CONDUCTED IMMUNITY TEST SYTEM – CIT-100

acc. to IEC/EN 61000-4-6, ISO 11452-4, MIL-STD

- **Conducted RF Immunity Testing**
- **BCI-Testing**

Description

The CIT-100 is a complete test system for conducted RF-immunity testing and BCI-testing acc. to IEC/EN 61000-4-6, ISO 11452-4, MIL-STD 461, CS114 and similar standards.
The system coconsists of a built-in

- Signal generator, 4kHz - 1.2 GHz
- RF-Power-Amplifier, max 4kHz - 400 MHz, 25 / 75 W
- 3-Channel RF-Power-Meter to measure the test level as well as forward & reverse power, 4kHz - 1.2 GHz
- Directional Coupler
- Comfortable control software

As a „stand-alone" test system the CIT-100 is convincing by its easy and comfortable handling and the excellent cost-performance ratio.
We also offer the full range of coupling/decoupling networks (CDN's) , EM-coupling clamp, BCI- and current clamps.

Special Features:

- Conducted RF immunity tests acc. to IEC/EN61000-4-6 and BCI tests acc. to ISO 11452-4 and MIL-STD 461, CS 114
- Signalgenerator, RF-power amplifier, RF-power meter and directional coupler in one 19"-case
- All built in instruments can also be used separately, via existing input / output connector.
  Hence, the Signal-generator and the RF-power-meter can also be used for radiated immunity tests acc. IEC/EN 61000-4-3.
  Furthermore an additional external RF-Power-amplifier could be connected to the CIT-100 for this purpose.
- Stand-alone operation possible with optional available netbook
- Control-software included
- Most important parameters are shown on an integrated display
- Automatic EUT-monitoring
- Operation via USB port of a PC or Notebook
- Complete range of CDNs and EM-clamps available

Also available as CIT-1000 with built-in touch-screen and control PC for independent stand-alone use.

Technical specifications	
RF-Generator	
Two switchable outputs (Only one can be used simultaneously)	2 x SMA
Frequency range	4 kHz to 1.2 GHz
Frequency resolution	1 Hz
Output level range	0 to -63 dBm
Output level resolution	0.1 dB
Harmonics	< 30 dBc
Spurious	< 45 dBc
Amplitude mod. (internal)	0 – 100%, resolution 1%
Amplitude mod. (external)	0-100%, max. Amplitude 1V=100%, BNC jack
Pulse modulation (internal)	5-95%, resolution 1%
Pulse modulation (external)	DC...1MHz, 3,3/5V CMOS/TTL, BNC jack
LF-Generator (modulation)	
Connector	BNC jack
Frequency range	1 Hz to 100 kHz
Frequency resolution	0.1 Hz
Signal	Sine wave / square wave / triangular
Amplitude	0...1 V

Technical specifications	
RF-Voltmeter 1 (test-level)	
Connector	BNC jack
Frequency range	4 kHz to 1.2 GHz
Measuring range	-40 to +30 dBm
RF-Voltmeter 2 + 3 (forward and reverse power)	
Connector	2 x SMA
Frequency range	4 kHz to 1.2 GHz
Measuring range	-40 to +33 dBm + directional coupler typ. 40 dB
EUT-Monitor input	
Input voltage	0-10 V
Resolution	2.5 mV
Input impedance	100 k
EUT-failed input	
Input signal	3.3/5V CMOS/TTL level
Detection Mode	Status or edge controlled
Temperature measurement	10 to 100 °C (1039-1385Ω) resolution < 1 °C (PT1000)
SCPI interfaces	
USB 2.0	USB-B
LAN, 100 Mbit	RJ45
GPIB (optional)	Centronics
Digital I/Os	
Out	4 Bit Digital out, 5V CMOS/TTL
In	4 Bit Digital in, 5V CMOS/TTL
Interlock	
Closes at	R < 1 k Ω

Technical specifications	CIT-100 / 25	CIT-100 / 75 MIL	CIT-100 / 75
RF-Power Amplifier (TYPE)	25 W	75 W MIL	75 W
Frequency range	100kHz-250MHz	(4) 10kHz-250 (400) MHz	100kHz-400MHz
Output Power:			
Nominal	25 W	75 W 10W from 4 kHz - 10 kHz min. 20 W from 250 MHz - 400 MHz	75 W
Linear @ 1dB compression	20 W	50 W	50 W
Gain	46dB nominal	51dB nominal	51dB nominal
Flatness		± 1.5 dB maximum	
Input power for rated input		1 mW / 0 dBm	
Input / output impedance		50 Ω	
Input VSWR		1.5:1 max	
Harmonic disortion	<- 20 dBc @ 20 W	<- 20 dBc @ 50 W	<- 20 dBc @ 50 W
Noise figure	typ. 5 dB	typ. 7 dB	typ. 7 dB
Spurious output		<- 75 dBc @ 10 W	

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Features:

Internal RF-Power Amplifier

Several amplifier modules are available. Highest output power can be 75 W over the specified frequency range. The amplifier input can be accessed via the back panel of the CIT-100, so that the amplifier can also be used with any external generator. 25 W and 75 W amplifiers are available as standard.

Internal RF-Voltmeter

Accurate measurements of RF signals from -40 dBm up to +30 dBm are done by the internal 3-channel RF-voltmeter which can be accessed (for separate use) via a BNC connector.
One channel is used to measure the test level and two channels to measure the forward and reverse power via the built-in directional coupler.

Internal RF-Signal Generator

As the internal generator generates its output signal without any internal mixing components, low harmonics and spurious frequencies are assured.

Amplitude Modulation

Frequencies generated by the generator can also be modulated with a LF signal. Modulation frequencies may vary from 1 Hz up to 100 kHz, modulation levels are available from 0 % to 100 %.

User defined signals

External signals (e.g. EUT-fail or external instruments) can be connected and monitored using the application software.

Setup:

The CIT-100 is a PC-controlled test equipment. It can be operated by any commercial IBM compatible PC (Microsoft® Windows software) via USB port. All settings of the equipment, e.g. start frequency, stop frequency, step width, test voltage etc. are made by means of the control software which is also included in the delivery. The three functional units RF-signal generator, RF-power amplifier and RF-voltmeter are set automatically by the software, depending on the pre-set test parameters.

Each component, however, may also be called and operated as separate measuring and testing equipment. This means: using the CIT-100 as testing system, you have three full, additional "single units" at your disposal, for which separate inputs and outputs are available as BNC connections. Due to the computer-aided control of the CIT-100, any modifications which may become necessary, for example, due to the revision of standards, may be performed without problems and without having to manipulate the hardware of the equipment.

Quick overview of the different verisons:

Type	CIT-100 / 25	CIT-100 / 75 MIL	CIT-100 / 75
Signalgenerator	← 4 kHz to 1.2 GHz →		
RF-Power-Amplifier	25 W 100 kHz - 250 MHz	75 W from 10kHz - 250MHz 10 W from 4 kHz - 100 kHz min. 20 W from 250 MHz - 400 MHz	75 W 100 kHz - 400 MHz
RF-Power-Meter (3-channel)	← 4 kHz to 1.2 GHz →		
Directional coupler	← 4 kHz to 1.2 GHz →		

CONDUCTED IMMUNITY TEST SYTEM – CIT-1000

acc. to IEC/EN 61000-4-6, ISO 11452-4, MIL-STD

Description:

The CIT-1000 is a complete test system for conducted RF-immunity tests acc. to IEC/EN 61000-4-6 and BCI-testing acc. to ISO 11452-4, MIL-STD 461 CS 114 and similar standards., like our well known type CIT-10. Signal generator, Power-Amplifier, RF-Power-meter, directional coupler and control software are all together in one box.
With the CIT-1000 our product-line has been extended by another, even more powerful and flexible product.
In addition to the CIT-10 it offers the following additional benefits:

- Frequency extension of the signal generator, directional coupler and RF-Voltmeter up to 1.2000 MHz, addtitional possibility for use for radiated immunity testing acc. to IEC/EN 61000-4-3
- Possibility to connect an external power amplifier for radiated immunity testing acc. to IEC/EN 61000-4-3
- Stand-alone operation via integrated touch-screen PC
- Integrated directional coupler + 3 pcs. RF-Voltmeter (1 pc. for test level, 2 pcs. for forward and reverse power)
- Great selection of RF-power-amplifier-modules for almost any application
- Temperature-measuring input for control and display of the BCI-clamp temperature
- Frequency extension for MIL-STD 461 testing down to 4 kHz, by means of the external device „CIT-4K“, with a 250 W power-amplifier
- Operation via „Helia“-device software (included) or via optional available „PROVE-EMC“ system software

In addition, all integrated devices, like Signal Generator, RF-Voltmeter and Power-Amplifier, can also be used individually via seperate input/output connectors.

CONDUCTED IMMUNITY TEST SYTEM – CIT-1000

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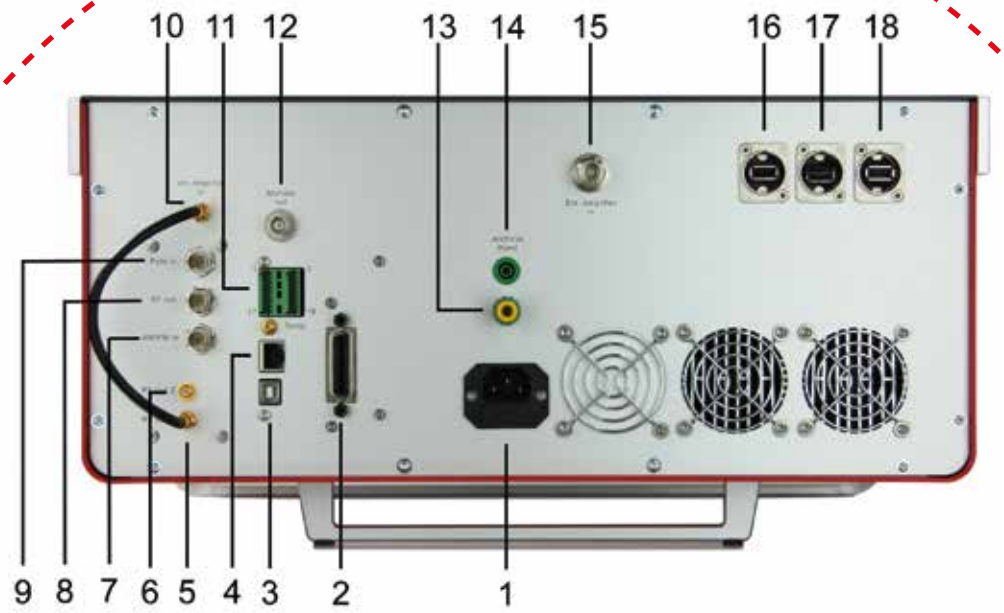
Technical specifications	
RF-Generator	
Two switchable outputs (only one can be used simultaneously)	2 x SMA
Frequency range	4 kHz to 1.2 GHz
Frequency resolution	1 Hz
Output level range	0 to -63 dBm
Output level resolution	0.1 dB
Harmonics	< 30 dBc
Spurious	< 45 dBc
Amplitude modulation (internal)	0 to 100%, resolution 1%
Amplitude modulation (external)	0 to 100% , max. Amplitude 1V = 100%, BNC jack
Pulse modulation (internal)	5 to 95%, resolution 1%
Pulse modulation (external)	DC...1MHz, 3,3/5V CMOS/TTL, BNC jack
LF-Generator (modulation)	
Connector	BNC jack
Frequency range	1 Hz to 100 kHz
Frequency resolution	0.1 Hz
Signal	Sine wave / square wave / triangular
Amplitude	0...1 V
RF-Voltmeter 1 (test level)	
Connector	BNC jack
Frequency range	4 kHz to 1.2 GHz
Measuring range	-40 to +30 dBm
RF-voltmeter 2+3 (forward and reverse power)	
Connector	2 x SMA
Frequency range	4 kHz to 1.2 GHz
Measuring range	-40 to + 33 dBm + directional coupler typ. 40 dB
EUT-Monitor input	
input voltage	0 to 10 V DC
resolution	2.5 mV
Input impedance	100 k
EUT-failed input	
Input signal	3,3/5V CMOS/TTL level
Detection mode	status or edge controlled
Temperature measurement	10 to 100 °C (1039 to 1385 Ω) resolution < 1 °C (PT 1000)
SCPI interfaces	
USB 2.0	USB-B
LAN, 100 Mbit	RJ45
GPIB (optional)	Centronics
Digital I/Os	
Out	4 Bit Digital out, 5 V CMOS/TTL
In	4 Bit Digital in, 5 V CMOS/TTL
Interlock	
Closes at	R < 1 kΩ

Technical specifications				
RF-Power Amplifier (TYPE)	**25 W**	**75 W Namur**	**75 W**	**180 W**
Frequency range	100kHz-250MHz	(4) 10kHz-250 (400) MHz	100kHz-400MHz	1MHz-400MHz
Output Power :				
Nominal	25W	75W 10W from 4 kHz - 10 kHz min. 20W from 250MHz - 400MHz	75W	180W
Linear @ 1dB compression	20W	50W	50W	100W
Gain	46dB nominal	51dB nominal	51dB nominal	56dB nominal
Flatness	±1.5 dB maximum			
Input power for rated output	1 mW / 0 dBm			
Input / output impedance	50 Ω			
Input VSWR	1.5:1 max			
Harmonic disortion	<-20 dBc @ 20W	<-20 dBc @ 50W	<-20dBc @ 50W	<-20 dBc @ 100W
Noise figure	typ. 5 dB	typ. 7 dB	typ. 7 dB	
Spurious output	<-75 dBc @ 10 W			

rear view



(1) Mains connector
(2) GPIB
(3) PC (USB)
(4) LAN (RJ45)
(5) RF-Generator Out 1 (SMA)
(6) RF-Generator Out 2 (SMA)
(7) AM external IN (BNC)
(8) Audio Freq Out (BNC)
(9) Pulse Modulation In (BNC)
(10) Amplifier In
(11) Socket Connector
(12) Monitor Out
(13) Arificial Hand
(14) Ground Connection
(15) Input for External Amplifier (N)
(16) USB 1
(17) USB 2
(18) External display (HDMI)

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CIT-4K

Frequency extension for MIL-STD 461 testing down to 4 kHz, type CIT-4K

- Frequency extension down to 4 kHz for the CIT-1000
- Optimal addition to the 180 W-amplifier from 1-400 MHz
- Optimal cooling concept by temperature controlled fans
- Short-curcuit protection
- Overload protection
- Linear MOSFET amplifier-technology
- Class A/B amplifier
- Suitable for all types of modulation
- Interlock input
- Remote-control via USB and LAN

Technical specifications

Frequency-range: 4 kHz to 1 MHz
Power output: 250 W
Input connector: SMA, 50 Ω
Input power for nominal output power: 1 mW / 0 dBm
Output connector: N, 50 Ω