

The affordable EMC RF Signal Generator

Flexible · Accurate · Extensible

An important part of an EMC immunity test system is the RF signal generator. It produces the modulated or unmodulated RF signal at a certain frequency and signal level. The latest expansion of the product range of DARE!! Instruments is the RadiGen series of affordable EMC RF signal generators. These generators are designed for EMC test purposes in order to perform fast and accurate EMC tests without the need of external modulation sources.

Flexible

The RadiGen EMC RF signal generator is available in three versions; the RGN0230A covers a frequency range from 9 kHz to 230 MHz, RGN6000A from 80 MHz to 6 GHz and RGN6000B from 9 kHz to 6 GHz. These versions offer a solution for all conducted and radiated immunity test applications. The generator provides CW, AM and Pulse modulated signals using an internal modulator. The Pulse on/off times can individually be set between 200 ns and 100 seconds. Pulse duration/repetition times can be configured separately offering very flexible Pulse modulation settings including Automotive Radar Gated Pulse tests (Ford, GM and PSA). The RGN6000B RF signal generator has 2x SMA connectors, 1x SMA for 9 kHz to 230 MHz (low band) and 1x SMA for 80 MHz to 6 GHz.



Accurate and pure signal

The RadiGen is an accurate RF signal generator with a frequency error of less than 20 ppm and modulation accuracy better than 2 %. These figures make it the perfect device for EMC immunity testing. Problems with non monotone behaviour and glitches in the output level are often encountered with generators using fixed step attenuators. The RadiGen generator makes use of a full range, analogue output attenuator. This results in a complete

monotone increase of output level without any glitches. Due to this, problems with levelling algorithms in EMC test software can not occur with this generator. Apart from this, mechanical defects to the output attenuator can not occur, resulting in a better Mean Time Between Failures.

Extensible

The RadiGen generator is delivered as a very compact, one slot, plug-in card designed to fit into the modular RadiCentre system. The RadiCentre is available as a one, two or seven slot system. Such a system can, for example, contain a RF signal generator (RadiGen), one or more E-field probes (RadiSense), coax switch cards (RadiSwitch), RF power meters (RadiPower) and turntable/antenna tower controllers (RadiControl). Of course it is possible to build even larger systems by combining any number of RadiCentre systems.

Easy to use

The RadiCentre systems are "Plug and Play", which means that every plug-in card is automatically recognised and initialised by the RadiCentre and immediately ready to use. The user can configure and control the system using external PC software or through the TFT touch screen (only on 2- and 7-slot RadiCentre).

Software support

The RadiGen and RadiCentre are software controllable with USB, RS-232 and IEEE-488* (*optional for 2- and 7-slot RadiCentre). Besides the RadiMation integral EMC measurement software the system can be controlled by other EMC measurement software packages using the RadiGen software command codes.



Performance	RGN0230A	RGN6000A	RGN6000B
Frequency range	9 kHz - 230 MHz	80 MHz - 6 GHz	9 kHz - 6 GHz
Output connector	Output LF, SMA	Output HF, SMA	Output LF+HF, 2x SMA
Frequency resolution	1 Hz		
Frequency error ⁽¹⁾	+/- 20 ppm		
Minimum output level	- 70 dBm		
Maximum output level	+10 dBm (+4,0 dBm when using AM)		
Amplitude resolution	0,1 dB		
Amplitude accuracy	+/- 1,5 dB		
Output level settling time	< 500 µs		
Phase noise	Typical -110 dBc/Hz (LF and HF output) ⁴ Typical -70 dBc/Hz (HF output) ⁵		
Harmonics	< -20 dBC		
Non harmonic spurious ⁽²⁾	< -50 dBC		
Modulation			
Modulation types	CW, AM, Pulse and Gated Pulse		
Modulation frequency range ⁽³⁾	2 Hz (80%), 10 Hz - 100 kHz		
AM modulation depth	5 % - 95 % (usable from 0 % to 100 %)		
AM accuracy, Output LF ⁽²⁾	< ± 3% (5 % to 95 % modulation depth) ± 4 % (2 Hz, 80%)		
AM accuracy, Output HF ⁽²⁾	< ± 2% (10 % to 90 % modulation depth) ± 3 % (2 Hz, 80%) < ± 3 % (5 % to 10 % and 90 % to 95 % modulation depth)		
Pulse on time- range	200 ns - 100 s (in 100 ns steps)		
Pulse off time- range	200 ns - 100 s (in 100 ns steps)		
Pulse modulation On/Off ratio, Output LF	> 60 dB (9 kHz to 230 MHz)		
Pulse modulation On/Off ratio, Output HF	> 90 dB (80 MHz to 1 GHz) > 70 dB (1 GHz to 3 GHz) > 60 dB (3 GHz to 6 GHz)		
Dimensions			
Height x Depth	100 mm (3 U) x 220 mm		
Width	Takes up one free slot in a RadiCentre		
Environmental conditions			
Temperature range	10 °C - 40 °C		
Relative humidity	10% - 90% (non-condensing)		
Power consumption			
Supply voltage	12 VDC		
Power consumption	< 25 W		
Warranty	3 years		

⁽¹⁾ Measured 10 minutes after power on

⁽²⁾ Measured at 0 dBm output level

⁽³⁾ The 2 Hz preset is only available after factory calibration and is supported by firmware version 2.6.0 and up

⁽⁴⁾ Measured with an RF signal of 125 MHz at 1 kHz, 10 kHz and 100 kHz from the carrier

⁽⁵⁾ Measured with an RF signal of 1 GHz at 1 kHz, 10 kHz and 100 kHz from the carrier

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