

# Conducted Immunity EMC Test System

## System 2050

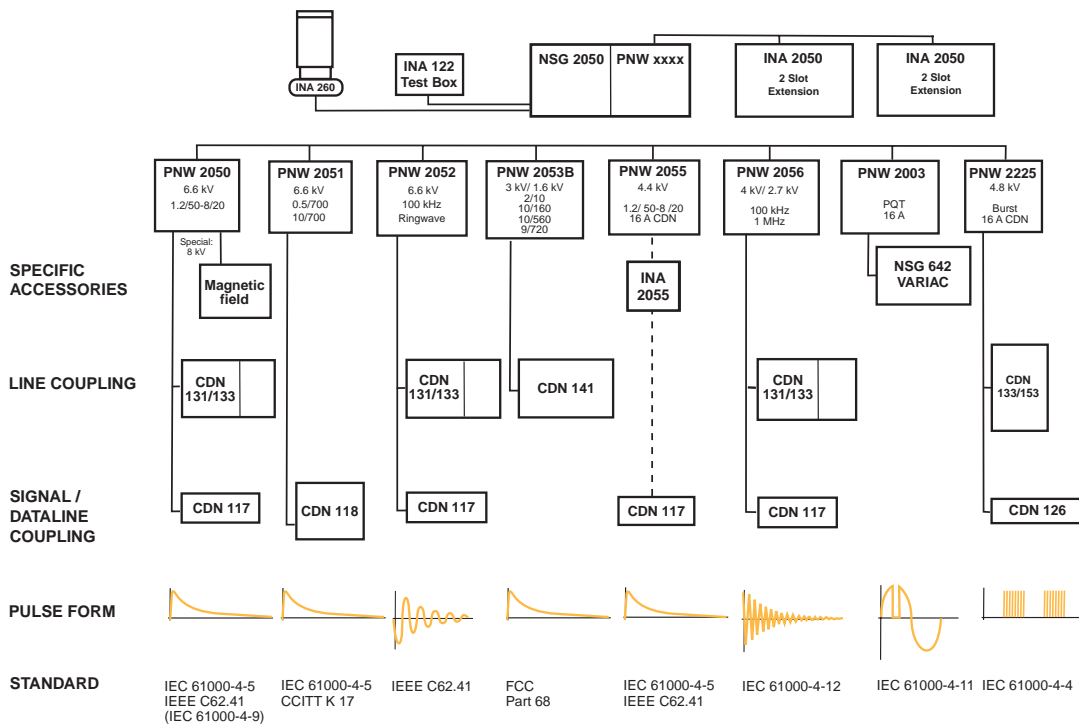
- Modular concept
- Wide range of pulse networks conforming to IEC, ANSI, FCC etc
- Industrial/telecom test applications
- Professional test management software



System 2050 is a highly versatile, modular, multi-role EMC test facility adaptable to meet a wide variety of test specifications, from compliance with basic national and international standards, through detailed design characterisation to compliance with manufacturers' own, more exacting EMC specifications. Its modularity offers each test lab a configuration to suit its test needs cost-effectively while remaining expandable so that, as test needs grow and change, System 2050 can be extended accordingly, thereby protecting investment.

**UKAS Calibration option**

### System 2050



### Technical Specifications

NSG 2050

- Power: 100 to 240Vac, 50/60Hz
- Microprocessor control recognises all system elements
- Operation with keypad and display
- Pulse output via 10kV connectors
- Oscilloscope trigger output
- Remote pulse trigger output
- Voltage / current monitor
- Peak current detector
- EUT fail input with program control
- Line synchronization input
- End of test signal

- Safety interlock
- Emergency stop to IEC safety regulations
- Interface to coupling networks
- RS 232 computer interface
- Table top unit or rack mount
- Dimensions 310 x 449 x 510mm
- Weight approx 20kg
- Interfaces extension chassis for pulse and control
- Houses one PNW at any time in system mainframe
- Houses up to five PNW at a time with extension chassis

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## System 2050

### Intelligent Mainframe

At the heart of System 2050 is the NSG 2050 mainframe unit, consisting of a micro-processor based control unit, a high voltage source and accommodation for user selected plug-in pulse networks. Each of the System 2050 plug-in modules and extension units comes complete with its own firmware, so that the system automatically recognises its presence and presents the user with the appropriate software menus and front-panel options. Intelligent control is effected either through the front panel controls and display or via a PC.

Further, System 2050 is designed for inter-compatibility, using open-architecture principles and modular Windows control software. As such, it can be combined seamlessly with any of Schaffner's specialist test and measurement instrumentation and with third party products, including radiated interference test equipment, in a complete ProfLine test system to meet the most demanding test needs.

### A Complete Conducted Immunity Test System

System 2050 offers a complete set of plug-in networks for full compliance testing to basic, generic and product standards, for single-phase and three-phase power lines as well as data and telecom lines. The mainframe unit and three plug-in networks (PNW 2055 surge and PNW 2225 fast transient pulse

generators and PNW 2003 a power quality module) make up a complete, integrated system for testing susceptibility to conducted interference on single-phase power lines. System 2050 may include just one or several modules and each of these provides a self-contained test facility that requires no external coupling unit for single-phase power line immunity tests to the basic standard. As requirements change in the future, System 2050 remains expandable with further networks and extensions for new applications.

### PNW 2055

is a basic surge generator complying with IEC 61000-4-5 that provides a hybrid surge pulse of 1.2/50 $\mu$ s - 8/20 $\mu$ s, with built-in coupling for single-phase equipment up to 16A.

### PNW 2225

generates burst pulses according to IEC 61000-4-4 and offers a range of additional test parameters. It includes a built-in processor-controlled 16A coupling network.

### PNW 2003

is a versatile power network quality simulator which generates drop-outs, dips, interruptions and variations. The correct functions for compliance testing are pre-programmed and no external device is needed.



An additional wide range of high current, high voltage pulse generator plug-in networks and external single- and three-phase extension units is available for more demanding industrial test applications. These can be used to create a complete user-defined system for testing to, and beyond, the full IEC, ANSI, IEEE, VDE standards and European Norms.

### Technical Specifications

2055 / 2225 / 2003

<b>PNW 2055</b>	Hybrid pulse	1.2/50 $\mu$ s - 8/20 $\mu$ s, 200V to 4400V up to 2200A	IEC 61000-4-5 EN 50082
	Impedance	2 $\Omega$ and 12 $\Omega$	EN 61000-4-5
	Pulse rep	10s to 10000s	ANSI/IEEE C62.41
	Coupling	built in coupling network, 20V to 230Vac, 16A synch or asynch to power line	
<b>PNW 2225</b>	Burst pulse	5/50ns, 200V to 4800V	IEC 61000-4-4 EN 50082
	Frequency	100Hz to 1MHz	EN 61000-4-4
	Spikes	1 to 250 per package and continuous	
	Coupling	built in coupling network, 12V to 250Vac, 16A switched output for coupling clamp	
<b>PNW 2003</b>	Power quality	drop out 2ms to 99s dips to 40% and 70% of U nominal. synch or asynch to power line variable dips and voltage with external variac	IEC 61000-4-11 EN 50082 EN 61000-4-11
	EUT power	12V to 250V, 16A nominal, ac and dc	

### PNW 2050

provides high energy hybrid surge pulses of 1.2/50µs - 8/20µs with an extended voltage range as required by IEC, ANSI-IEEE and many other standards. It is used with single- and 3-phase power-line coupling networks or data-line couplers. The network can also be used, in conjunction with an antenna, for pulsed magnetic field testing, e.g. to IEC 61000-4-9.

### PNW 2051

provides a 10/700µs pulse, as specified in telecom applications and also required in some industrial electronics standards, e.g. IEC 61000-4-5. For higher test specifications, PNW 2051 also provides the sharper pulse rise time of 0.5µs. The matching pulse networks, required in some applications, are available.

### PNW 2052

generates a 100kHz ringwave, as required by the ANSI-IEEE standard. It can be used with external coupling unit CDN 131 or CDN 133 for single-or three-phase testing up to 25A.

### PNW 2056

is a high frequency pulse generator which produces damped oscillatory waves of 100kHz and 1MHz with amplitudes up to 4kV.

### Coupling Units

A comprehensive range of couplers and extension units is available for single- and three-phase power-line and data-line testing. Full technical details are outlined on page 44.

### CDN 131 and CDN 151

are designed to couple surge pulses and fast transient pulses respectively to single-phase power lines. They can be used with all the surge and fast transient pulse generator networks, for testing up to 240Vac and 25A.

### CDN 133 and CDN 153

are providing three-phase coupling for tests up to 440Vac (phase to phase) and 25A continuous operation. All combinations of coupling modes are selectable under software control. There are separate inputs for high energy surge pulses and high frequency burst pulses with one common output to the equipment under test.

### NSG 642

is an automated variable AC source which can be used as a second supply with the drop-out simulator PNW 2003 to generate a wide range of dynamic voltage variations including over-voltage, ramps and dips. Meets the requirements of IEC 61000-4-11.

Technical Specifications			CDN 131 / 133		
<b>CDN 131</b>	Surge Coupling	single-phase coupling network 20V to 230Vac, 50/60Hz 25A continuous, 30A for 0.5 hour	<b>CDN 133</b>	Surge Coupling	3-phase coupling network 3 x 20V to 440Vac, 50/60Hz 25A continuous, 30A for 0.5 hour
	Burst Coupling	CDN 151 option		Burst Coupling	CDN 153 option, 3-phase
	Mechanical	310 x 449 x 510, 22kg approx		Mechanical	310 x 449 x 510, 32kg approx

Technical Specifications			2050 / 2051 / 2052 / 2056 / NSG 642		
<b>PNW 2050</b>	Hybrid pulse	1.2/50µs - 8/20µs, 200V to 6600V up to 3300A	<b>PNW 2056</b>	Damped osc.	0.5µs/100kHz up to 4000V 75ns/100kHz up to 2700V 75ns/1MHz up to 2700V
	Impedance	2Ω and 12Ω		Rep rate	40Hz at 100kHz, 400Hz at 1MHz
	Pulse rep	10s to 10000s			
<b>PNW 2051</b>	Telecom	10/700µs and 0.5/700µs, 200V to 6600V up to 440A	<b>NSG 642</b>	Power quality	motor driven transformer extension 1 to 280Vac 16A continuous, 25A for 1min.
	Impedance	15Ω and 40Ω		Speed	up to 120V/s
	Pulse rep	10s to 10000s		mechanical	310 x 449 x 510, 35kg approx
<b>PNW 2052</b>	Ring wave	0.5µs/100kHz, 200V to 6600V up to 550A			
	Impedance	12Ω, 30Ω and 200Ω			
	Pulse rep	10s to 10000s			

# Conducted EMC Test System

# System 2050

## Telecom Test System

A range of specialist telecom test plug-in networks for System 2050 is available for testing to current telecom standards around the world, including CCITT, FCC, IEC, Bellcore and ETSI. There is also a full set of coupling units available, for coupling fast transient and surge pulses to two-wire, four-wire, multi-wire PABX and ISDN lines.



## PNW 2051

generates 10/700 $\mu$ s and 0.5/700 $\mu$ s test pulses as used in telecom specs such as CCITT. Normally applied in non-powered test arrangements, it can also be used with coupling networks for powered system tests.

## PNW 2053B

provides all pulses required by the new FCC part 68 standard in one device. FCC part 68 specifies the test methods for all classes of terminal equipment in the telecommunication environment. The test arrangement includes a dedicated coupling unit, CDN 141, with a decoupling network for the 2/10 $\mu$ s power line test pulse and coupling facilities for telecom line test applications.



## Components' Test System

Components are often tested in, or close to, the manufacturing area. System 2050 offers the required safety standards and operating flexibility, as well as ready to use adapters. Test sequences are prepared by the system administrator then simply called into operation by the operator. Manipulation errors are avoided and the test results can be recorded automatically. The system can be used as a platform for a wide range of test rigs from a self-contained test bench arrangement, to complex computer controlled set-ups with integration of power sources and measuring equipment.

### Technical Specifications

PNW 2051 / 2053

<b>PNW 2051</b>	CCITT	10/700 $\mu$ s and 0.5/700 $\mu$ s, 200V to 6600V up to 440A
	Impedance	15 $\Omega$ and 40 $\Omega$
	Pulse rep	10s to 10000s
<b>PNW 2053B</b>	FCC	2/10 $\mu$ s up to 2600V / 1150A
		10/160 $\mu$ s up to 2500V / 220A
		10/560 $\mu$ s up to 950V / 110A
		9/720 $\mu$ s up to 2500V / 50A