

CIT-10

Compact Immunity Test System according to IEC/EN 61000-4-6



In one unit:

- Function generator
- Signal generator
- RF millivoltmeter
- RF power amplifier

- Internal modulation:
AM: 1Hz-100kHz, 0...100%
PM: 1Hz-100 kHz, 10 - 90% duty cycle
- Output power metering during test
- Manual and automatical
EUT-monitoring
- Standard software included

All components may as well be used separately!



FRANKONIA

Compact Immunity Test

to IEC/EN



FRANK

General:

The international standard IEC/EN 61000-4-6 defines the testing and measuring methods for „testing the immunity to conducted disturbances induced by RF fields“.

The corresponding test systems may consist either of individual components whose control is realized via a separate PC and the corresponding control software via IEEE 488 Bus and/or RS 232 Bus, or of one compact unit like the CIT-10, which includes all necessary components and is easier to handle.

The use of individual components is recommended especially in those cases where these components are to be used also for further test assemblies, e.g. according to IEC/EN 61000-4-3 or other applications. These components will then be designed already for multiple use, regarding frequency range and measuring range (please request our separate information material).

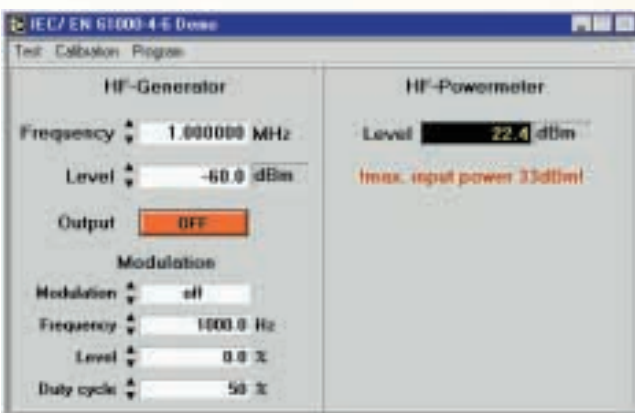
As a „stand-alone“ test system the CIT-10 is convincing by its easy and still comfortable handling and the excellent cost-performance ratio.

Set-up:

The CIT-10 is a PC-controlled test equipment. It can be operated by any commercial IBM compatible PC (WIN 9x/NT/2000/XP) via serial bus (RS 232). All settings of the equipment, e.g. start frequency, stop frequency, step widths, test voltage etc. are made by means of the control software which is also included in the delivery. The three functional units Signal generator, RF power amplifier and RF voltmeter are set automatically by the software, depending on the preset test parameters. Each component, however, may also be called and operated as a separate measuring and testing equipment. This means: using the CIT-10 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-10, 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.

Functioning:

The equipment is ready for operation immediately after connection of the serial port, installation of the drivers and the control software. After starting of the control software, the main menu offers the manual control of <HF-Generator> and <HF-Power Meter>. Further options in the menu are <Calibration> (<CDN-Calibration>, <Self-Calibration>) and <Test> (<Complete Test>, <Selective Test>).



<HF Generator> and <HF-Power Meter>:

Generator and Power-Meter allow to operate these two integrated components as single units. The separate use of the RF power amplifier does not require any software adjustment. It is sufficient to connect the input and output of the amplifier correspondingly; in this case the voltmeter could again be used to measure the output power of the amplifier.

<CDN-Calibration>:

The CDNs (Coupling/Decoupling Networks) serve to inject the test voltage into the lines to be tested and/or to decouple any connected peripheral equipment from the EUT. The characteristics of the CDNs as well as of the power amplifier are not absolutely linear over the whole frequency range, i.e. the amount of power required to generate a constant test voltage over the whole frequency range varies slightly, depending on the frequency. In the calibration run, the frequency-dependent output level of the signal generator, which is necessary for a constant test voltage, will be determined and stored in the software, together with the defined frequency range and the desired test voltage. The data records thus created may then be stored and recalled for tests. When our CDNs are used, no calibration will be necessary since we also deliver the corresponding calibration files.



<Self-Calibration>:

When selecting this menu option, the test equipment will perform a self-calibration. In this case, the output of the signal generator must be connected to the input of the voltmeter.

<Test>:

The menu option <Test> offers the selection possibilities <Complete Test>, <Selective Test> and <Protocol>.

The settings for a test, e.g. start and stop frequency, step width and test voltage are made automatically via the calibration file of the selected coupling unit. It is now possible to decide whether the test is to be performed exactly according to these pre-settings, i.e. exactly as in the calibration, or whether modifications of the pre-settings shall be admissible. If the calibration run was performed, for example, for a test voltage of 10V, and the test is to be performed now with 3V without having to perform a new calibration run for this purpose, this can be done by selecting menu item <Extrapolation>.

Test System according

61000-4-6

KONIA Is a suitable measuring instrument connected to the specified serial port of the CIT-10, EUT can be monitored automatically. Data are shown graphically. During all test routines the amplifier output is monitored in a bar display. This guarantees correct tests.

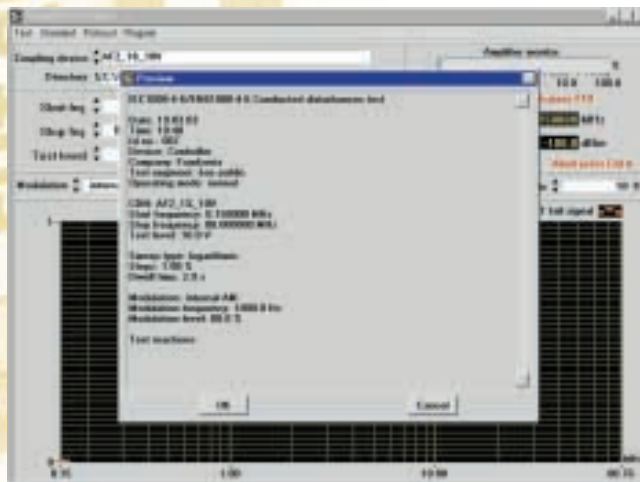
In the case of <Complete Test>, a test is performed over the complete selected frequency range; in this case the test frequency is increased by the control software according to the selected step width and the entered dwell time. If there is a malfunction of the EUT, the test may be stopped at any time. It is then possible to



either increase or reduce the frequency by any number of steps, as well as to switch on and off the modulation and test voltage. Besides, a description of the malfunction occurred may be entered in a comment line which is included in the test record.

<Selective Test> offers the possibility of testing the EUT at discrete frequencies. This can be done either with a fixed test voltage or, optionally, with a ramp function. In case of the ramp function, the start and stop voltage, the step width by which the test voltage is to be increased, as well as the dwell time between the individual steps may be preset by the tester.

The standard <Protocol> consists of the head of the protocol and a diagram which shows the test results. In the head of the protocol the date and time are taken over from the computer; in addition, details like temperature, air humidity, tester, as well as testing set-up and EUT, may be registered. The protocol may be printed directly. Additionally it is possible to edit the protocol individually.



Most common Coupling/Decoupling Networks (CDNs), 150kHz to 230MHz:

Type:	Use for:	Number of lines	Type of connection
CDN-M1	unshielded mains supplies	1	4mm MC socket
CDN-M2	unshielded mains supplies	2	4mm MC socket
CDN-M3	unshielded mains supplies	3	4mm MC socket
CDN-M2+3	unshielded mains supplies	2 or 3	4mm MC socket
CDN-M5	unshielded mains supplies	5	4mm MC socket
CDN-S1	shielded lines	1	BNC
CDN-S2	shielded lines	2	XLR
CDN-S9	shielded lines	9	9 pole Sub-D
CDN-S25	shielded lines	25	25 pole Sub-D
CDN-AF2	asymmetric lines	2	connector block
CDN-AF8	asymmetric lines	8	connector block
CDN-T2	symmetric lines	2	connector block
CDN-T4	symmetric lines	4	connector block
CDN-T8	symmetric lines	8	connector block

EM coupling clamp:

The EM coupling clamp is used in all cases where CDNs are not advisable or not available. The lines to be tested are in this case inserted in the clamp and the test voltage is injected inductively.

Technical Data:

Signal generator incl. function generator

Frequency range	100kHz to 250MHz Resolution 1Hz
Output level	-60dBm to 0dBm Resolution 0.1 dB
Distortions	Harmonic <30dBc Non-harmonic <40dBc
Amplitude Modulation	1Hz to 100kHz, 0...100% (internally)
Pulse Modulation	1Hz to 100kHz, 10...90% duty cycle (internally)
External Modulation	AM, Input resistance > 100k Ω

RF Power Amplifier

Frequency range	100kHz to 230MHz
Output power	>13W (CIT-10), 75W (CIT-10/75)
Distortions	<20dBc at nominal power

RF Voltmeter

Frequency range	100kHz to 250MHz
Measuring range	+37dBm to -40dBm
Accuracy	± 0.5 dB (+30dBm to -30dBm) ± 1.0 dB (+37dBm to -40dBm)
Resolution	0.1dB

Inputs, Outputs

EUT-fail: BNC (TTL level)
Internal function generator: BNC
External modulation: BNC
Artificial hand: 4 mm MC; 500 Ω /200pF
Signal generator, Amplifier, RF-Voltmeter: BNC
Monitoring output

General Data

Temperature range	0°C to 40°C
Housing	19" - 3HU
Weight	14 kg

Scope of Delivery

CIT-10 basic equipment
Serial bus cable
Mains cable, 2 pc. BNC cable, 0.75m grounding cable
6dB attenuator (Optional with CIT-10/75, CIT-10/W)
System software (WIN 9x/NT/2000/XP)

Part Number

CIT-10 with integrated 13W-power amplifier
CIT-10/75 with integrated 75W-power amplifier
CIT-10/W without internal power amplifier



FRANKONIA
EMV-Mess-Systeme GmbH

Frankonia EMV Mess-Systeme GmbH:
Weiherweg 14 • 96199 Zapfendorf • Germany
Phone ++ 49 (0) 95 47/94 01 0 • Fax ++ 49 (0) 95 47/94 01 20
<http://www.frankonia-emc.com> • e-mail: frankonia.emv@t-online.de

Frankonia GmbH:
Rambacher Straße 2 • D-91180 Heideck • Germany
Phone ++ 49 (0) 9177/98 500 • Fax ++ 49 (0) 9177/98 520
<http://www.frankonia-emc.com> • e-mail: info@frankonia-emc.com