Ω respectively

SY 9223-120

IEC61643-21

Is a balun including a resistive adaption part. It transforms an asymmetrical 50 Ω signal (N-connector) into a symmetrical 120 Ω environment (screw terminals).

SY 9223-PLC, IN 9223-PLC

EN 50065-2-1 2003 + A1:2005

Was designed for measurements acc. to EN 50065-2-1. The balun transformer offers galvanic isolation of the symmetrical and the unsymmetrical ports with a transformation ratio of 1:1. It can be used for both, immunity and emission testing of mains signaling devices.

LISN LINE IMPEDANCE STABILIZATION NETWORKS

	Model	Tests	Impedance	Current	Voltage	Paths	Conn.	Cal Adpt.	Options
	Automotive								
	**NNHV 8123**	CISPR 25 HV BMW GS 95025-1, BCI	5µH || 50 Ω	70 A AC 100 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8125	HVSE 8600
	**NNHV 8123-200**	CISPR 25 HV, BMW GS 95025-1, BCI	5µH || 50 Ω	200 A 280 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 D	HVSE 8600
	**NNHV 8123-400**	CISPR 25HV, BMW GS 95025-1, BCI	5µH || 50 Ω	400 A 500 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 F HYB	HVSE 8600 CAP 0.9-400
	**NNHV 8123-800**	CISPR 25 HV, BMW GS 95025-1, BCI	5µH || 50 Ω	800 A 1000 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 F HYB	HVSE 8601 CAP 0.9-400
	**NNHV 8123-1600**	CISPR 25 HV, BMW GS 95025-1, BCI	5µH || 50 Ω	1600 A	700V AC, 300V 400Hz 1000V DC	1	Type N(f)		HVSE 8602
	**NNHV 8123-200R**	CISPR 25 HV, BMW GS 95025-1, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	200 A 280 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 D	HVSE 8600
	**NNHV 8123-400R**	CISPR 25 HV, BMW GS 95025-1, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	400 A 500 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 F HYB	HVSE 8600
	**NNHV 8123-800R**	CISPR 25 HV, BMW GS 95025-1, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	800 A 1000 A Max	700V AC, 300V 400Hz 1000V DC	1	Type N(f)	KA 8126 F HYB	HVSE 8601
	**NNBM 8124**	CISPR 25, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	70 A AC 100 A Max	250V AC, 130V 400Hz 500V DC	1	BNC(f)	KA 8125	N-connector
	**NNBM 8124-200**	CISPR 25, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	200 A AC/DC 280 A Max	700V AC, 700V 400Hz 1000V DC	1	BNC(f)	KA 8126 D	N-connector
	**NNBM 8124-400**	CISPR 25, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	400 A AC/DC 500 A Max	700V AC, 700V 400Hz 1000V DC	1	BNC(f)	KA 8126 F HYB	N-connector
	**NNBM 8124-800**	CISPR 25, ISO 7637-2, BCI	(5µH + 1 Ω) || 50 Ω	800 A AC/DC 1000 A Max	400V AC, 300V 400Hz 1000V DC	1	BNC(f)	KA 8126 F HYB	N-connector
	**BNB 8652**	MBN 11123, ISO 21498-2	2 x 1 µH Rint = 50/25/10 mΩ	100A, 120A, 200A	1000 VDC	2	Type N(f)	Water cooled	
	**BNB 8653**	MBN 11123, ISO 21498-2	2 x 1 µH Rint = 50/25/10 mΩ	300A, 600A, 850A	1000 VDC	2	Type N(f)	Water cooled	
	**BNB 8654**	MBN 11123, ISO 21498-2	2 x 1 µH Rint = 50/25/10 mΩ	500A, 1000A, 1600A	1000 VDC	2	Type N(f)	Water cooled	
	**BAN 8508**	ISO 11452-7 or DC-10614		2 A - 8 A	100 V DC	1	BNC(f)		DC-Block 500
	**BAN 8530**	ISO 11452-7 or DC-10614		8 A – 30 A	100 V DC	1	BNC(f)		DC-Block 500

HVSE 8600 / 8601 / 8602

Shielded Enclosure for Automotive LISN CISPR 25 Ed. 4

The HVSE 8600 Shielded Enclosure (Shielding Box) is necessary for measurements of electric or hybrid vehicles.

HVSE 8600: NNHV 8123, NNHV 8123-200, NNHV 8123-400, NNHV 8123R, NNHV 8123-200R, NNHV 8123-400R
HVSE 8601: NNHV 8123-800, NNHV 8123-800R
HVSE 8602: NNHV 8123-1600 (One neeeded for each LISN)

	Model	Tests	Impedance	Current	Voltage	Paths	Conn.	Cal Adpt.	Options
	DO 160								
	**NNBM 8126 A 890**	DO160, MIL-STD Aircraft, Def-Stan	(5 µH + 5 Ω) || 50 Ω	70 A AC/DC 100 A Max	530V 400Hz, 270V 890Hz 600V DC	1	BNC(f)	KA 8125	DO-160 CAL CAP 10-100 N-connector
	**NNBM 8124**	DO160, MIL-STD Aircraft, Def-Stan	(5µH + 1 Ω) || 50 Ω	70 A AC 100 A Max	250V AC, 130V 400Hz 500V DC	1	BNC(f)	KA 8125	DO-160 CAL CAP 10-100 N-connector
	**NNBM 8124-200**	DO160, MIL-STD Aircraft, Def-Stan	(5µH + 1 Ω) || 50 Ω	200 A AC/DC 280 A Max	700V AC, 700V 400Hz 1000V DC	1	BNC(f)	KA 8126 D	DO-160 CAL CAP 10-200 N-connector
	**NNBM DO160-1500**	DO160, MIL-STD Aircraft, Def-Stan	5 µH || 50 Ω.	200 A AC/DC 280 A Max	650V AC, 650V 400Hz 1500V DC	1	BNC(f)	KA 8125	DO-160 CAL CAP 10-200 N-connector
	MIL-STD								
	**NNBL 8225**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	20 A AC/DC	250V AC, 140V 400Hz 250V DC	1	BNC(f)	KA 8125	N-connector
	**NNBL 8226**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	70A AC/DC 100A Max	250V AC, 140V 400Hz 250V DC	1	BNC(f)	KA 8126 D	N-connector
	**NNBL 8226-HV**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	70A AC/DC 100A Max	800V AC, 140V 400Hz 800V DC	1	BNC(f)	KA 8126 D	N-connector
	**NNBL 8226-2**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	70A AC/DC 100A Max	250V AC, 140V 400Hz 500V DC	2	BNC(f)	KA 8126 D	CAP 10-8226-2 N-connector
	**NNBL 8229-HV**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	200 A AC/DC	800V AC, 1000V DC	1	BNC(f)	KA 8126 D	N-connector
	**NNBL 8230**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	300A AC/DC 500A Max	250V AC, 140V 400Hz 500V DC	1	BNC(f)	KA 8126 F HYB	N-connector
	**NNBL 8240**	Mil-Std-461/462	(50µH + 5 Ω) || 50 Ω	800A AC/DC 1000A Max	650V AC, 1000V DC	1	BNC(f)	KA 8126 F HYB	N-connector
	CISPR 16-1-2 socket								
	**NSLK 8117**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	2 x 10 A AC/DC Schuko	250V AC, 350V DC artificial hand	2	BNC(f)	KA 8127	N-connector
	**NSLK 8127**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	2 x 16 A AC/DC Schuko	250V AC, 400V DC artificial hand	2	BNC(f)	KA 8127	RC, PLC N-connector
	**NSLK 8126**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	2 x 16 A Schuko 4 x 16 A CEKON	250V AC, 400V 3P, 400V DC, artificial hand	4	BNC(f)	KA 8127, KA 8126	RC N-connector
	**NSLK 8128**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	2 x 16 A Schuko 4 x 32 A CEKON	250V AC, 400V 3P, 400V DC, artificial hand	4	BNC(f)	KA 8127, KA 8128	RC N-connector
	**NSLK 8163**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	4 x 63 A CEKON	400V AC, 700V 3P, 630V DC, artificial hand	4	BNC(f)	KA 8163	RC N-connector
	CISPR 16-1-2 Wing Terminals								
	**NNLK 8121**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	50 A AC/DC 100 A	250V AC, 400V 3P, 400V DC	4	BNC(f)	KA 8121	RC, 400/700V, HighCurrent, Fans, TC, N
	**NNLK 8122**	CISPR 16-1-2	50 µH + 5 Ω || 50 Ω	50 A AC/DC	750V AC 1000V DC	2	BNC(f)	KA 8121	N-connector
	**NNLK 8129**	CISPR 16-1-2	50 µH || 50 Ω	200 A AC/DC 300 A Max	250V AC, 400V 3P, 400V DC	4	BNC(f)	KA 8129	RC, 400/700V, Fans, TC N-connector
	**NNLK 8129-2 HV**	CISPR 16-1-2	50 µH || 50 Ω	200 A AC/DC 300 A Max	1000V AC, 1000V DC	2	BNC(f)	KA 8129	RC, TC N-connector
	**NNLK 8130**	CISPR 16-1-2	50 µH || 50 Ω	400 AAC/ DC500 A Max	250V AC, 400V 3P, 400V DC	4	BNC(f)	KA 8130	RC, 400/700V, TC N-connector
	**NNLK 8140**	CISPR 16-1-2	50 µH || 50 Ω	800 A AC/DC 1000 A Max	1000V AC, 500V 400Hz, 1000V DC	1	BNC(f)	KA 8130	TC N-connector

LISN ACCESSORIES

CAP 10-100 / CAP 10-200 /CAP 10-8226-2

10uF Capacitors
CAP 10-100 & CAP 10-200 for tying Line to Ground to meet: DEF STAN 59, DO 160, or MIL 461F Aircraft
CAP 10-8226-2 for tying Line to Line for meeting MIL-STD-461 CS 101-4; CS106-3 Used on NNBL 8226-2

CAP 0.9-400

Extend the use of 8123 LISNS for 1uF testing

Capacitance of in total 1 uF parallel to a resistance of 1 MΩ at the input side of the LISN a 0.9 µF capacitor like the CAP 0.9-400 has to be connected to the mains terminals of the NNHV 8123-400 or NNHV 8123-800 LISN.

CMDM 8700

Common Mode / Differential Mode Switch for use with LISNs

9 kHz - 108 MHz, Measurement modes: Line A, Line B, Common mode, Differential mode

ARTIFICIAL HAND

CISPR 16-1-2, 220 pF + 510 Ω

Artificial hand simulates the capacitive coupling between device under test and human hand which rests on the device under test during regular operation.

CALIBRATION ADAPTORS

KA 8127
Schuko male
Fits NSLK 8127, NSLK 8126, NSLK 8128, R&S ESH3-Z5, ENV216

KA 8127 F
Schuko female
Fits NSLK 8127, R&S ESH3-Z5, ENV216

KA 8127 NEMA
NEMA male

KA 8126
CEE / CEKON 16 A male 16 Amp 3-P
Fits NSLK 8126

KA 8126
CEE / CEKON 16 A female 16 Amp 3-P
Fits NSLK 8126

KA 8128
CEE / CEKON 32 A male 32 Amp 3-P
Fits NNSLK 8128, R&S ENV432

KA 8128 F
CEE / CEKON 32 A female 32 Amp 3-P
Fits NSLK 8128, R&S ENV432

KA 8163
CEE / CEKON 63 A male 63 Amp 3-P
Fits NSLK 8163

KA 8163 F
CEE / CEKON 63 A female 63 Amp 3-P
Fits NSLK 8163

KA 8121
Fits NNLK 8121, NSLK 8122 and NDTV 8160

KA 8125
Fits NNBM 8124, NNBM 8125, NNBM 8126 A, NNBM 8125 BCI and NNBL 8225, NNHV 8123, NPLC 8500

KA 8129
Fits NNLK 8129

KA 8126 D
Fits NNBM 8126 D, NNBL 8226-HV, NNBL 8226, NNBL 8226-2, NNBM 8125 BCI with Option 200 A, NNBM 8124-200, NNBM 8126 G, NNHV 8123200

KA 8130
Fits NNLK 8130, NNBL 8230, NNBL 8240 and NNLK 8140

KA 8126 F
Fits NNBM 8126 E, NNBM 8126 F, NNBM 8126 F HYB up to S/N 148

MSS 9630
Braid current blocking cable
N-male, N-female, length ca. 0.2-0.3 m

KA 8126 F HYB
NNBM 8124-400, NNBM 8124-800, NNBL 8229 HV, NNBM 8126 F HYB starting from S/N 149, NNHV 8123-400

M/F CONECTORS & REPLACMENT LISN TERMINALS

PULSE LIMITERS

Diode Pulse Limiter with built-in power attenuator and fuse lamp to protect sensitive measuring equipment.
Use with LISN!

Model	VTSD 9561 D-BNC	VTSD 9561 D-N	VTSD 9561 F-BNC	VTSD 9561 F-N	VTSD 9562
General Specs	Diode Pulse Limiter	Diode Pulse Limiter	Diode Pulse Limiter	Diode Pulse Limiter	Partial Discharge Limiter
Frequency Range	DC ... 200 MHz	DC ... 200 MHz	DC ... 200 MHz	DC ... 200 MHz	150 kHz ... 1 MHz
Insertion Loss	20 dB +/- 0.5 dB	20 dB +/- 0.5 dB	10 dB +/- 0.5 dB	10 dB +/- 0.5 dB	
Fuse Lamp (RI)	Osram 2306	Osram 2306	Osram 2306	Osram 2306	Amplitude limited
Connector	BNC	Type N	BNC	Type N	BNC

SPECIAL LISN

SPECIAL LISN

The ECSS LISN 1 was developed following the „European Cooperation for Space Standardization“. The ECSS LISN 1 is used for DC mains lines.

Model	ECSS LISN 1	ECSS LISN 2	ECSS LISN 2-75A	ECSS LISN 3
Frequency Range	10 Hz – 150 MHz	10 Hz – 150 MHz	10 Hz – 150 MHz	10 Hz – 150 MHz
Impedance	(1.5 µH+0.1 Ω) || 50 Ω	(2 µH+0.1 Ω) || 50 Ω	(2 µH+0.1 Ω) || 50 Ω	(0.7 µH+0.05 Ω) || 50 Ω
Current	10 A (15 A Short time)	10 A (15 A Short time)	75 A (100 A Short time)	10 A (15 A Short time)
Voltage	200 V DC	200 V DC	200 V DC	200 V DC
Paths	2	2	2	2
Standard	ECSS-E-ST-20-07 Rev1	ECSS-E-ST-20-07 Rev1	ECSS-E-ST-20-07 Rev1	ECSS-E-ST-20-07 Rev1

Aditional ECSS LISNs:
ECSS LISN 4 10A, 200V, 2 paths, no measurement output, 2.0 µH, 20 mF, switchable resistors, increased power dissipation.
ECSS LISN 5 10A, 200V, 2 paths, without measuring output, 2 µH. Like the ECSS LISN 2 but with 10mF capacitor 'C2' (instead of 5mF) and without 10µF capacitor 'C1' and 'C3' to ground, without resistors 'R2' and 'R5'.
ECSS LISN 6 10A, 200V, 2 paths, no measurement output, 0.5 µH.
ECSS LISN 7 10A, 200V, 2 paths, no measurement output, 1 µH.
ECSS LISN 8 10A, 50V, 2 paths, no measurement output, 3 µH
ECSS LISN 9 - 75A 75A, 200V, 2 paths, no measurement output, 5 µH (like the ECSS LISN 2 - 75 A, but with 5 µH inductors instead of 2 µH).
ECSS LISN 10 10A, 200 VDC, 2 paths, 10 Hz - 150 MHz, no measurement output, L1=L2= 5 µH, R1=R2=100mOhm, R3=R4 = 50 Ohm, C1 = 1.4 mF.
ECSS LISN 11 10A, 200V, 2 paths, no measurement output, x=1 µH, y=25 mOhm, optional capacitor between the regulation wires = 1 mF.
ECSS LISN 12 10A, 200 VDC, 2 paths, 10 Hz - 150 MHz, no measurement output, L1= L2= 4 uH, R1=R2= 140 mOhm, optional capacitor between the regulation wires = 5mF.
ECSS LISN 13 5A, 40 VDC, 2 paths, no measurement output, 0.5 µH, 200 mOhm, 20 mF, switchable resistors.

Model	PVDC 8301	PVDC 8300	TEMP 8400	NPLC 8500
General Specs	Photovoltaic Inverters Common/Differential	Photovoltaic Inverters Common/Differential	Tempest LISN	PLC measurements ITU-T G.9901
Frequency range	0.15 MHz - 30 MHz	0.15 MHz - 30 MHz	9 kHz - 1 GHz	3 kHz - 148.5 kHz
Impedance	(150 +/- 30) Ω	(150 +/- 20) Ω	(50 +/- 10) Ω	1 Ω
Current	200 A(250 A Short time)	100 A (150 A Short time)	16 A (25 A Short time)	16 A_{rms}
Voltage	1500 V DC	1500 V DC	150 V AC	250 V AC 50Hz
Paths	2	2	2	1
Connector	BNC(f)	BNC(f)	Type N(f)	
Options	-RC, -400 amps		Adapters to wing-terminals/ schuko/GB	

HPF 150 K - HIGH PASS FILTER

9kHz - 30 MHz, 50Ohm, 100 Watts, Type N(f)

HPF is a passive LC-Filter with female N-connectors in shielded metal housing with very steep slope according to CISPR 16-1-1. The main application is the elimination of noise below 150 kHz for conducted measurements.

HPF - HIGH PASS FILTER

35 - 1000 MHz, 50Ohm, 100 Watts, Type N(f)

HPF is a passive LC-Filter with female N-connectors in shielded metal housing with very steep slope according to CISPR 16-1-1. The main application is the spurious measurement of medical diathermal equipment with a fundamental frequency of 27.12 MHz

RF ACCESSORIES

LOW NOISE PRE-AMPLIFIERS

Low-Noise Preamplifiers are used to increase signal levels for measurements.



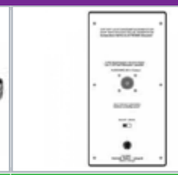



Model	BBV 9743 B	BBV 9744	BBV 9745	BBV 9745	BBV 9718 D	BBV 9721
General Specs						
Frequency Range	10 MHz - 6 GHz	9 kHz - 6 GHz	9 kHz - 2 GHz	10 MHz - 8 GHz	1- 8GHz(0.5 - 20GHz)	18 - 40 GHz
Noise Figure	Typ.<2.7 dB (1.0 GHz)	2.5 dB (1.0 GHz)	2.5 dB (1.0 GHz)	2.7 dB (1.0 GHz)	2 dB	5.5 dB
Gain	Typ. +28 dB	+28 dB	+30 dB	+29dB	+ 27dB (typ. 30 dB)	+30 dB (typ. 35dB)
Gain Flatness	< +/- 3 dB	< +/- 3 dB	< +/- 3 dB	< +/- 3 dB	< +/- 5.5 dB	< +/- 4 dB
1dB Compression	> -18 dBm (89 dBµV)	> -20 dBm (87 dBµV)	> -20 dBm (87 dBµV)	> -17 dBm (90 dBµV)	> -18 dBm (89 dBµV)	> -20 dBm (87 dBµV)
VSWR In/Out	< 2 : 1	< 2 : 1	< 2 : 1	< 2 : 1	< 2.5 : 1	< 2.6 : 1
Power	+ 10-15 V, 120 mA	+ 10-15 V, 120 mA	+ 10-15 V, 120 mA	+ 10-15 V, 120 mA	Battery 3.7 V, 3.1 Ah Lithium Ion	+ 15 V / 600 mA DC Supply1 -(8...15)V/-100 mA DC Supply 2
Power Supply	PS 120/12	PS 120/12	PS 120/12	PS 120/12	USB port, Charger	PS 9721
Optional Battery						PS 9721 Battery
Mounting	To antenna	To antenna	To antenna	To antenna	Mounts to antenna's 22mm tube, 0.5m coax N-SMA	Antenna mounts to BBV 9719, short Coax 2.92 connector (shown in picture)

COMB & NOISE GENERATORS

Comb Generators produces frequency spectrum lines with spacing. In combination with an antenna it can be used as an emission source for testing open area test sites, anechoic chambers or GTEM-cells.



Model	SG 9301	SG 9303	SG 9302 C	IGUF 2910
General Specs	Comb Generator	Comb Generator	Comb Generator	Pulse Generator (noise)
Frequency Range	30-1000 MHz	(0.01) 1 - 6 (8) GHz	0.1 - 18 GHz	up to 300MHz (1 GHz)
Frequency Spacing	100 Hz, 1 kHz, 10 kHz, 100 kHz, & 1 MHz	10 MHz & 100 MHz	100 MHz	
Operation	Battery	Battery	Battery	Battery
Charger	ACS 110	ACS 110	USB Port	LGA 9802
Connector	Type N (f)	Type N (f)	Type N (f)	BNC (f)
Suggested Accessories	DGA 9552 N 10 dB UBAA9114,BAOC 9216 Bicon	DGA 9552 N 10 dB SBA 9119 Mini Bicon	DGA 9552 N 10 dB SBA 9112 Mini Bicon	DGA 9552 N 10 dB

DGA 9552 N-# BIDIRECTIONAL ATTENUATOR 18 GHz

High Quality Bidirectional attenuator
- 5 watts CW/ 1kW peak, Low VSWR
- Available in 3, 6, 10, 20, 30, & 40 dB values
- Delivered with an individual calibration

CCA 9552A optional case

DGA 9553 BNC-# BIDIRECTIONAL ATTENUATOR 2 GHZ

High Quality Bidirectional attenuator
- 1 watts CW, Low VSWR
- Available in 3, 6, 10, 20, & 30 dB values
- Delivered with an individual calibration

DC BLOCK 500 50 KHZ - 1 GHz

For the protection of measurement receivers from high DC levels.
A lot of measurement setups require to decouple the device under test (DuT) from the measurement equipment DC wise. Measurement equipment for RF often provides an impedance of 50 Ω and does not provide galvanic isolation.

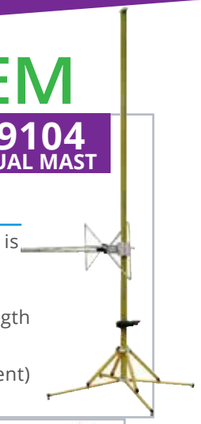
ANTENNA TRIPOD SYSTEM

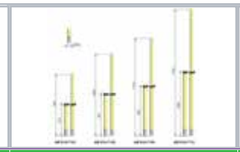
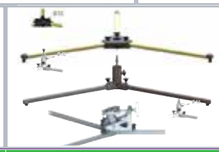
AM 9144 AM 9104 4m MANUAL MAST

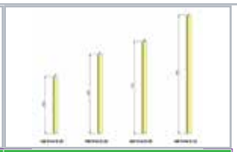
Modular Antenna Mast System

The double telescopic antenna mast / tripod is continuously height-adjustable.

- Sturdy design for all antennas
- Fiberglass for low-reflectivity/high-strength
- Adjustable for uneven surface
- Screw antenna mount 3/8" for adapter
- Max hight of 3m (configuration dependent)





Antenna Adapters	Telescoping Section	Mast Foot	Optional Wheels	Optional Extensions
AA9202, **AA 9202 POM,** **AA 9203** **AA 9209,** **AA 9205,** **RA 9215,** **KG 9201,** **PDG 9211,** **PPS 9208** **Positioner,** **AA 9213,** **RS 9214**	**AM 9144 T-05** 510-940 mm	**AM 9144 M-VA** Stainless Steel +100 mm	**AM 9144 W-VA** For M-VA/M-TILT Foot +50 mm	**AM 9144 E-05** +430 mm
	AM 9144 T-08 700 - 1300 mm	**AM 9144 M-GFK** Fiberglass +50 mm	**AM 9144 W-GFK** For M-GFK Foot +50 mm	**AM 9144 E-08** +600 mm
	AM 9144 T-09 800 - 1510 mm	**AM 9144 M-TILT** Stainless Steel, Tilt 20° +140 mm		**AM 9144 E-09** +710 mm
	AM 9144 T-12 1050 - 1950 mm			**AM 9144 E-12** +900 mm

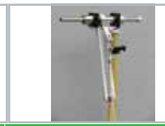
ANTENNA ADAPTERS






AA 9202	AA 9202 POM	AA 9209	AA 9203	RA 9215	KG 9201
Mast Adapter	Mast Adapter	Heavy Duty Mast Adapter	Elevation Swivel Mast Adapter	Indexing 90 ° step Mast Adapter	Polarization swivel Mast Adapter
22 mm hole for most Antennas	22 mm hole for most Antennas	For: STLP 9128 E/E-SP/D/D-SP, STLP 9129	22 mm hole for most Antennas	22 mm hole for most Antennas	For VULP 9118 D,E,F,G and VUSLP 9111 E only
3/8" and 1/4" camera threads	3/8" camera thread	3/8" and 1/4" camera threads	3/8" and 1/4" camera threads	3/8" and 1/4" camera threads	3/8" camera thread



AA 9205	AA 9213	PDG 9211	PPS 9208	EA 9207	POSITIONER
Orthogonal Swivel Adapter	22 mm Mast Adapter	Polarization swivel fixture	Pneumatic polarization adapter	Adapter to EMCO Mast	Light Antenna adapter
22 mm hole for small Bicon	3/8" female thread to 22 mm tube BBHA 9170	For: Large Horn antennas: BBHA 9102 J,G,F,LF...	22 mm hole for most Antennas & PDG 9211	22 mm hole for most Antennas	For SBA 9113, 420 NJ
3/8" and 1/4" camera threads	22 mm mount	3/8" camera thread	3/8" camera thread	3/8" and 1/4" camera threads	22 mm mount

AUTOMOTIVE ANTENNAS

419NJ ELEMENTS

Elements for NMHC 4MM Balun — 30MHz - 220MHz

Flat, broadband antenna elements with termination resistors and heatsinks for the NMHC 4MM Balun for efficient immunity testing at close distances in the frequency range below 220 MHz.

- 20 MHz - 220 MHz,
- Used with NMHC 4MM, 30 watts
- 240 x 109 x 2 mm
- Optional 50mm spacer made with RF transparent material Polystyrene
- Ordering info: 419NJ, NMHC 4MM, Spacer 50, CCA NMHC 4MM(case)

NMHC 4MM

Small Biconical Antenna, Rx and Tx

- 50 kHz - 300 MHz, 30 watts, Type N(f)
- ISO 11452-9 Annex C.5 20 MHz and 220 MHz with the flat elements 419 NJ
- 75 x 28 x 322 mm,

420NJ ELEMENTS

Elements for SBA 9113 Balun — 360 MHz - 2.7 GHz

Flat, broadband antenna elements for the SBA 9113 Balun (also compatible with SBA 9113B and SBA 9113 Short Version) for efficient immunity testing at close distances. Linear Polarization.

- 360 MHz - 2.7 GHz,
- Used with SBA 9113, -B, and -mini versions, 20 watts
- 240 x 109 x 2 mm
- Optional 50mm spacer made with RF transparent material Polystyrene
- Ordering info: 420NJ, SBA 9113 (comes with Case), Spacer 50

SB 9113

Small Biconical Antenna, Rx and Tx

- 500 MHz - 3 GHz, 20 watts, Type N(f)
- CISPR16-1-4:2007-02 Ed. 2.0 Site validation above 1 GHz
- 140 x 49 x 560 mm, Mini ver. available

422NJ ELEMENTS

Elements for SBA 9119 Balun — 800 MHz - 6 GHz

The combination of the flat elements 422 NJ with SBA 9119-Balun provides remarkable field-strength levels with moderate transmit power. With approx. 10 Watt transmit power, one can reach field-strength levels of 300 V/m at a distance of 30 mm.

- 360 MHz - 2.7 GHz,
- Used with SBA 9119 and -mini versions, 20 watts
- 108 x 49 x 2 mm
- Optional 30mm spacer made with RF transparent material Polystyrene
- Ordering info: 422NJ, SBA 9119 (comes with Case), Spacer 30

SBA 9119

Small Biconical Microwave Antenna, Rx and Tx

- 1 - 6 GHz, 20 Watts, Type N(f)
- CISPR16-1-4:2007-02 Ed. 2.0 Site validation above 1 GHz
- 190 x 50 x 560 mm, Delivered with transportation case

FOLDED DIPOLE ELEMENTS — FDAI

NMHB 4MM - 1:1 Balun
9 kHz - 420MHz
50Ω, <2 SWR, N(f)
22mm Tube mount

Model	FDAI 146	FDAI 155	FDAI 165	FDAI 174	FDAI 222
Type	Folded Dipole	Folded Dipole	Folded Dipole	Folded Dipole	Folded Dipole
Frequency	380 MHz - 6 GHz	10 kHz - 120 MHz	100 kHz - 300 MHz	DC - 150 kHz	215 - 246 MHz
SWR typical	< 2	< 2	< 2	< 2	< 2
Power Max	50 Watts	50 Watts	50 Watts	50 Watts	50 Watts
Connector	Type N, 22 tube	BNC, 3/8" Thread	BNC	4mm Banana	BNC, 1/4" thread
Dimensions	89 x 240 x 140 mm	89 x 240 x 140 mm	89 x 240 x 140 mm	89 x 240 x 140 mm	89 x 240 x 140 mm
Needed Accessories	NMHB 4MM FDAI Spacer 50 CCA FDAI	NMHB 4MM FDAI Spacer 50 CCA FDAI	NMHB 4MM FDAI Spacer 50 CCA FDAI	NMHB 4MM FDAI Spacer 50 CCA FDAI	NMHB 4MM FDAI Spacer 50 CCA FDAI
Standard	ISO 11452-9 Annex C.5	ISO 11452-9 Annex C.5	ISO 11452-9 Annex C.5	ISO 11452-9 Annex C.5	ISO 11452-9 Annex C.5

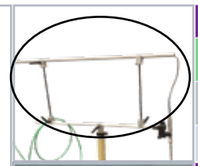
Can be sold as a kit with a case, CCA FDAI

HLC / FAN / EGG / PCD

The antennas are monopole antenna located in a PVC-housing for automotive immunity testing on component level. This antenna type is proposed in the standard ISO 11452-9.

Model	Frequency Range	Power	Connector	Size	Mounting	Standard	Pic #
HLC 27	26.96 - 27.4 MHz	50 Watts	BNC (f)	80 x 80 x 145 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	1.
HLC 146	144 - 148 MHz	50 Watts	BNC (f)	80 x 80 x 145 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	2.
HLC 170	169.8 - 173 MHz	50 Watts	BNC (f)	80 x 80 x 145 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	3.
FAN 405	380 - 430 MHz	50 Watts	BNC (f)	80 x 80 x 145 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	4.
FAN 450	430 - 470 MHz	50 Watts	BNC (f)	80 x 80 x 145 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	5.
EGG 900	890 - 915 MHz	50 Watts	SMA (f)	80 x 80 x 150 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	6.
EGG 1860	1710 - 2025 MHz	50 Watts	SMA (f)	80 x 80 x 85 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	7.
PCD 2440	2402 - 2480 MHz	50 Watts	SMA (f)	80 x 80 x 85 mm	22 mm tube, L = 30 mm & 3/8"	ISO 11452-9	8.

Can be sold as a kit with a case



Cable Holder
Shown Attached to Positioner
For 419NJ, 420NJ, 422NJ,
22 mm mount

POSITIONER
Light Antenna adaptor
For SBA 9113, 9118 420NJ, 422NJ
22 mm mount

AA 9202
Mast Adapter
22 mm hole for most Antennas
3/8" and 1/4" camera threads

N-BNC Coax
Shown Attached to 422NJ
For 419NJ, 420NJ, 422NJ,
RG223/U

AUTOMOTIVE ANTENNAS

TSA ANTENNA SET

Tuned Sleeve Antennas 385 MHz - 2 GHz

Tuned sleeve antennas are tuned half wave dipoles, with their axis aligned as a straight extension of the coaxial feed cable. The main applications of the TSA-antennas are immunity testing against handheld transmitters in the automotive industry within the VHF/UHF range according to ISO 11542-9 respectively manufacturer specific standards (e.g. Toyota TSC 7006G).

- 20 watts CW / 50 watts short time
- Type N(f)
- Includes transport case & the following:

Model	Nominal Frequency	Typ. VSWR	Frequency range	Standard
TSA 385	385 MHz	< 2.0 (< 1.5)	377 - 393 MHz (380 - 388 MHz)	ISO 11452-9
TSA 400	400 MHz	< 2.0 (< 1.5)	388 - 408 MHz (393 - 404 MHz)	ISO 11452-9
TSA 415	415 MHz	< 2.0 (< 1.5)	407 - 423 MHz (410 - 420 MHz)	ISO 11452-9
TSA 430	430 MHz	< 2.0 (< 1.5)	420 - 440 MHz (425 - 435 MHz)	ISO 11452-9
TSA 455	455 MHz	< 2.0 (< 1.5)	445 - 465 MHz (450 - 460 MHz)	ISO 11452-9 & Toyota
TSA 835	835 MHz	< 2.0 (< 1.5)	802 - 888 MHz (815 - 855 MHz)	Toyota TSC 7006G
TSA 880	880 MHz	< 2.0 (< 1.5)	833 - 956 MHz (851 - 927 MHz)	ISO 11452-9
TSA 900	900 MHz	< 2.0 (< 1.5)	862 - 952 MHz (883 - 918 MHz)	Toyota TSC 7006G
TSA 1270	1.27 GHz	< 2.0 (< 1.5)	956 - 1420 MHz (1010 - 1372 MHz)	Toyota TSC 7006G
TSA 1440	1.44 GHz	< 2.0 (< 1.5)	1241 - 1585 MHz (1380 - 1428 MHz)	Toyota TSC 7006G
TSA 1750	1.75 GHz	< 2.0 (< 1.5)	1230 - 1905 MHz (1292 - 1846 MHz)	ISO 11452-9
TSA 1950	1.95 GHz	< 2.0 (< 1.5)	1600 - 2220 MHz (1700 - 2130 MHz)	Toyota TSC 7006G

Each piece available individually

NMHA 6M ANTENNA SET

Normal Mode Tuned Helical Antennas 26 MHz - 2.7 GHz

Nissan and Renault antenna set to test immunity against handy transmitters acc. to Nissan specification 28401NDS02 [6] and RENAULT 36-00-808/L (combined set) consisting of normal mode helical antennas, counterpoise, SBA 9113 with 420NJ elements and transport case.

- 20 watts CW / 50 watts short time
- BNC for NMHA, Type N(f) for SBA 9113
- Includes transport case & the following:

Model	Frequency	Nissan	Renault
NMHA 26	26 MHz		36-00-808/M
NMHA 28	28 MHz	28401NDS02 [6]	36-00-808/M
NMHA 30	30 MHz		36-00-808/M
NMHA 40	40 MHz	28401NDS02 [6]	
NMHA 52	52 MHz	28401NDS02 [6]	
NMHA 75	75 MHz	28401NDS02 [6]	
NMHA 125	125 MHz	28401NDS02 [6]	
NMHA 145	145 & 146 MHz	28401NDS02 [6]	36-00-808/M

Model	Frequency	Nissan	Renault
NMHA 155	155 MHz	28401NDS02 [6]	
NMHA 165	160 & 165 MHz	28401NDS02 [6]	36-00-808/M
NMHA 174	174 MHz		36-00-808/M
NMHA 190	190 MHz	28401NDS02 [6]	
NMHA 223	223 MHz	28401NDS02 [6]	
NMHA 350	350 MHz	28401NDS02 [6]	
SBA 9113 +420NJ +Spacer 50	360 - 2620 MHz	28401NDS02 [6]	36-00-808/M

Each piece available individual

VHIC 9260 9 KHZ - 30 (120) MHZ

Antenna Impedance Converter

Antenna Impedance converter acc. CISPR 25 9 kHz - 30 (120) MHz.
Option ACS 110: Charger ACS 110

VW TL 82166 2016-02 SET

Matched Normal Mode Helical Antennas 26 MHz - 6 GHz

Antenna kit for testing immunity against hand-held radios acc. to Volkswagen standard TL 82166:2009-05
For the frequency range 26-174 MHz matched normal mode helical antennas are used. For frequencies from 360 MHz and beyond the broadband SBA 9113 & SBA 9119 mini versions with 420 NJ & 422 NJ elements is used.

- 20 watts CW / 50 watts shot time
- BNC for NMHA, Type N(f) for SBA 9113 & SBA 9119
- Includes transport case & the following:

Model	Freq Band/System	Frequency Range	Unit Mock-up
NMHA 26.5	10 m band (CB radio, analog)	26 - 30 MHz	VW case small, MSS 9630
NMHA 27.5			
NMHA 28.5			
NMHA 29.5			
NMHA 71	4 m band (radio, analog)	68 - 87.5 MHz	VW case small, MSS 9630
NMHA 77			
NMHA 83.75			
NMHA 151	2 m band (radio, analog)	144 - 174 MHz	VW case large, MSS 9630
NMHA 166			
SBA 9113 Mini version +420NJ +Spacer 50	70 cm band (radio, analog/digital)	410 - 470 MHz	VW case large, MSS 9630
	TETRA / TETRAPOL (radio, digital)	380 - 876 MHz in various bands	VW case small, MSS 9630
	AMPS (mobile phone)	824 - 849 MHz	VW case small, MSS 9630
	GSM 850 and GSM 900 (mobile phone)	824 - 915 MHz in various bands	VW case small, MSS 9630
	23 cm band (radio, analog)	1200 - 1300 MHz	VW case small, MSS 9630
	GSM 1800 and GSM 1900 (mobile phone)	1710 - 1910 in various bands	VW case small, MSS 9630
	UMTS (mobile phone WCDMA & TD/CDMA)	1885 - 2025 MHz	VW case small, MSS 9630
	Bluetooth/WLAN (data)	2400 - 2500 MHz	VW case small, MSS 9630
SBA 9119 Mini version +422NJ +Spacer 30		700 - 6000 MHz	VW case small, MSS 9630

Each piece available individual

RS 9244 150 KHZ - 1 GHZ

Long Wire Antenna Called-out in CISPR 25 Ed4.

The radiation source RS 9244 complies to CISPR 25 Edition 4, which proposes the "Long Wire Antenna" and is used as reference source to evaluate the suitability of absorber lined shielded enclosures (ALSE) according to the 'Long Wire Antenna method'

- 150 kHz - 1 GHz
- Conductor: hight 50 mm, diameter 4 mm
- Size: 700 x 105 x 150 mm
- Connectors: 2 x Type N(f)

CA 9260 150 KHZ TO 6.2 GHZ

Artificial Antenna Network

The CA 9260 artificial antenna network (AAN) described in CISPR 25 Annex B, 150 kHz to 6.2 MHz, is used to measure the S21 of the Impedance converter VHIC 9260

AUTOMOTIVE CONT.

CCC 9224

Capacitive Coupling Clamp **ISO 7637-3**

- 50Ω impedance, For transients acc. to ISO 7637-3 or DC-10614 B.5.
- 1250mm x 300 mm x 150 mm, N female

CCP 9225 DC-30 MHZ

Capacitive Coupling Plate **MBN 10284-2 2011-04**

The main application is to conduct CV-tests (capacitive voltage measurements) in conjunction with the impedance converter VHIC 9260. The construction complies to the automotive manufacturer standard MBN 10284-2 2011-04, Annex B.

TF 130-150

Wire Support Test Fixture FORD EMC-CS-2009 RI 130/150

- Fixture for testing to EMC-CS-2009 RI130 and RI150 requirements
- Size: 1350 x 150 x 150 mm
- Connectors: Type N(f)

TEMZ 5231 DC - 220 MHz

50 Ω Stripline ISO 11452-5 **w/Opt. FOLDAWAY**

The unsymmetrical 50 W stripline complies to the requirements of ISO 11452-5. The stripline can be used to create TEM-waves up to max. 220 MHz. The field-strength distribution at TEM-mode operation inside the stripline is very homogeneous.

TEMZ 5232 DC - 220 MHz

90 Ω Stripline ISO 11452-5 **w/Opt. FOLDAWAY**

Open, unsymmetrical 90 Ω stripline for automotive immunity testing of components. (A wooden frame construction is required to bear the stripline, not included in delivery) The power rating of the resistor is 60 W, which is sufficient for generating field-strengths up to 500 V/m

NEW

TK TSC7508G Voltage probe according to Toyota TSC7508G. Aluminum housing, C=1000 pF, with BNC female connectors. Including 1 meter of RG 223 cable with BNC male connectors and measurement clip (BNC male to 2x crocodile clips).

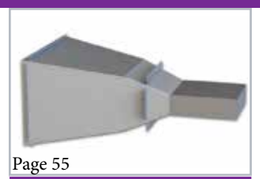
OTHER AVAILABLE AUTOMOTIVE PRODUCTS

Page 61

VAMP 9243
Emissions Testing

Page 61

VAMP 9241
ALSE Validation



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BBHA 9120 K
FORD/GM Radar Pulse

Page 74

LISNs
ISO/CISPR

Page 35

Mag System
ISO/MIL/...

EV ARTIFICAIL NETWORKS

BNB 8651-40 1000 V / 40 A

HV Battery Impedance Network **2 x 100, 50, 25, 10mΩ**

ISO 21498-2:2021, MBN 11123 & others
- Air cooled
- 450 mm x 475 mm x 486 mm, 36 kg

BNB 8652 1000 V / 80 A

HV Line Stabilization Network & Coupling Network 100, 50, 25mΩ

MBN 11123 & others
- Can be used as a coupling Network using its built in transformer
- Air cooled
- 670 mm x 420 mm x 660 mm, 80 kg

BNB 8653 1000 V / 300 A

HV-Line Stabilization Network **2 x 100, 50, 25, 10mΩ**

ISO 21498-2:2021, MBN 11123:2021-08 & others
- Liquid Cooled
- 446 mm x 535 mm x 770 mm, 63 kg

BNB 8654 1000 V / 300 A

HV-Line Stabilization Network **2 x 50, 25, 10mΩ**

MBN 11123 & others
- Liquid Cooled
- 446 mm x 535 mm x 770 mm, 71 kg

BNB 8655 1000 V / 800 A

HV-Line Stabilization Network **2 x 100, 50, 25mΩ**

MBN 11123 & others
- Liquid Cooled
- 710 mm x 570 mm x 900 mm, 123 kg

BNB 8656 1000 V / 800 A

HV-Line Stabilization Network **2 x 100, 60, 50, 25, 10mΩ**

ISO 21498-2:2021-03, MBN 11123:2021-08, BMW 95024-2-2:2011-02, PSA B21 7112:2021-05, VW 80300:2021-02 & others
- Liquid Cooled
- 446 mm x 535 mm x 770 mm, 117 kg

CISPR 15 LUMINARY TESTING

HXYZ 9170 2 m DIAM.

3-Dimentional Loop Antenna Van Veen

According to EN 55015 / 4.4, the magnetic field strength of fluorescent lighting luminaries has to be measured if the operating frequency is above 100 Hz. The measurement is done with a triple loop antenna as shown. The Unit under Test is positioned under operating conditions in the center of the triple loop antenna. To measure the magnetic field strength without turning, there are loops in X-,Y- and Z direction. A current transformer converts the loop current into an appropriate voltage. Ferrite chokes reduce braid current on the coaxial cables which would cause wrong measurement.
Shown with **HXYZ 9170 Socket**, stand for mounting antenna

HXYZ 9170 3M 3 m DIAM.

3-Dimentional Loop Antenna Van Veen

According to EN 55015 / 4.4, the magnetic field strength of fluorescent lighting luminaries has to be measured if the operating frequency is above 100 Hz. The measurement is done with a triple loop antenna as shown. The Unit under Test is positioned under operating conditions in the center of the triple loop antenna. To measure the magnetic field strength without turning, there are loops in X-,Y- and Z direction. A current transformer converts the loop current into an appropriate voltage. Ferrite chokes reduce braid current on the coaxial cables which would cause wrong measurement.

HXYZ 9170 OPTIONS

HFCD 9171

Calibration Dipole for HXYZ 9170. Recommended AM 9144 antenna tripod & CDA 9271 adapter

CDA 9271

Adapter to hold HFCD 9171 on Antenna tripod AM 9144

HXYZ 9170 UMSCHALTBOX

3 in one coaxial switch for manual / remote operation including cable set

ADAPTORS

Unschaltbox adapter to receivers: ESPI, ZVR, ESCI, ESCS, FSB, or ESL, ESR

VDHH 9502

Van der Hoofden Test Head 20 kHz - 10 MHz

The "Van der Hoofden" test head VDHH 9502 is used to determine the exposure of humans to radiation caused by luminaries. The measurement is based on DIN IEC 62493:2015 and VDE 0848-493.

NTFM 8131

T-LISN, are used to measure the asymmetrical interference voltage on symmetrical data or telecommunication lines for luminaries.

Furthermore it can be used for measurements according to CISPR 32 and CISPR 15.

SY 9501

The balanced to unbalanced transformer SY 9501 is designed according to the standard EN 55015 (CISPR 15). This balun is used to measure the attenuation of luminaries (lighting equipment) up to 1.605 MHz. Luminary attenuation measurements require a 50 Ω - LISN (e.g. NSLK 8127), an EMI receiver with tracking generator (e.g. FCKL 1528) and the suitable dummy lamps.

CDNE

Coupling Decoupling Network

These CDNs have been built for testing to EN 55025 & CISPR 15 over the range of 30MHz - 300MHz. For the emissions testing of Luminaries which carry higher tolerances than IEC 61000-4-6 immunity testing. CDNE cannot be used for immunity.
For measurements on DuTs without PE one has to use the CDNE M2. For measurements using PE,N and L the CDNE M3 has to be used.

Model	Frequency range	Lines	Voltage	Current	Connector
CDNE M2	30-300 MHz	2 Line (no PE)	400VDC / 277VAC	16 Amp	4mm safety jacks
CDNE M3	30-300 MHz	3 Line (with PE)	400VDC / 277VAC	16 Amp	4mm safety jacks

CDNE CALIBRATION ACCESSORIES

CA CDNE M2 Part A
Shorting adapter required for calibration

CA CDNE M3 Part A
Shorting adapter required for calibration

CA CDNE Part B
Shorting adapter required M2 or M3

SR 100-6W B

Adapter for the calibration of a CDN (e.g. ISN S1, ISN S8) or a CDNE. Therefore it matches the 50 Ω measurement port to the 150 Ω system. Built per the requirements of IEC 61000-4-6, CISPR 15, CISPR 16-1-x.

DUMMY LAMPS FOR CISPR 15

Model	Type	Standard	Length	Diam	Watts
Single Capped Twin Tube Dummy Lamps with Socket G23					
LN G23	Socket	Fig 4e, CISPR 15	47 mm		
RS G23 / 85	Tube	IEC 85 mm	38 mm	13 mm	5 W
RS G23 / 115	Tube	IEC 115 mm	68 mm	13 mm	7 W
RS G23 / 145	Tube	IEC 145 mm	98 mm	13 mm	9 W
RS G23 / 215	Tube	IEC 215 mm	168 mm	13 mm	11 W
Single Capped Quadruple Tube Dummy Lamps w/ Socket G24					
LN G24	Socket	Fig 4f, CISPR 15	45 mm		
RS G24 / 95	Tube	IEC 95 mm	50 mm	13 mm	10 W
RS G24 / 130	Tube	IEC 130 mm	85 mm	13 mm	13 W
RS G24 / 150	Tube	IEC 150 mm	105 mm	13 mm	18 W
RS G24 / 170	Tube	IEC 170 mm	125 mm	13 mm	26 W
Single Capped Twin Tube Dummy Lamps with Socket 2G11					
LN 2G11	Socket	Fig 4d, CISPR 15	67 mm		
RS 2G11 / 225	Tube	IEC 225 mm	158 mm	15 mm	18 W
RS 2G11 / 320	Tube	IEC 320 mm	253 mm	15 mm	24 W
RS 2G11 / 415	Tube	IEC 415 mm	348 mm	15 mm	36 W
RS 2G11 / 535	Tube	IEC 535 mm	468 mm	15 mm	55 W
Linear Dummy Lamps 15 mm Diameter with Socket G5					
LN G5	Socket	Fig 4c, CISPR 15	20 mm		
RS G5 / 136	Tube	IEC 136 mm	96 mm	15 mm	4 W
RS G5 / 212	Tube	IEC 212 mm	172 mm	15 mm	6 W
RS G5 / 288	Tube	IEC 288 mm	248 mm	15 mm	8 W
RS G5 / 517	Tube	IEC 517 mm	477 mm	15 mm	13 W
RS G5 / 549	Tube	IEC 549 mm	509 mm	15 mm	14 W
RS G5 / 849	Tube	IEC 849 mm	809 mm	15 mm	21 W
RS G5 / 1449	Tube	IEC 1449 mm	1409 mm	15 mm	35 W
Linear Dummy Lamps 20 mm Diameter with Socket G13 / 25					
LN G13 / 25	Socket	Fig 4a, CISPR 15	75 mm		
RS G13 / 25 / 438	Tube	IEC 438 mm	288 mm	20 mm	15 W
RS G13 / 25 / 590	Tube	IEC 590 mm	440 mm	20 mm	18 W
RS G13 / 25 / 720	Tube	IEC 720 mm	570 mm	20 mm	16 W
RS G13 / 25 / 895	Tube	IEC 895 mm	745 mm	20 mm	30 W
RS G13 / 25 / 970	Tube	IEC 970 mm	820 mm	20 mm	36 W
RS G13 / 25 / 1047	Tube	IEC 1047 mm	897 mm	20 mm	38 W
RS G13 / 25 / 1200	Tube	IEC 1200 mm	1050 mm	20 mm	36 W
RS G13 / 25 / 1500	Tube	IEC 1500 mm	1350 mm	20 mm	58 W
Linear Dummy Lamps 28 mm Diameter with Socket G13 / 38					
LN G13 / 38	Socket	Fig 4a, CISPR 15	75 mm		
RS G13 / 38 / 590	Tube	IEC 590 mm	440 mm	28 mm	20 W
RS G13 / 38 / 970	Tube	IEC 970 mm	820 mm	28 mm	25 W
RS G13 / 38 / 1200	Tube	IEC 1200 mm	1050 mm	28 mm	115 W
RS G13 / 38 / 1500	Tube	IEC 1500 mm	1350 mm	28 mm	140 W
RS G13 / 38 / 1800	Tube	IEC 1800 mm	1650 mm	28 mm	160 W
RS G13 / 38 / 2400	Tube	IEC 2400 mm	2250 mm	28 mm	125 W
Single Capped Twin Tube Dummy Lamps with Socket 2G7					
LN 2G7	Socket	CISPR 15	47 mm		
RS 2G7 / 85	Tube	IEC 85 mm	38 mm	13 mm	5 W
RS 2G7 / 115	Tube	IEC 115 mm	68 mm	13 mm	7 W
RS 2G7 / 145	Tube	IEC 145 mm	98 mm	20 mm	9 W
RS 2G7 / 215	Tube	IEC 215 mm	168 mm	13 mm	11 W
U-shape Tube Dummy Lamps with Socket 2G13					
LN 2G13	Socket	CISPR 15	75 mm		
RS 2G13 / 310	Tube	IEC 310 mm	235 mm	20 mm	20 W
RS 2G13 / 607	Tube	IEC 607 mm	532 mm	20 mm	40 W
RS 2G13 / 765	Tube	IEC 765 mm	690 mm	20 mm	65 W
Circular dummy lamps					
LN G10q /28 / 216	Socket/Tube	Fig 4b, CISPR 15	IEC 216 mm	20 mm	22 W
LN G10q /32 / 311	Socket/Tube	Fig 4b, CISPR 15	IEC 311 mm	28 mm	32 W
LN G10q /32 / 413	Socket/Tube	Fig 4b, CISPR 15	IEC 413 mm	28 mm	40 W
Single Pin Linear Dummy Lamps with Socket Fa6					
LN Fa6	Socket pair	CISPR 15	75 mm		
RS Fa6 / 1200	Tube	IEC 1200 mm	1050 mm	28 mm	32 W
RS Fa6 / 1500	Socket/Tube	IEC 1500 mm	1350 mm	28 mm	50 W
Conical Covers					
Conical Cover	Test fixture for energy saving lamps with E27 socket according to Fig. 7b CISPR 15				
Option E14	Adapter E27-E14 to insert E14 lamps				
Option B22d	Adapter E27-B22d to insert B22d lamps				
Option GU10	Adapter E27-GU10 to insert GU10 lamps				

RF CDN

CDN Selection

When using a CDN, the # of lines to be tested needs to match up with the CDNs # of lines. For Example: a M3, M4, or M5 CDN can not be used to test a product with 2 main lines. A M2 CDN must be used. An exception is the S-Type CDNs. Since in this case the immunity is only coupled and decoupled onto one point, the shield, a higher conductor CDN can be used to test less lines.

CDN M TYPE

Mains Coupling Decoupling Net-

Coupling Decoupling Network (CDN) built to the requirements of IEC 61000-4-6. CDNs have a common mode impedance of 150 Ohm. M Type are for testing:

- Mains
- Unscreened lines
- Unbalanced lines
- AC or DC
- High current
- Each CDN incl. 2 Shorting adapters

Model	Frequency Range	No. Lines	Voltage	Current	Connector
CDN M1 16A 1000V	0.15 - 230 MHz	1	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M2 16A 1000V	0.15 - 230 MHz	2	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M2 63A 1000V	0.15 - 230 MHz	2	500 VAC / 1000 VDC	63 Amp	Multi-Contact 6 mm
CDN M2 125A 1000V	0.15 - 230 MHz	2	500 VAC / 1000 VDC	125 Amp	Multi-Contact 6 mm
CDN M2/M3PE 16A	0.15 - 230 MHz	2 or 3 switch	250 VAC / 400 VDC	16 Amp	4 mm safety
CDN M3PE 16A 1000V	0.15 - 230 MHz	3 (incl. PE)	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M3 32A 1000V	0.15 - 230 MHz	3	500 VAC / 1000 VDC	32 Amp	4 mm safety
CDN M3PE 32A 1000V	0.15 - 230 MHz	3 (incl. PE)	500 VAC / 1000 VDC	32 Amp	4 mm safety
CDN M4 16A 1000V	0.15 - 230 MHz	4	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M4PE 16A 1000V	0.15 - 230 MHz	4 (incl. PE)	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M4 32A 1000V	0.15 - 230 MHz	4	500 VAC / 1000 VDC	32 Amp	4 mm safety
CDN M4PE 32A 1000V	0.15 - 230 MHz	4 (incl. PE)	500 VAC / 1000 VDC	32 Amp	4 mm safety
CDN M4 63A 1000V	0.15 - 230 MHz	4	500 VAC / 1000 VDC	63 Amp	Multi-Contact 6 mm
CDN M5PE 16A 1000V	0.15 - 230 MHz	5 (incl. PE)	500 VAC / 1000 VDC	16 Amp	4 mm safety
CDN M5PE 32A 1000V	0.15 - 230 MHz	5 (incl. PE)	500 VAC / 1000 VDC	32 Amp	4 mm safety
CDN M5PE 63A 1000V	0.15 - 230 MHz	5 (incl. PE)	500 VAC / 1000 VDC	63 Amp	Multi-Contact 6 mm
CDN M5PE 125A 1000V	0.15 - 230 MHz	5 (incl. PE)	500 VAC / 1000 VDC	125 Amp	Multi-Contact 6 mm

CDN AF TYPE

Unscreened / Unbalanced Lines

Coupling Decoupling Network (CDN) built to the requirements of IEC 61000-4-6. CDNs have a common mode impedance of 150 Ohm. AF Type are for testing:

- Unscreened lines
- Unbalanced lines
- Low current
- Each CDN incl. 2 Shorting adapters

Model	Frequency Range	No. Lines	Voltage	Current	Connector
CDN AF2	0.15 - 230 MHz	2	100 VAC / 150 VDC	4 Amp	4 mm safety
CDN AF3	0.15 - 230 MHz	3	100 VAC / 150 VDC	4 Amp	4 mm safety
CDN AF4	0.15 - 230 MHz	4	100 VAC / 150 VDC	4 Amp	4 mm safety
CDN AF6	0.15 - 230 MHz	6	100 VAC / 150 VDC	4 Amp	4 mm safety
CDN AF8	0.15 - 230 MHz	8	100 VAC / 150 VDC	4 Amp	4 mm safety

CDN S TYPE

Screened Lines

Coupling Decoupling Network (CDN) built to the requirements of IEC 61000-4-6. CDNs have a common mode impedance of 150 Ohm. S Type are for testing:

- Coax Cables
- Screened or shielded lines
- Each CDN incl. 1 Shorting adapters

Model	Frequency Range	No. Lines	Voltage	Current	Connector
CDN S1 BNC	0.01 - 230 MHz	1	100 VAC / 150 VDC	0.25 Amp	BNC 50 Ω
CDN S1 BNC 75	0.01 - 230 MHz	1	100 VAC / 150 VDC	0.25 Amp	BNC 75 Ω
CDN S2 XLR3-1	0.01 - 230 MHz	2	100 VAC / 150 VDC	0.25 Amp	XLR3-1 GND:PIN1
CDN S2 XLR3-3	0.01 - 230 MHz	2	100 VAC / 150 VDC	0.25 Amp	XLR3-1 GND:PIN3
CDN S4 4xBNC	0.01 - 230 MHz	4	100 VAC / 150 VDC	0.25 Amp	4- BNC 50 Ω
CDN S4 XLR4	0.01 - 230 MHz	4	100 VAC / 150 VDC	0.25 Amp	XLR4 female
CDN S4 DIN5-1	0.01 - 230 MHz	4	100 VAC / 150 VDC	0.25 Amp	DIN5 GND:PIN1
CDN S8 RJ45	0.01 - 230 MHz	8	100 VAC / 150 VDC	0.25 Amp	RJ45
CDN S9 SUBD	0.01 - 230 MHz	9	100 VAC / 150 VDC	0.25 Amp	Sub-D9 pin
CDN S9 USB3.0	0.01 - 230 MHz	9	100 VAC / 150 VDC	0.25 Amp	USB 3.0
CDN S15 VGA	0.01 - 230 MHz	15	100 VAC / 150 VDC	0.25 Amp	Sub-D15 HD (VGA)
CDN S19 HDMI	0.01 - 230 MHz	19	100 VAC / 150 VDC	0.25 Amp	HDMI
CDN S24 USB-C	0.01 - 230 MHz	24	100 VAC / 150 VDC	0.25 (5) Amp	USB-C
CDN S25 SUBD	0.01 - 230 MHz	25	100 VAC / 150 VDC	0.25 Amp	Sub-D25 pin

CDN T TYPE

Balanced / Unscreened Lines

Coupling Decoupling Network (CDN) built to the requirements of IEC 61000-4-6. CDNs have a common mode impedance of 150 Ohm. T Type are for testing:

- Unscreened lines
- Balanced lines
- Telecommunication ports
- Unshielded twisted pairs
- Each CDN incl. 2 Shorting adapters

Model	Frequency Range	No. Lines	Voltage	Current	Connector
CDN T2	0.01 - 230 MHz	2	100 VAC / 150 VDC	0.25 Amp	4 mm safety
CDN T2 16A	0.01 - 230 MHz	2	100 VAC / 150 VDC	16 Amp	4 mm safety
CDN T4	0.01 - 230 MHz	4	100 VAC / 150 VDC	0.25 Amp	4 mm safety
CDN T4 4A	0.01 - 230 MHz	4	100 VAC / 150 VDC	4 Amp	4 mm safety
CDN T4 RJ45	0.01 - 230 MHz	4	100 VAC / 150 VDC	0.25 Amp	RJ45
CDN T8 RJ45	0.01 - 230 MHz	8	100 VAC / 150 VDC	0.25 Amp	RJ45

CDN CALIBRATION ACCESSORIES

SR 30/4

Shorting adapter required for use with SR 100-6W B. Each CDN comes with 2 shorting adapters specific to the CDN, the SR 30/4 is a spacer for 30mm separation.

SR 100-6W B

Adapter for the calibration of a CDN (e.g. ISN S1, ISN S8) or a CDNE. Therefore it matches the 50 Ω measurement port to the 150 Ω system. Built per the requirements of IEC 61000-4-6, CISPR 15, CISPR 16-1-x.

ABSORBING CLAMPS

MDS 21 C 30 - 1000 MHz

EMI Absorbing Clamp to CISPR 16

Before this EMI Absorbing Clamp has been introduced, most EMI (Radio Interference) Measurement had to be performed as a Field-strength Measurement on an open field antenna range (e.g. in 10 m distance on a clear place without any reflecting obstacles). This meant quite some effort and depended on weather conditions.

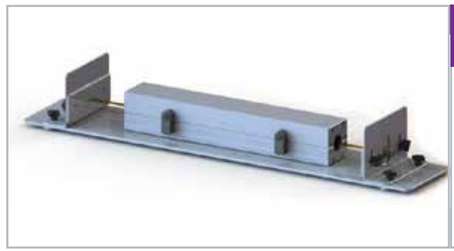
With this clamp the EMI work becomes simple for testing domestic (household) equipment and Electric Tools per EN 55014.

CMAD 1614 10 - 1000 MHz

Common Mode Absorption Device

Common Mode Absorption Device consists of many precision cut ferrite half-toroids, which are embedded in a gray plastic housing. The unique floating toroid bearing ensures a perfect fit of the ferrite surfaces. Cable bundles or coaxial cables with a maximum diameter of 26 mm are accepted by the clamp without disassembling connectors or interrupting any circuitry.

- Quick locks easy open/close
- Large diameter 26 mm
- Broad frequency range
- High quality rugged construction



CAL CMAD 1614

Calibration Fixture for CMAD 1614 & Others

The fixture consists of an aluminum base plate with two side-plates, adjustable in height and position and each of them equipped with N-connector and inner conductor fixture. A variety of inner conductors with 4 mm diameter is part of the delivery. The calibration fixture was designed for measurements acc. to CISPR 16-1-4 sections 9.5 and 9.6

CNA 280

A-Type CDN for Coaxial Antenna Inputs

- The CNA280 meets the specifications of the standard CISPR 16-1-2 A1, figure C1 (unit type A) and CISPR 16-1-3, app. B,Fig. 9.
- It is also required to calibrate EMI absorbing clamps like the MDS 21.

ISN & RF VOLTAGE PROBES

ISN PER. CISPR 22/32

8 WIre Impedance Stabilization Network

T-ISN is used to perform common mode disturbance voltage measurements on unshielded twisted pairs (UTP) or communication ports with 2, 4, 6 or 8 wires according to CISPR 22:2005 or EN 55022:2006.

T-ISN also can be used for IEC 61000-4-6 immunity measurements of disturbance voltages (requires SR 100-6W B & SR 30/4). Alternatively CDN-T8 can not be used as T-ISNs. T-ISN are built with tighter tolerances.

Model	Type	CISPR 22	Frequency range	Line Type ISN	Line Type CDN
NTFM 8158	CAT6 RJ45	Figure D.3	150 kHz - 30 MHz (80 MHz CDN)	T2, T4, T8 Balanced pair	T8 Balanced pair
CAT5 8158	CAT5 RJ45	Figure D.3	150 kHz - 30 MHz (80 MHz CDN)	T2, T4, T8 Balanced pair	T8 Balanced pair
CAT3 8158	CAT3 RJ45	Figure D.3	150 kHz - 30 MHz (80 MHz CDN)	T2, T4, T8 Balanced pair	T8 Balanced pair
ISN S8	S8 RJ45	Figure D.11	150 kHz - 230 MHz (230 MHz CDN)	S2, S4, S8 Shielded	S2, S4, S8 Shielded
ISN S1	S1 BNC	Figure D.9	150 kHz - 230 MHz (230 MHz CDN)	S1 coax 50 Ω	S1 coax 50 Ω
NTFM 8131	T-2	Figure D.1	150 kHz - 30 MHz	T2 Balanced pair	NA

8158 MAG BASE

The magnetic fixture 8158 Mag Base can be used to fix NTFM 8158, CAT5 8158, or CAT3 8158 to a steel wall vertically. It is capable of holding approximately 2.5 kg whereas the ISN mentioned above weigh not even 500 g.

PILOT ISN

IEC 61851-21-1mpedance stabilization network which can be used to measure disturbance voltages of PLC

CVP 9222 C 9 kHz-100 MHz

High Impedance Capacitive Voltage Probe

For measurements of the asymmetrical disturbance voltage on cables without interrupting and unlimited EuT operation.

- acc. to CISPR 22 / EN 55022 Section C 1.3
- 9 kHz - 100 MHz
- Battery operated for up to 40 hours
- Flat frequency response

TK 9261 50 kHz-700 MHz

50 Ω Active Voltage Probe

The TK 9261 is an active high-impedance RF voltage probe equipped with an internal impedance transformer which allows using it with 50 Ω measurement devices

- 100 kHz - 100 MHz Flat Response up to 700Mhz with short ground
- 50 Ω impedance for Receiver use

TK94## 9 kHz-30 MHz

50 Ω Voltage Probe

Especially designed for measuring power electronic equipment, e.g. switching power supplies with a strong disturbance spectrum in the kHz-frequency range.

Model	Frequency range	Input	HF Volts	AC Volts	DC Volts	Attenuation
TK 9417	(10) 150 kHz - 30 MHz	2.5 kΩ		<250V	<500 V	34dB
TK 9420	9 kHz - 30 MHz	1.5 kΩ	<30 V	<2.5 kV	<4.4 kV	30dB
TK 9421	(9) 150 kHz - 30 MHz	1.5 kΩ	<100 V	<10 kV	<15 kV	30dB
TK 9422	(9) 150 kHz - 30 MHz	5 kΩ	<100 V	<10 kV	<15 kV	40dB

PCB/IC TEST SYSTEMS

PCB IMMUNITY

Measuring systems and EMC tools for accompanying immunity testing and analysis of assemblies and devices

Immunity Development System
The Immunity Development System helps you locate Burst / EFT and ESD vulnerabilities on your assembly and inside the device.

Mini Burst Field Generators
Mini burst field generators are small and handy burst generators used to detect weak spots in the device under test.

Accessory EFT/Burst generators IEC 61000-4-4
The field sources and the burst transformer are used to harden the device under test. They are powered by an EFT/burst generator.

Optical Signal Transmission
Langer EMV-Technik GmbH`s optical signal transmission systems are used for a floating transmission of signals from the device under test to a distance of up to 20 m.

Burst-detectors
The Burst detector monitors interference threshold excellences at cable or line bundles. It selectively detects conducted disturbances which would influence the monitored device.

PCB EMISSION

Measuring systems and EMC tools for emission analysis
of assemblies and devices at the development stage

Measurement Technology for the Development Stage
The measurement technology for the development stage enables the detection of magnetic and electric field sources at your PCB directly at the workplace.

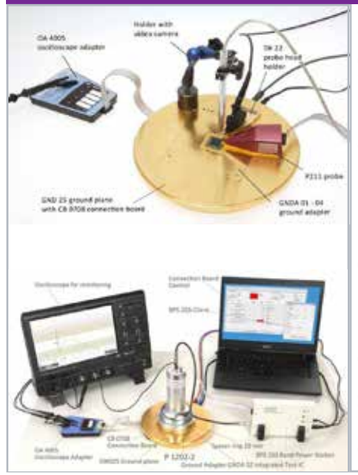
Near-Field Probes
Near-field probes are used for accompanying measurements of high-frequency, electric and magnetic RF fields on assemblies and devices. Technical parameters for the single probes are available from the respective product articles and from the overview PDF as a download.

Preamplifier
To amplify the measurement signal and to protect your measurement receiver, we recommend the use of a preamplifier in the appropriate frequency range.

Near-Field Microprobes
The near-field microprobes are designed for E-field and H-field measurements in a frequency range from 0.5 MHz to 6 GHz with a resolution from 60 µm to 300 µm.

Optical Signal Transmission
Langer EMV-Technik GmbH`s optical signal transmission systems are used for the floating transmission of signals from the device under test up to a distance of 20 m.

IC TEST SYSTEMS



With the IC (integrated circuit) test system the developer tests the behavior of circuits during specific disturbances (conducted and radiated) or their emissions. The IC is tested in operation.

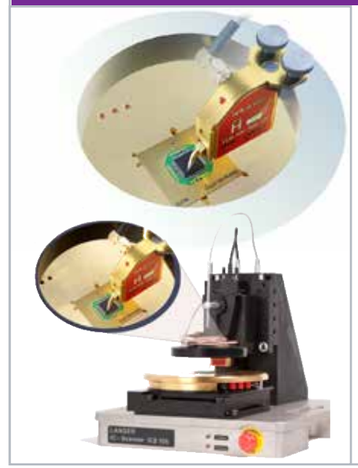
IC Test Environment
With the IC Test Environment, you can determine EMC parameters of an IC and assess the EMC strength of ICs.

Emission
The IC probes for emission allow for conducted RF measurements and measurements of RF field emission.

Immunity
Measuring systems for the coupling of Burst, EFT, ESD and RF are available for conducted and radiated measurements of an IC`s immunity.

Simulation
The simulation models of our probes help to understand and combine EMC measurement and simulation

IC SECURITY



Fault Injection
The ICI and ICI-DP probes allow for inject fast, transient magnetic or electric fields as well as current pulses into ICs. They are intended to use for electromagnetic fault injection (EMFI) or body biasing injection (BBI).

Side-channel analysis
The near-field microprobes are designed for E-field and H-field measurements in a frequency range from 0.5 MHz to 6 GHz with a resolution from 60 µm to 300 µm.

Positioning systems
Automated positioning solutions (IC scanner) for ICI and ICR Probes from Langer EMV-Technik

PRE-COMPIANCE TESTING

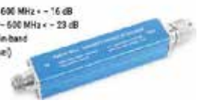
PRE-COMPLIANT LISNS

Model	TBOH01	TBL0550-1	TBL05100-1	TBL5016-1	TBL50100-1	TBLC08	TBL5016-2	TBL5016-3	TBL5032-3
Impedance	5µH // 50Ω	5µH // 50Ω	5µH // 50Ω	50µH // 50Ω	50µH // 50Ω	(50µH+5Ω)// 50Ω	(50µH+5Ω)// 50Ω	(50µH+5Ω)// 50Ω	(50µH+5Ω)// 50Ω
Frequency range	150 kHz – 108 MHz	150 kHz – 108 MHz	150 kHz – 108 MHz	150 kHz – 30 MHz	150 kHz – 30 MHz	9 kHz – 30 MHz	9 kHz – 30 MHz	9 kHz – 30 MHz	9 kHz – 30 MHz
Path	1	1	1	1	1	2	2	3	3
Max. current	10 A	50 A	100 A	16 A	100 A	8 A	16 A	16 A	32 A
Max. Voltage	60V nominal, Component rating: 250V	60V nominal, Component rating: 250V	60V nominal, Component rating: 250V	250V	250V	240V	240V	540V/260V	540V/260V
EUT Socket	4mm (banana)	Phoenix High current	Phoenix High current	Phoenix High current	Phoenix High current	Country specific mains socket	Country specific mains socket	CEE/IEC60309	CEE/IEC60309
Additional Features						Filter / Limiter / Attenuator, switchable Artificial hand connection PE switchable: 50Ω // 50µH	Filter / Limiter / Attenuator, switchable Artificial hand connection PE switchable: 50Ω // 50µH	Artificial hand connection PE switchable: 50Ω // 50µH	Artificial hand connection PE switchable: 50Ω // 50µH

Combined Transient Limiter / Attenuator / Highpass Filter

Model TBFL1
Frequency range: 9 kHz – 600 MHz
Attenuation: 10 dB – 3.5√f+1.6 dB in-band (9 kHz to 600 MHz)
Attenuation HP-filter: > 60 dB @ 1kHz
Maximum continuous RF input power: 5W (+37 dBm) in-band
Maximum DC input voltage: ± 20V

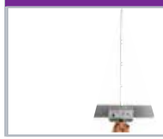
Input matching, linear operating range: 9 kHz – 600 MHz < – 16 dB
Output matching, linear operating range: 9 kHz – 600 MHz < – 23 dB
Linear operating range: up to 0 dBm input level, in-band
Limiting threshold: +11 dBm (@ 37 dBm input level)
Input connector: N female
Output connector: N male



PRE-COMPLIANT ANTENNAS

Modell	TBMA6-P	TBMA1	TBMA2	TBMA3	TBMA4
Type	Loop	Biconical	Biconical	Logarithmic - periodic	Horn
Frequency range	9 kHz – 30 MHz	30 MHz– 1GHz	30 MHz – 300 MHz	250 MHz – 1.3 GHz	1 GHz – 8 GHz
CISPR band	B	C + D	C	D	E
Antenna-factor	-20 dB/Ωm @ 30 MHz	16 – 41 dB/m	11 – 26 dB/m	14 – 27 dB/m	24 – 43 dB/m
Maximum input power	-	2 W	100 W	100 W	100 W

TBMA5 ACTIVE MONOPOLE ANTENNA



- Characterized frequency range: 9 kHz to 30 MHz
- Electric field antenna factor: +6 to +7 dB/m, typ.
- Antenna factor variation: < ±0.8 dB, typ.
- Dynamic Range: 118 dB @ 1MHz, 1 KHz bandwidth
- Electric field, lower limit: 12 dBµV/m (4.0 µV/m) @ 1MHz, 1 KHz bandwidth
- Electric field, upper limit: 130 dBµV/m (3.15 V/m) @ 1 dB compression

TBPS01-TBWA2/20DB OR 40DB 6 GHz

EMC Near-field Probe Set + 20/40dB Wide-band
The H20, H10, H5 and E5 are magnetic field (H) and electric field (E) probes for radiated emissions EMC measurements. The probes are used in the near field of sources of electromagnetic radiation. Includes 20 or 40dB preamplifier 10 MHz - 6 GHz

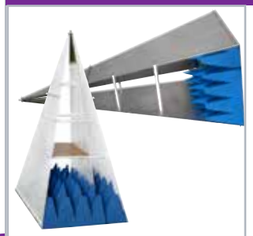
PRE-COMPLIANT PRE-AMPLIFIERS

Model	TBWA2/20dB	TBWA2/40dB	TBHDR1
Frequency range	1.5 MHz – 6 GHz	2.5 MHz – 6 GHz	30 kHz – 1.5 GHz
Gain typ.	20 dB	40 dB	20 dB
Max. input power	+10 dBm	-10 dBm	+10 dBm
P1dB typ.	+18 dBm @ 2 GHz	+18 dBm @ 2 GHz	+18 dBm @ 100 MHz
Output IP3	+ 33 dBm @ 2 GHz	+ 33 dBm @ 2 GHz	+ 38 dBm @ 100 MHz
Noise figure	+5 dB	+ 5 dB	2.7 dB
Power supply	+5V / 110mA, mini USB-B	+5V / 210mA, mini USB-B	+5V / 100mA, mini USB-B
Application	General purpose pre-amplifier near-field probe pre-amplifier	General purpose pre-amplifier near-field probe pre-amplifier	General purpose / high dynamic range pre-amplifier

OPEN TEM CELLS

Model	TBTC0	TBTC1	TBTC2	TBTC3
Frequency range for immunity tests	9 kHz – 3.15 GHz	9 kHz – 2.1 GHz	9 kHz – 1.2 GHz	9 kHz – 700 MHz
Frequency range for radiated emission tests	9 kHz – 6 GHz	9 kHz – 6 GHz	9 kHz – 6 GHz	9 kHz – 6 GHz
Max. input power	100 W * Requires 100W termination	500 W * Requires 500W termination	500 W * Requires 500W termination	500 W * Requires 500W termination
Outer dimensions (LxWxH)	390 x 100 x 62 mm	390 x 200 x 108 mm	636 x 300 x 205 mm	1038 x 501 x 305 mm
Usable area under septum	190 x 70 mm	190 x 130 mm	230 x 280 mm	360 x 480 mm
Septum height	28 mm	50 mm	100 mm	150 mm
Application	Radiated emission and immunity pre-compliance testing	Radiated emission and immunity pre-compliance testing	Radiated emission and immunity pre-compliance testing	Radiated emission and immunity pre-compliance testing
Default accessories	DC-block, 10W termination, N-male to N-male 75 cm RG223 cable	DC-block, 25W termination, N-male to N-male 75 cm RG223 cable	DC-block, 25W termination, N-male to N-male 75 cm RG223 cable	DC-block, 25W termination, N-male to N-male 75 cm RG223 cable

OPEN GTEM TBGTC1



The TBGTC1 open GTEM-cell adds to our existing portfolio of low-cost open TEM-cells for EMC pre-compliance testing. Unlike TEM cells, which have limits at higher frequencies, GTEM cells may operate up to many GHz.

- Septum Height: 250 mm at the location of the EUT-board
- Outer dimensions (LxWxH): 1452x780x520 mm
- Approx Cell Weight: 13 kg.
- Maximum EUT size (LxWxH): 200x200x150 mm
- Defined test volume (±3 dB < 3000 MHz, LxWxH): 100x100x100 mm
- GTEM cell connectors: N-female
- Nominal cell impedance: 50 Ohm
- Frequency range: 0.009 MHz – 6 GHz

RF ACCESORIES

ATTENUATOR/LOAD SETS

Model	TBAS1	TBAS2	TBAS3
RF connectors	N-male / N-female	SMA-male / SMA-female	N-male / N-female
Frequency range	DC – 3 GHz	DC – 6 GHz	DC – 3 GHz
VSWR	< 1.3	< 1.3	< 1.3
Tolerance	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB
Power rating	2 W	1 W	10 W
Attenuation	1 pc 3 dB, 1 pc 6 dB, 1 pc 10 dB, 1 pc 20 dB	1 pc 3 dB, 1 pc 6 dB, 1 pc 10 dB, 1 pc 15 dB, 1 pc 20 dB, 1 pc 30 dB + 2 pcs 50Ω termination, male	1 pc 3 dB, 1 pc 6 dB, 1 pc 10 dB, 1 pc 20 dB

ATTENUATORS

Model	TBATT-N-10-3 TBATT-N-10-6 TBATT-N-10-10 TBATT-N-10-20 TBATT-N-10-30	TBATT-N-25-3 TBATT-N-25-6 TBATT-N-25-10 TBATT-N-25-20 TBATT-N-25-30	TBATT-N-50-3 TBATT-N-50-6 TBATT-N-50-10 TBATT-N-50-20 TBATT-N-50-30	TBATT-N-100-3 TBATT-N-100-6 TBATT-N-100-10 TBATT-N-100-20 TBATT-N-100-30
RF connectors	N-male / N-female	N-male / N-female	N-male / N-female	N-male / N-female
Frequency range	DC – 3 GHz	DC – 3 GHz	DC – 3 GHz	DC – 3 GHz
VSWR	< 1.3	< 1.3	< 1.3	< 1.3
Tolerance	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB 30 dB: ± 1 dB	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB 30 dB: ± 1 dB	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB 30 dB: ± 1 dB	3, 6, 10dB: ± 0.5 dB 20 dB: ± 0.8 dB 30 dB: ± 1 dB
Power rating	10 W	25 W	50 W	100 W
Attenuation	3 dB, 6 dB, 10 dB, 20 dB, 30 dB	3 dB, 6 dB, 10 dB, 20 dB, 30 dB	3 dB, 6 dB, 10 dB, 20 dB, 30 dB	3 dB, 6 dB, 10 dB, 20 dB, 30 dB

50 Ω LOADS

Model	TBTER-25W-3GHz-50-N	TBTER-10W-6GHz-50-N	TBTER-2W-6GHz-50-N	TBTER-2W-2GHz-50-BNCM	TBTER-0.5W-2GHz-BNCM	TBTERFT-0.5W-1GHz-BNCF/BNCM
RF connector	N-male	N-male	N-male	BNC-male	BNC-male	BNC-male / BNC-female
Frequency range	DC – 3 GHz	DC – 6 GHz	DC – 6 GHz	DC – 2 GHz	DC – 2 GHz	DC – 1 GHz
VSWR	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Power rating	25 W	10 W	2 W	2 W	0.5 W	0.5 W

ADAPTOR KIT

TBCAS1 parts list				
1 pc N-male to N-male	4 pcs N-male to BNC-female	2 pcs N-female to SMA-male	1 pc BNC-female to RCA-male	3 pcs SMA-female to SMA-female
1 pc N-female to N-female	1 pc N-male to BNC-male	1 pc N-female to SMB-female	1 pc BNC-male to SMA-male	3 pcs SMA-male to SMA-male
4 pcs N-male to SMA-female	1 pc N-female to BNC-male	1 pc BNC-male to BNC-male	2 pcs BNC-male to SMA-female	2 pcs SMA-male to SMB-male
2 pcs N-male to SMA-male	1 pc N-female to BNC-female	1 pc BNC-female to BNC-female	1 pc BNC-female to SMA-male	2 pcs SMA-male to SMB-female
2 pcs N-male to SMB-female	2 pcs N-female to SMA-female	1 pc BNC-male to RCA-female	2 pcs BNC-female to SMA-female	2 pcs SMA-female to SMB-female

SHIELDING PRODUCTS

BNC/BANANA ADAPTOR KIT

TBBNC1 parts list	
1 pc N-male to Banana-male	1 pc N-male to terminal block
1 pc N-male to Banana-female	1 pc N-female to terminal block
1 pc N-female to Banana-male	1 pc BNC-female to BNC-male 50 Ohm feed-though adapter SWR < 1:1.5 @ 1 GHz
1 pc N-female to Banana-female	

SHIELDED TENTS

Model	TBST-86/49/45/2-B	TBST-86/49/45/1-B	TBST-120/60/60/2-B	TBST-200/100/100
Outer dimensions	86 x 48 x 48 cm	86 x 48 x 48 cm	124 x 64 x 60 cm	204 x 104 x 100 cm
Opening dimensions	40 x 22 cm	40 x 22 cm	85 x 35 cm	130 cm x 46 cm
Frame	2020 extruded aluminium profiles	2020 extruded aluminium profiles	2020 extruded aluminium profiles	2020 extruded aluminium profiles
Shielding	2 layers of conductive fabrics	2 layers of conductive fabrics	2 layers of conductive fabrics	2 layers of conductive fabrics
Seal	Conductive Velcro tape	Conductive Velcro tape	Conductive Velcro tape	Conductive Velcro tape
Suspension	Velcro straps	Velcro straps	Velcro straps	Velcro straps
Filter Panel	1 x 240V/10A AC mains filter; IEC socket; 2 x 240V/10A DC filter; cables with female Banana couplers 3 pcs N- female + 1 pc BNC-female feed through connectors with screw caps	2 x 240V/10A DC filter; cables with female Banana couplers 3 pcs N- female + 1 pc BNC-female feed through connectors with screw caps	1 x 240V/10A AC mains filter; IEC socket; 2 x 240V/10A DC filter; cables with female Banana couplers 3 pcs N- female + 1 pc BNC-female feed through connectors with screw caps	1 x 240V/10A AC mains filter; IEC socket; 2 x 240V/10A DC filter; cables with female Banana couplers 3 pcs N- female + 1 pc BNC-female feed through connectors with screw caps
Internal AC-socket	Pigtail with detachable mains socket , type F (Schuko)	Pigtail with detachable mains socket , type F (Schuko)	Pigtail with detachable mains socket , type F (Schuko)	Pigtail with detachable mains socket , type F (Schuko)
Attenuation	Up to 50 dB in the range 10 MHz – 6 GHz	Up to 50 dB in the range 10 MHz – 6 GHz	Up to 50 dB in the range 10 MHz – 6 GHz	Up to 50 dB in the range 10 MHz – 6 GHz
Suitable TEM-cells	TBTC0, TBTC1, TBTC2	TBTC0, TBTC1, TBTC2	TBTC0, TBTC1, TBTC2, TBTC3	TBTC0, TBTC1, TBTC2, TBTC3

SHIELDED BAGS

Model	TBSB-70/40	TBSB-105/60
Outer dimensions	70 x 40 cm	105 x 60 cm
Shielding	2 layers of conductive fabrics	2 layers of conductive fabrics
Seal	Conductive Velcro tape	Conductive Velcro tape
Filter Panel	none	none
Attenuation	Up to 50 dB in the range 10 MHz – 6 GHz	Up to 50 dB in the range 10 MHz – 6 GHz
Suitable TEM-cells	TBTC0, TBTC1,	TBTC0, TBTC1, TBTC2

FABRIC GROUND PLANE

Fabric dimensions: 250 cm x 140 cm
Fabric thickness: 0.7 mm
Fabric weight: 1.1 kg
Fabric material: Polyester 45% + Silver 55% conductive fabric, fleece
Contact block dimensions: 96 mm x 40 mm x 7.2 mm
Contact block weight: 0.23 kg
Contact block material: nickel plated

CURRENT PROBES

RF CURRENT MONITORING PROBES

Model	TBCP1-200	TBCP1-250	TBCP1-500	TBCP2-250	TBCP2-30K400	TBCP2-500	TBCP2-750	TBCP3-1000	TBCP4-250	TBCP4-500	TBCP4-750
Characterized frequency range	10 kHz – 200 MHz	30 kHz – 250 MHz	30 kHz – 500 MHz	10 kHz – 250 MHz	10 Hz – 400 MHz	10 kHz – 500 MHz	10 kHz – 750 MHz	30 kHz – 1 GHz	10 kHz – 250 MHz	10 kHz – 500 MHz	10 kHz – 750 MHz
Trans-impedance	17 dBΩ	18 dBΩ	20 dBΩ	16 dBΩ	2 dBΩ	20 dBΩ	22 dBΩ	20 dBΩ	14 dBΩ	16 dBΩ	20 dBΩ
Aperture diameter	25 mm	25 mm	25 mm	32 mm	32 mm	32 mm	32 mm	17 mm	32 mm	32 mm	32 mm
Snap on / hinge	no	no	no	yes	yes	yes	yes	no	no	no	no

RF PULSE CURRENT MONITORING PROBES

RF pulse Current Monitoring Probes are typically used for surge or RF pulse current monitoring applications in the time domain.

Model	TBPCP1-20100	TBPCP2-3070
Characterized frequency range	1 Hz – 200 MHz	1 Hz – 200 MHz
3 dB frequency range	20 Hz – 100 MHz	30 Hz – 70 MHz
Transfer Impedance (high Z)	0.2 V/A	0.1 V/A
Transfer Impedance (50 Ohm)	0.1 V/A	0.05 V/A
Droop rate	< 10% / ms	< 20% / ms
Rise time	< 5 ns	< 5 ns
Aperture diameter	25 mm	40 x 15 mm

RF SUFACE DURRENT MONITORING PROBE

Model	TBSCP1-5M300	TBSCP1-10M500
Characterized frequency range	30 kHz – 400 MHz	30 kHz – 600 MHz
Trans-impedance	-7 dBΩ	-5 dBΩ
Footprint	40 x 15 mm	40 x 15 mm

COAXIAL RF CURRENT PROBE

Model	TBCCP1-3K70	TBCCP1-3K100	TBCCP1-400K600
Characterized frequency range	10 Hz – 100 MHz	10 Hz – 100 MHz	10 Hz – 600 MHz
Trans-impedance	0 dBΩ	+5 dBΩ	+23 dBΩ
Application	Transducer for large loop antennas (LLA)	General purpose coupling device	General purpose coupling device

IMMUNITY TRANSDUCERS

BCI PROBES

Model	TBBCI1-200K280	TBBCI1-800K420	TBBCI1-CAL
Frequency range	150 kHz – 230 MHz	1 MHz -400 MHz	150 kHz – 400 MHz
Coupling loss	8 dB typical	5dB typical	-
Maximum RF input power	50 W	50 W	500 W
Aperture diameter	27 mm	27 mm	-
Outer dimensions	92 x 76 mm	92 x 76 mm	200 x 150 x 140 mm
Application / Standard	BCI probe for IEC / ISO 61000-6-4	BCI probe IEC / ISO 11452-4	BCI probe calibrator for IEC / ISO 61000-6-4 IEC / ISO 11452-4

PRE-COMPLIANT COUPLING DE-COUPLING NETWORKS

Model	TBCDN-M1	TBCDN-M2	TBCDN-M3	TBCDN-M4	TBCDN-M5
Application	Unscreened AC and DC power supply lines	EUT supplied with DC or single phase AC, Line + Neutral	EUT supplied with single phase AC, Line + Neutral + Earth	EUT supplied with 3-phase AC and wired in Delta - configuration	EUT supplied with 3-phase AC and wired in Y-configuration

Part Number	Description
TBCDN-M1-AP	Adapter panel with shorting bar for M1 coupling decoupling network; N-Female to 4mm Banana plug
TBCDN-M2-AP	Adapter panel with shorting bar for M2 coupling decoupling network; N-Female to 2x 4mm Banana plug
TBCDN-M3-AP	Adapter panel with shorting bar for M3 coupling decoupling network; N-Female to 3x 4mm Banana plug
TBCDN-M4-AP	Adapter panel with shorting bar for M4 coupling decoupling network; N-Female to 4x 4mm Banana plug
TBCDN-M5-AP	Adapter panel with shorting bar for M5 coupling decoupling network; N-Female to 5x 4mm Banana plug
TBCDN-50-150	50 Ω to 150 Ω N-male to N-female adapter

2-WAY RF SPLITERS

Model	TBRFPS1	TBRFPS4
Max. power	2 W	0.5 W
Frequency range	100 kHz - 800 MHz	5 MHz – 3 GHz
S21 above 3 dB	-0.5 dB, midband	-0.6 dB, midband
S31 above 3 dB	-0.6 dB, midband	-0.9 dB, midband
Amplidude unbalance	0.1 dB, midband	0.3 dB, midband
Phase unbalance	0.1 °, midband	0.5 °, midband
Isolation	23 dB, midband	21 dB, midband
SWR Port 1	1.2, midband	2.0, midband
SWR Port 2	1.2, midband	2.0, midband
SWR Port 3	1.2, midband	2.0, midband

COMB GENERATOR/AMPS

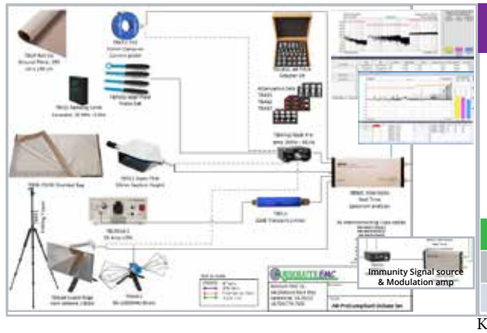
PRE-COMPLIANT COMB GENERATORS

Model	TBCG1	TBCG2	TBCG3-CN	TBCG3-RN2	TBCG2-RN6
Characterized frequency range	100 MHz – 6 GHz	2 MHz – 6 GHz	5 kHz – 2 GHz	5 kHz – 2 GHz	5 kHz – 6 GHz
Comb frequencies	internal, 100 MHz	external, 2 MHz – 300 MHz	switchable 0.1, 0.5, 1, 5, 10 MHz, external 5 kHz – 300 MHz	switchable 5, 10, 25, 50, 100 MHz external 5 kHz – 300 MHz	switchable 5, 10, 25, 50, 100 MHz external 5 kHz – 300 MHz
External Input	no	Only external	yes	yes	yes
Power supply	9V Battery	passive	4 x NiMH, AA	6 x NiMH, AA	6 x NiMH, AA
accessory	-	-	External universal charger	2 monopole antennas, external universal charger	2 monopole antennas, external universal charger
Application	Reference for radiated emissions	General purpose, frequency multiplier	Reference for conducted emissions	Reference for radiated emissions	Reference for radiated emissions

PRE-COMPLIANT MODULATED AMPLIFIERS

Model	TBMDA1	TBMDA2	TBMDA3B	TBMDA4B	TBMDA5	TBLPA1	TBMDA-CDN25	TBMDA-BCI25
Frequency range	40 MHz – 3 GHz	10 MHz – 1.5 GHz	10 MHz – 1 GHz	100 kHz – 75 MHz	150 kHz – 1 GHz	10 MHz – 1GHz	150 kHz – 250 MHz	1 MHz – 400 MHz
Output power	150 mW	0..5 W	8 W	5 W	2.5 W	1W	25 W	25 W
Modulator	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	-	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %	AM, 1 kHz, 80 % PM, 1 kHz, 50 % PM, 217 Hz, 12.5 %
Gain	22 dB	43 dB	42 dB	48 dB	38 dB	37 dB	47 dB	47 dB
Application	Immunity testing in TEM-cells	Immunity testing in TEM-cells	Immunity testing in TEM-cells	Immunity testing in TEM-cells	Immunity testing in TEM-cells or with CDNs according EN 61000-4-6	General purpose	Immunity testing with CDNs or BCI-probes according EN 61000-4-6	Immunity testing with BCI-probes according ISO 11452-4
Maximum stress levels	TBTC0: 100 V/m TBTC1: 56 V/m TBTC2: 28 V/m TBTC3: 18 V/m	TBTC0: 178 V/m TBTC1: 100 V/m TBTC2: 50 V/m TBTC3: 33 V/m	TBTC0: 711 V/m TBTC1: 398 V/m TBTC2: 199 V/m TBTC3: 132 V/m	TBTC0: 565 V/m TBTC1: 316 V/m TBTC2: 158 V/m TBTC3: 105 V/m	Class 1 Class 2		Class 1 Class 2 Class 3 Class X	I (60mA) II (100mA III (150mA) IV (200mA) V (up to 350 mA) (substitution method)
Supply	USB	USB	Mains 100 – 240V AC	Mains 100 – 240V AC	Mains 100 – 240V AC	Mains 100 – 240V AC	Mains 100 – 240V AC	Mains 100 – 240V AC

PRE-COMPIANT EMC SYSTEMS



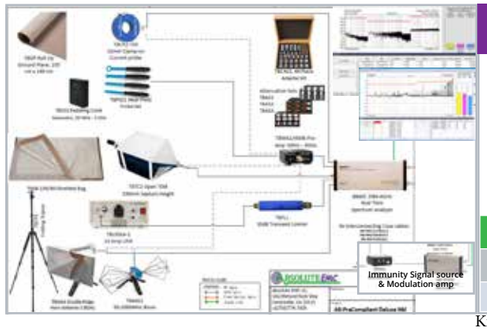
AB-PRE-COMPLIANT KITS-SM

Low Cost Kits for Emissions and Immunity

Contains all the tools you need to investigate Conducted & Radiated emissions. Use the test cell and shielded back in a rf shielded environment. Incl. Spectrum Analyzer, Software, antennas, near filed probes Current probes, LISN, TEM Cell, pre-amp, selection of coax and connectors.

Model	Frequency	Test Volume	Real time SA	
-Sm	1 Hz - 4.4 GHz	6.3 x 4.3 x 2 cm	No	
-Deluxe Sm	9 kHz - 6 GHz	6.3 x 4.3 x 2 cm	Yes	Shown

Kits can be configured for you needs. add/remove items



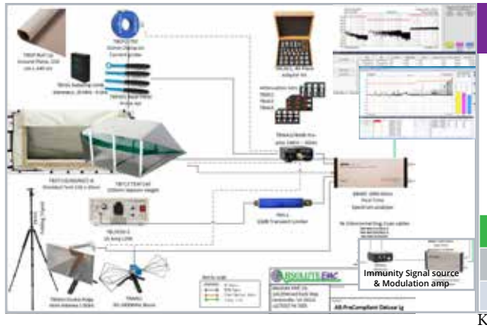
AB-PRE-COMPLIANT KITS-MD

Low Cost Kits for Emissions and Immunity

Contains all the tools you need to investigate Conducted & Radiated emissions. Use the test cell and shielded back in a rf shielded environment. Incl. Spectrum Analyzer, Software, antennas, near filed probes Current probes, LISN, TEM Cell, pre-amp, selection of coax and connectors.

Model	Frequency	Test Volume	Real time SA	
-Md	1 Hz - 4.4 GHz	7.6 x 9.3 x 3.3 cm	No	
-Deluxe Md	9 kHz - 6 GHz	7.6 x 9.3 x 3.3 cm	Yes	Shown

Kits can be configured for you needs. add/remove items



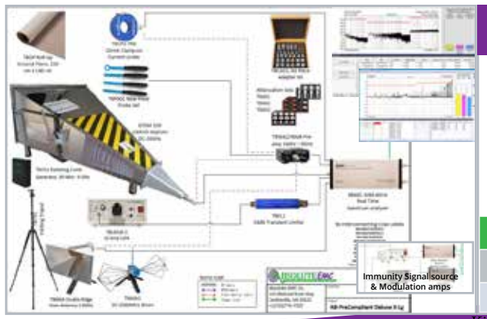
AB-PRE-COMPLIANT KITS-LG

Low Cost Kits for Emissions and Immunity

Contains all the tools you need to investigate Conducted & Radiated emissions. Use the test cell and shielded back in a rf shielded environment. Incl. Spectrum Analyzer, Software, antennas, near filed probes Current probes, LISN, TEM Cell, pre-amp, selection of coax and connectors.

Model	Frequency	Test Volume	Real time SA	
-Lg	1 Hz - 4.4 GHz	12 x16 x 5 cm	No	
-Deluxe Lg	9 kHz - 6 GHz	12 x16 x 5 cm	Yes	Shown

Kits can be configured for you needs. add/remove items



AB-PRE-COMPLIANT KITS-X-LG

Low Cost Kits for Emissions and Immunity

Contains all the tools you need to investigate Conducted & Radiated emissions. Use the test cell and shielded back in a rf shielded environment. Incl. Spectrum Analyzer, Software, antennas, near filed probes Current probes, LISN, GTEM Cell, pre-amp, selection of coax and connectors.

Model	Frequency	Test Volume	Real time SA	
-X-Lg	1 Hz - 4.4 GHz	20 x 20 x 15 cm	No	
-Deluxe X-Lg	9 kHz - 6 GHz	20 x 20 x 15 cm	Yes	Shown

Kits can be configured for you needs. add/remove items

THE TEAM

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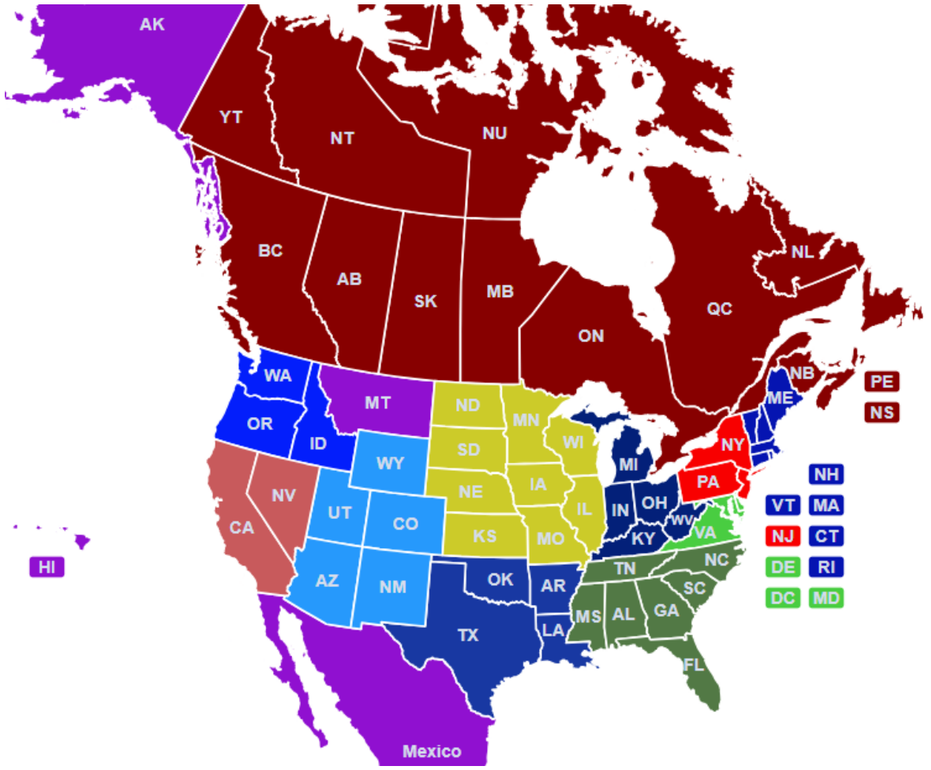
ABSOLUTE EMC SALES PARTNERS



Company	Street	Town	State	Zip	Website
ACA TMetrix Inc.	3585 Laird Road, Units 15-16	Mississauga	ON	L5L 5Z8	https://tmetrix.com/
Absolute EMC Llc	8240 Rugby Road	Manassas Park	VA	20111	https://absolute-emc.com
Tritek Solutions, Inc.	30021 Tomas, Suite 120	Rancho Santa Margarita	CA	92688	https://triteksolutions.com/
Vic Myers	33 E. Comstock Drive. Ste #2	Chandler	AZ	85225	https://www.vicmyers.com/
Tec-Rep	1919 S. Highland Ave Bldg. A, Ste. 330	Lombard	IL	60418	https://www.tec-rep.com/
Kemp Instruments Inc.	720 Ave F, Ste 104	Plano	TX	75074	https://www.kempinstruments.com/
EQS Systems LLC	8588 Mayfield Road	Chesterland	OH	44026	https://www.eqssystems.com/
Brennan Associates	906 Retriever Ave	Seffner	FL	33584	https://www.brennanassoc.net/
RJ Sickles Associates	33 Spinnaker Way	Westport	MA	O2790	https://rjsickles.com/
Northern Technical Sales NTS	30 Grove Street	Pittsford	NY	14534	https://rjsickles.com/
Proteq Solutions	1 Tara Blvd, Suite 301	Nashua	VA	20111	https://proteqsolutions.com/

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HILO TEST