NSG 6000A
RADIATED AND CONDUCTED IMMUNITY TEST SYSTEM 9 KHz - 6 GHz

- **Integrated signal generator 9 kHz to 6 GHz**
- **Integrated RF switch network**
- **Integrated 3 freely configurable pulse modulators (1 µs to 200 s) for radar pulse profiles**
- **External modulation inputs for AM and PM**
- **Multiple EUT monitoring options**
- **5.7" TFT color display**
- **Remote control via USB, RS232, LAN or optical**

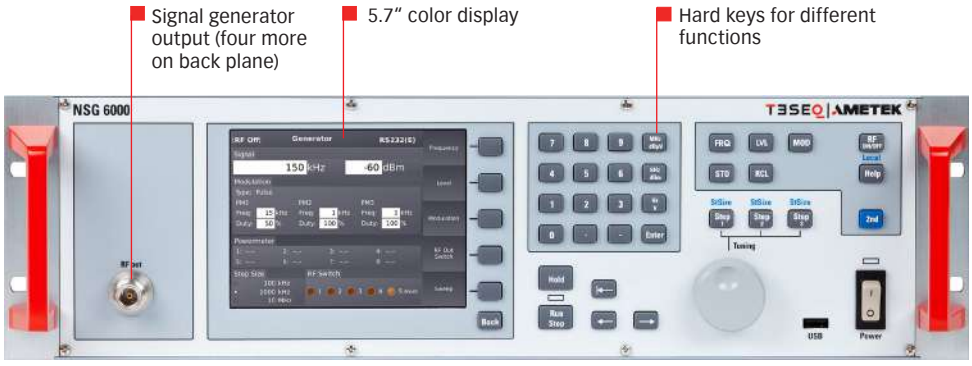
Standards:

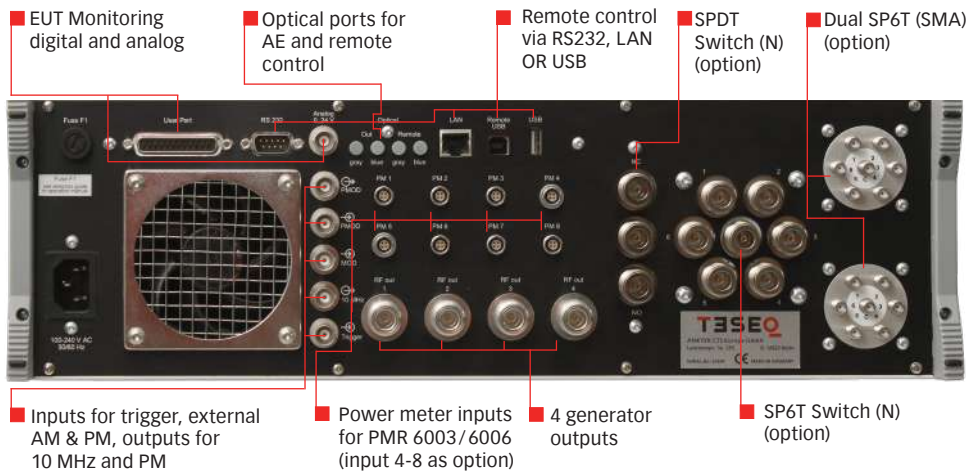
- **IEC/EN 61000-4-3**
- **IEC/EN 61000-4-6**
- **IEC/EN 61000-4-20**
- **IEC/EN 61000-4-21**
- **IEC/EN 62132**
- **ISO 11452-4**
- **MIL 461 CS114**
- **Ford FMC1278**
- **VW TL81000**
- **And others**

The NSG 6000A consists of an integrated RF signal generator, RF switch and EUT monitoring interfaces. The unit is designed for various EMC applications in the 9 kHz to 6 GHz frequency range. In addition to the generator, the system includes the AM and PM modulators necessary for EMC testing. The NSG 6000A includes 3 freely configurable pulse modulators (1 µs to 200 s) for radar pulse profiles as required e.g. by Ford FMC1278 or VW TL81000. The RF signal can be switched to one of five outputs, where up to five power amplifiers can be connected directly. Different RF switches are supplied for combining amplifiers into two antenna paths or other applications.

The 5.7" color display shows the generator and system setting parameters.

The EUT monitoring is provided by 4 digital, and 1 analog input. 14 digital outputs can be used for control purposes. Up to eight power meters PMR 6003 or PMR 6006 can be connected directly to the NSG 6000A. The NSG 6000A provides remote control through its network, RS232 and USB and optical interfaces.





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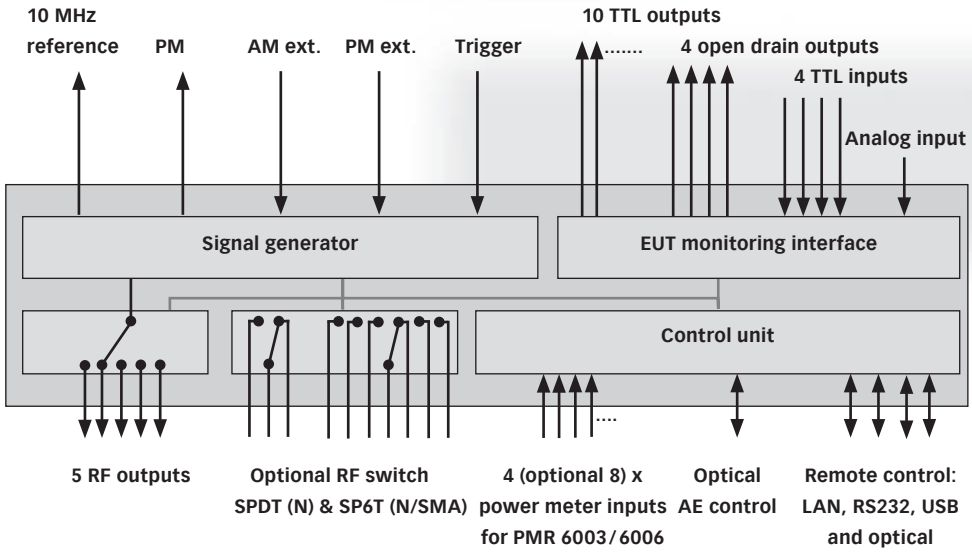
NSG 6000A Block diagram



Technical specifications

Generator

Frequency range:	9 kHz to 6 GHz
Resolution:	1 Hz
Reference frequency:	10 MHz
Level range:	-60 dBm to +10 dBm
Resolution:	0.1 dB
Accuracy:	≤0.5 dB
Spectral distortion	
Harmonics:	<-30 dBc
Non harmonics:	<-30 dBc at carrier offset > 1 kHz
Amplitude modulation	
Modulation frequency range:	100 Hz to 20 kHz (usable frequency range from 1 Hz to 20 kHz when ALC is switched off)
Modulation depth:	0 to 100%
Resolution:	0.5%
Frequency resolution:	1 Hz
Pulse modulation	3 freely configurable pulse modulators
Modulation frequency range:	5 mHz to 1 MHz
Frequency resolution:	5 mHz

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Generator (continued)

Duty cycle:	0% to 100%
Pulse on time:	≥ 50 ns
External amplitude modulation (AM)	
Level:	1 Vpp to get 100% AM, 1 Hz to 10 kHz

Pulse width and duty cycle individually adjustable to generate radar pulse profiles

Back panel

Monitoring input analog:	BNC socket, 0-24 V Ri=15 kΩ, 6 mV resolution
User port:	D-Sub 25 pole
	10 TTL outputs
	4 open drain outputs 40 V, 3 A
	4 TTL inputs
	+12 V / 700 mA, +5 V / 700 mA
Generator outputs:	4 x N sockets 50 Ω, 9 kHz to 6 GHz
External AM input:	BNC socket, impedance >10 kΩ
External PM input:	BNC socket, TTL
External PM output:	BNC socket, TTL, impedance >1.2 kΩ
10 MHz reference output:	BNC socket, approx. 0 dBm/50 Ω
RF Switch network*:	
Option	SPDT, N sockets 50 Ω
Option	Dual SP6T, SMA sockets 50 Ω
Option	SP6T Switch, N sockets 50 Ω
Power meter inputs	
1 - 4:	For connecting up to 4x PMR 6003/6006
Option 5-8:	For connecting up to four additional PMR 6003/6006
Trigger input:	BNC socket, TTL for external triggering, max. frequency 100 Hz, trigger delay <50 ms
Remote ports	
RS232:	D-Sub 9 pole, up to 115200 Bd
USB device connector:	Connector type "B"
Network:	RJ45, Ethernet 10/100 BASE-T
Optical remote control	Connector 2 x HFBRx523 socket for 1 mm fiber optic cable with length between 5 m and 30 m with 115200 Bd, for other distance 38400 Bd, max. 50 m
Optical port for AE control	LWL (Light wave connector), HP versatile link HFBR0501 series 40 kBd, (avoid scattered light on the back panel)
USB	USB host connector for USB stick, keyboard, mouse

*See graphs on next page for performance of N and SMA type switches

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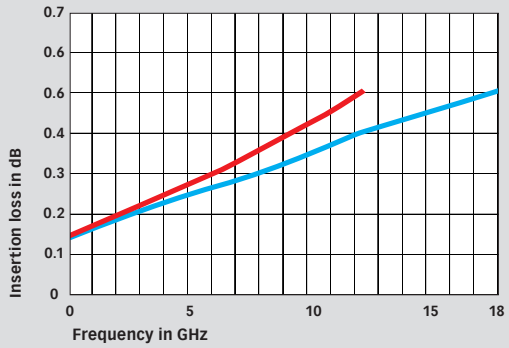
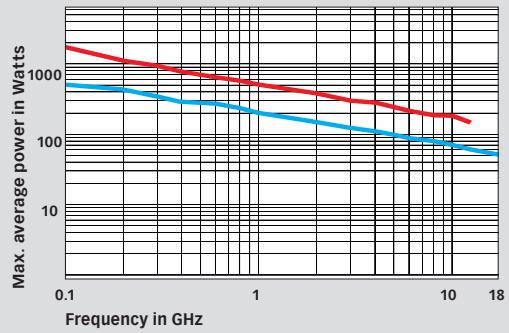
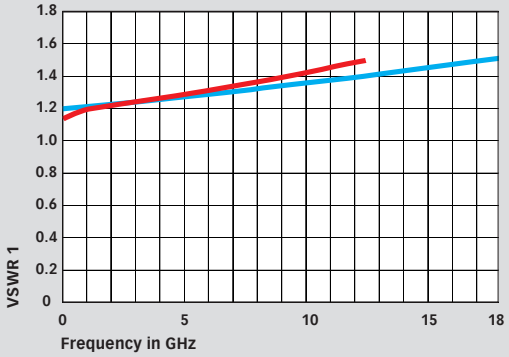
Performance graphs of N and SMA type switches for NSG 6000A







Legend:

- N type,
- SMA type

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Front panel

Generator output	N socket, 50 Ω, 9 kHz to 6 GHz
USB	USB host connector for USB stick, keyboard, mouse

Power supply

Operating range:	100 to 240 VAC, 50/60 Hz, autoranging
Power consumption:	90 VA
Fuse:	1.5 A (slow) for 110 V, 1 A (slow) for 230 V

General data

Operating temperature range:	0°C to 40°C
Storage temperature range:	-20°C to 60°C
Relative humidity:	95%/30°C (no moisture condensation)
EMC:	DIN/EN 61326-1:2013
Shock:	DIN/EN 60068-2-27
Vibration:	DIN/EN 60068-2-6
Protection class:	DIN/EN 61010-1/IEC 61010-1

Mechanical specifications

Size (W x H x D) :	45 cm (19“, 48.3 cm with rack handle bar) x 13.2 cm (3HU) x 42.3 cm
Weight:	approx. 11 kg

Firmware

The included firmware allows configuration and application of the NSG 6000A as signal generator with many additional features like power meter reading, switch network control, and system control option. For EMC testing, the NSG 6000A can be used with Teseq’s Compliance comprehensive test system software.

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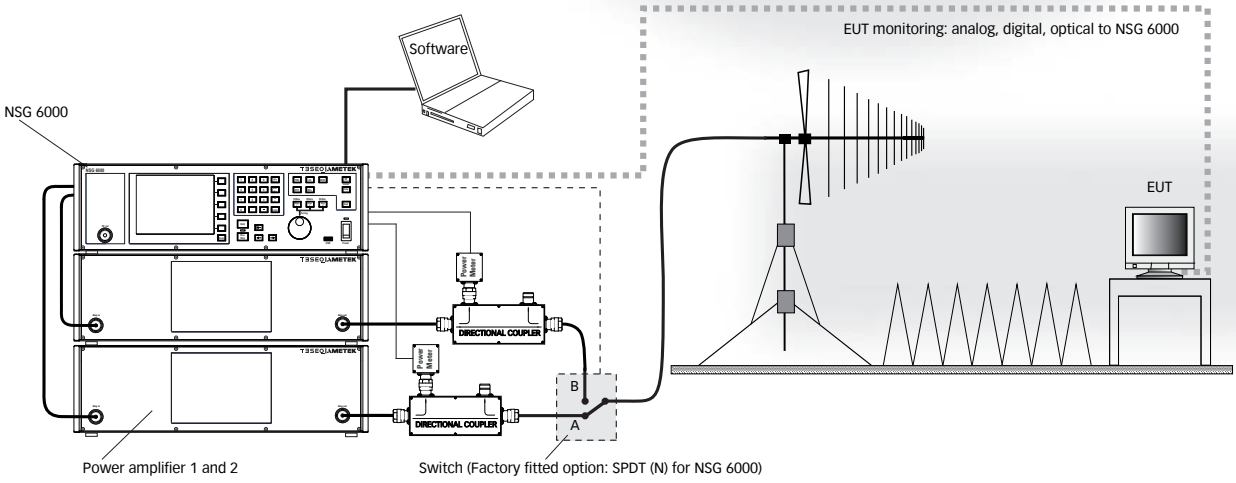
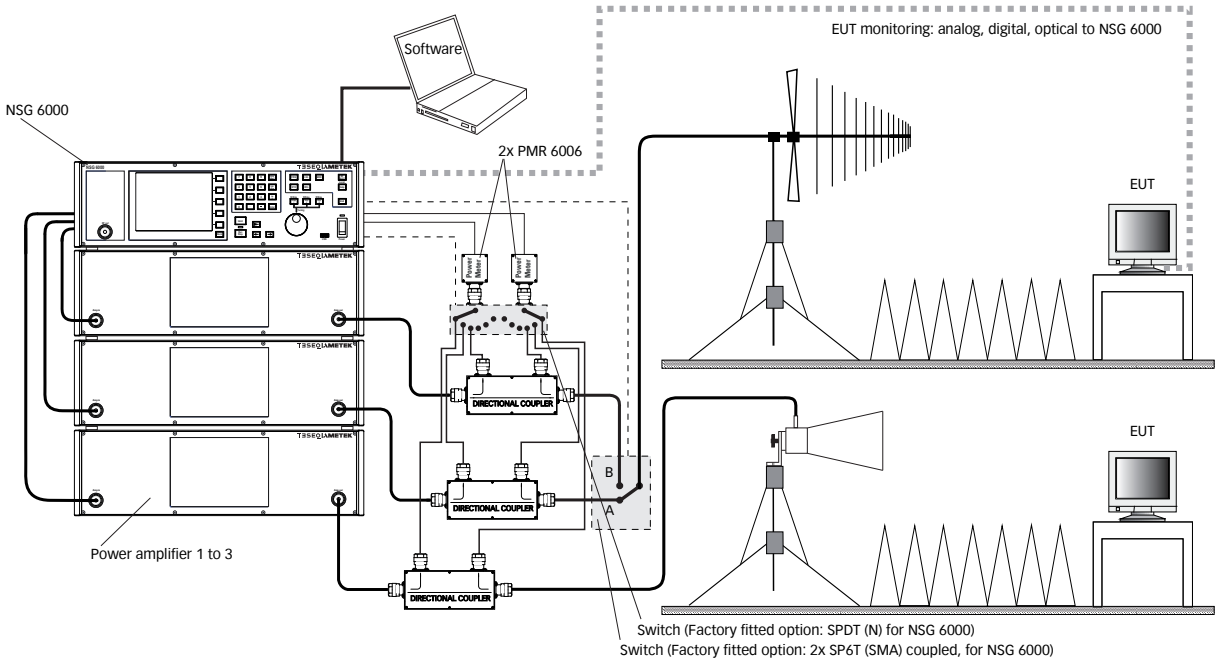
Application with 2 power amplifiers and 1 antenna



Application with 3 power amplifiers and 2 antennas and power meter switching



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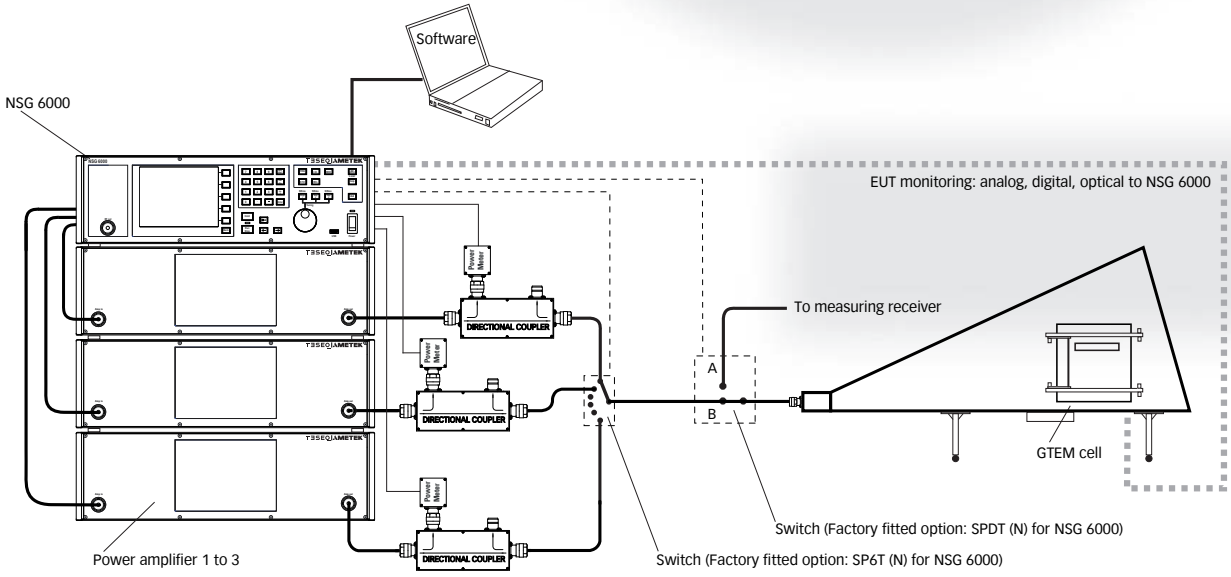
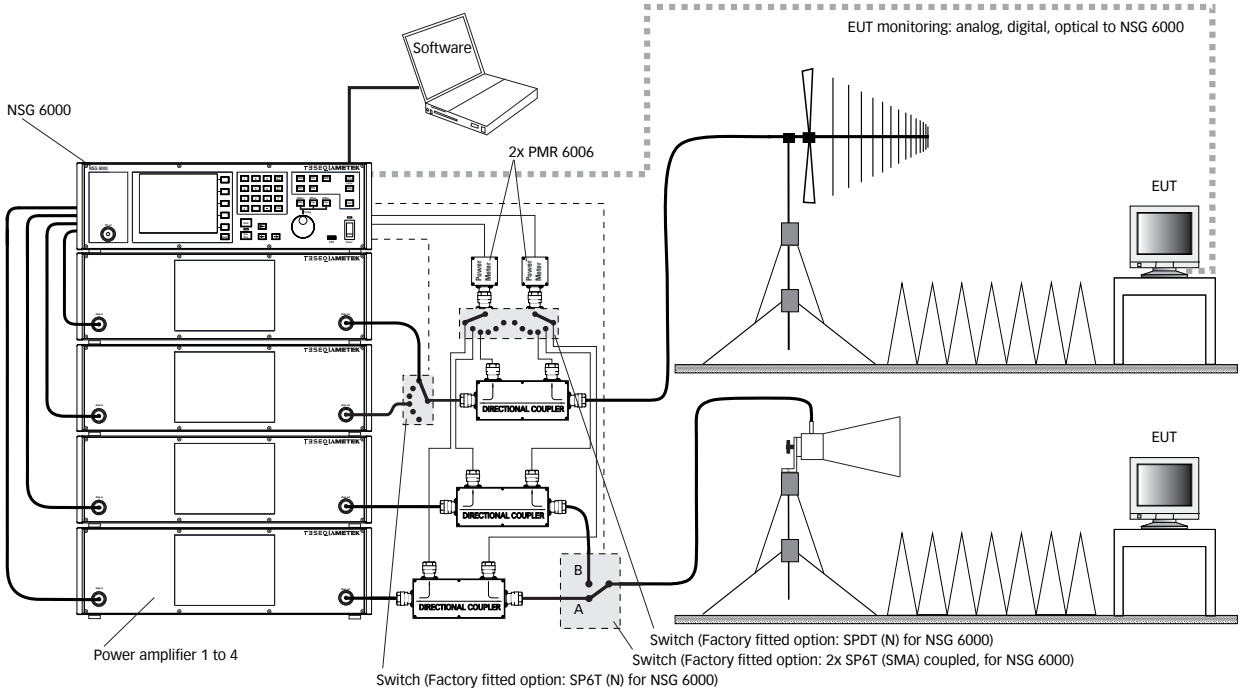
Application with 3 power amplifiers and GTEM cell and connection to emission measuring system



Application with 4 power amplifiers and 2 antennas



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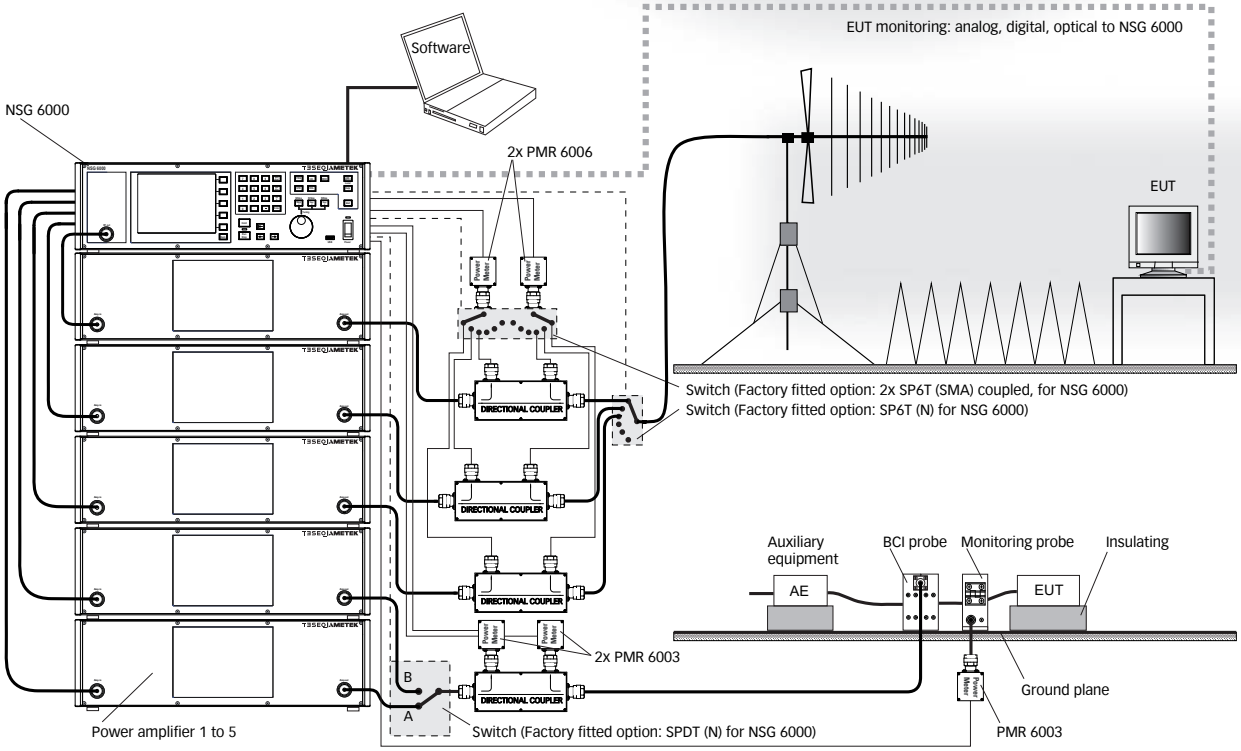
Application with 5 power amplifiers and 1 antenna and a BCI test site with 2 amplifiers



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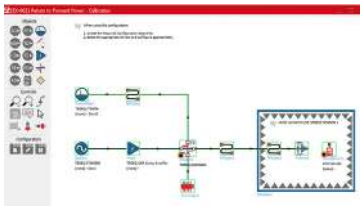
Power meter PM 6006, available as PMR 6006 or PMU 6006



Compliance Immunity Software CIS

Model range and options

Part number	Description
256051	NSG 6000A- RACK- Radiated and conducted Immunity test system, 9 kHz to 6 GHz RF generator, 5 RF outputs, power meter connectors 1-4, EUT monitor ing system, country version EU, UK, US/JP, rack version, power supply cables, USO 4013, LWL 20m, USB stick, fuse set, manual
256056	Option: Power meter 5-8 for NSG 6000A
256057	Option: SPDT (N) for NSG 6000A
256058	Option: SP6T (N) for NSG 6000A
256059	Option: 2X SP6T (SMA) for NSG 6000A, coupled for forward and reverse power measurement (simultaneous switching)
97-256050	NSG 6000A -TC Traceable calibration (ISO17025), order only with the device
98-256050	NSG 6000A-DAkkS DAkkS calibration (ISO17025), order only with the device
254725	PMR 6006 Power meter PM 6006, 1 MHz to 6 GHz, version R for direct connection to NSG 6000A, cable LE 243-2 included (length 2 m)
254746	PMR 6006-10 Power meter PM 6006, 1 MHz to 6 GHz, version R for direct connection to NSG 6000A, cable LE 243-10 included (length 10 m)
254726	PMU 6006 Power meter PM 6006, 1 MHz to 6 GHz, version USB for direct connection to PC, cable LE 244 (length 2 m) and storage case included
254701	PMR 6003 Power meter PM 6003, 9 kHz to 3 GHz, version R for direct connection to NSG 6000A, cable LE 243-2 included (length 2 m)
254729	PMU 6003 Power meter PM 6003, 9 kHz to 3 GHz, version USB for direct conec-tion to PC, cable LE 244 (length 2 m), storage case and software tools included
345-610	CIS Compliance Immunity with 12 months support; License on key
345-612	CIS App Industry Compliance Immunity Industry application; valid on one key

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