AFJ INSTRUMENTS

DDA55 DISCONTINUOUS DISTURBANCES ANALYSER

Fully digital analyser for measurement of discontinuous disturbances

Compact designed and manufactured compliant to CISPR 16 International Standard for measurements of discontinuous disturbances, called “clicks”, in accordance with requirements of CISPR 14-1 Standard, advanced software for EMC testing, multi-window real time display, time domain analyse, built-in pulse generator.

Easy EMC

INSTRUMENTS

DDA55 DISCONTINUOUS DISTURBANCES ANALYSER

Based on a PC integrated architecture with WINDOWS 7 Embedded OS, DDA55 click analyser is ready to operate with advanced software for EMC testing to guarantee precise click measurements.
DDA55 click analyser is not just a GO/NO-GO tester, it is a sophisticated analyser supporting a full investigation on when, where and why a click occurs.
It provides so a very substantial contribution to problem-solving requirements in a critical domain of equipment compliance.

DEFINITIONS

CISPR 14-1 describes limits for phenomena related to unwanted radio emissions from household appliances and portable tools, including the discontinuous disturbances on the mains cord.

A discontinuous disturbance, commonly called "click", is defined as a disturbance exceeding the limit of continuous emission for no longer than 200ms and separated from a subsequent disturbance by at least 200ms.

All automatic, programmed-controlled machines electrically operated and thermal appliances, and common domestic and light-industry equipment, generate discontinuous disturbances along the power supply cabling. The effects of such disturbances vary with repetition rate and amplitude: the higher the amplitude of the disturbance, the lower should be its frequency of occurrence.

APPLICABLE STANDARDS

For "clicks" - that are for interference emissions that exceed the recognized steady-state limits but for a very limited time - CISPR14-1 has been and is used as the basic standard for short-term emissions as well as a product standard. It is a quoted as a basic reference in the generic IEC 61000-6-3 standard for residential and light industrial limits and IEC 61000-6-4 standard for industrial environments.
Likewise it is referenced in EN55103 product standard for professional audio/video equipment.

Such requirement is a time-consuming test, that may take several hours per each phase of the EUT.

Thanks to the independence and simultaneous operation of its channels, DDA55 click analyser greatly reduces the required test time.

CISPR COMPLIANCE

DDA55 click analyser is a four parallel channels, fixed frequencies (150kHz, 500kHz, 1.4MHz, 30MHz) RF receiver, with each channel provided with Peak and Quasi-peak detectors, fully complies with CISPR16-1-1.
The way the Quasi-peak detectors are designed, enables to automatically perform tests full compliance with the requirements of CISPR 14-1, where requesting to test using an oscilloscope (time-domain operation).

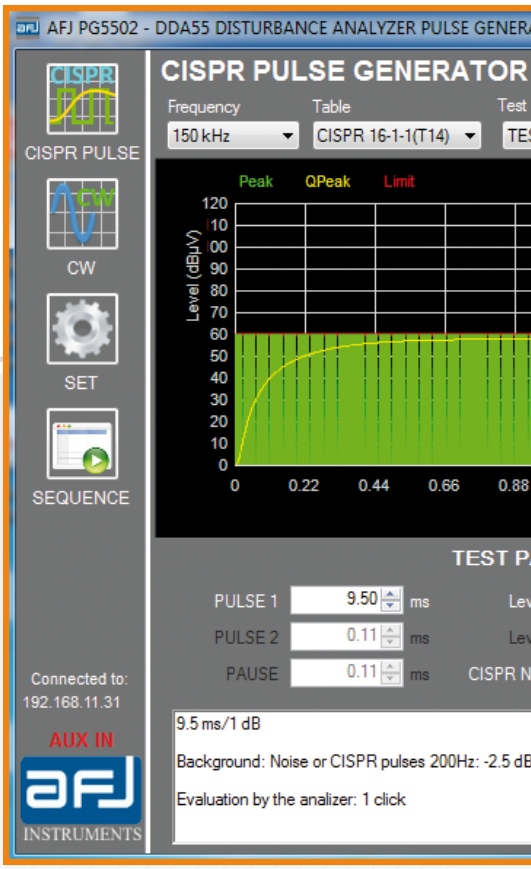
The equipment has a built-in impulse generator, which can produce the entire set of single and multiple disturbance pulses as required by CISPR 16-1-1.

VCCI Option makes the equipment fully compliant with VCCI Emission Japanese standard by through 500kHz / 550kHz selectable frequencies.

DENAN Option makes the equipment fully compliant with DENAN LAW Part.10 Emission Japanese standard for extra long clicks evaluation and Denan rules.

DDA55 Click Analyser

The PC totally controls the equipment through a friendly application software, running under WINDOWS 7 Embedded OS.
The powerful and user-friendly software enables the operator to set all parameters according to CISPR 14-1 requirements or any other specific needs, performing automatic measurements with generation of the test report in a very easy and fully automatic way.
Remote control with an external PC is also possible via LAN communication port.



DDA55 click analyser main characteristic is its ability to sample, in parallel, the Peak and Quasi-peak levels of the four channels, to recognize and count all clicks (short, long, fast long, continuous noise and switching operations) and store all numeric and graphic data, like waveforms, in the PC hard disk.

The PC-based operation of the equipment means practically unlimited memory capabilities and the ability to generate fully-automatic test reports.

All information collected by the equipment during the test, are displayed in real time on the PC screen, divided into a number of windows corresponding to the number of internal RF channels.

Finally, the real superiority of the analyser, resides in the built-in power meters, enabling the continuous monitoring of EUT current consumption: in fact, step variations in this current are often related with disturbances (click) because of the very large bandwidth, that includes all frequencies able to generate a click.

BUILT-IN PULSE GENERATOR

For the purpose of functional self-assessment, the analyser has a built-in pulse generator, which can produce the entire set of single and multiple disturbance pulses, in the various timing and shift configurations, according to CISPR 16-1-1 (T17) and CISPR 16-1-1 (F.1) tables at the four standard frequencies (150kHz, 500 kHz, 1.4MHz, 30MHz) and at two user defined frequencies.

INSTRUMENTS

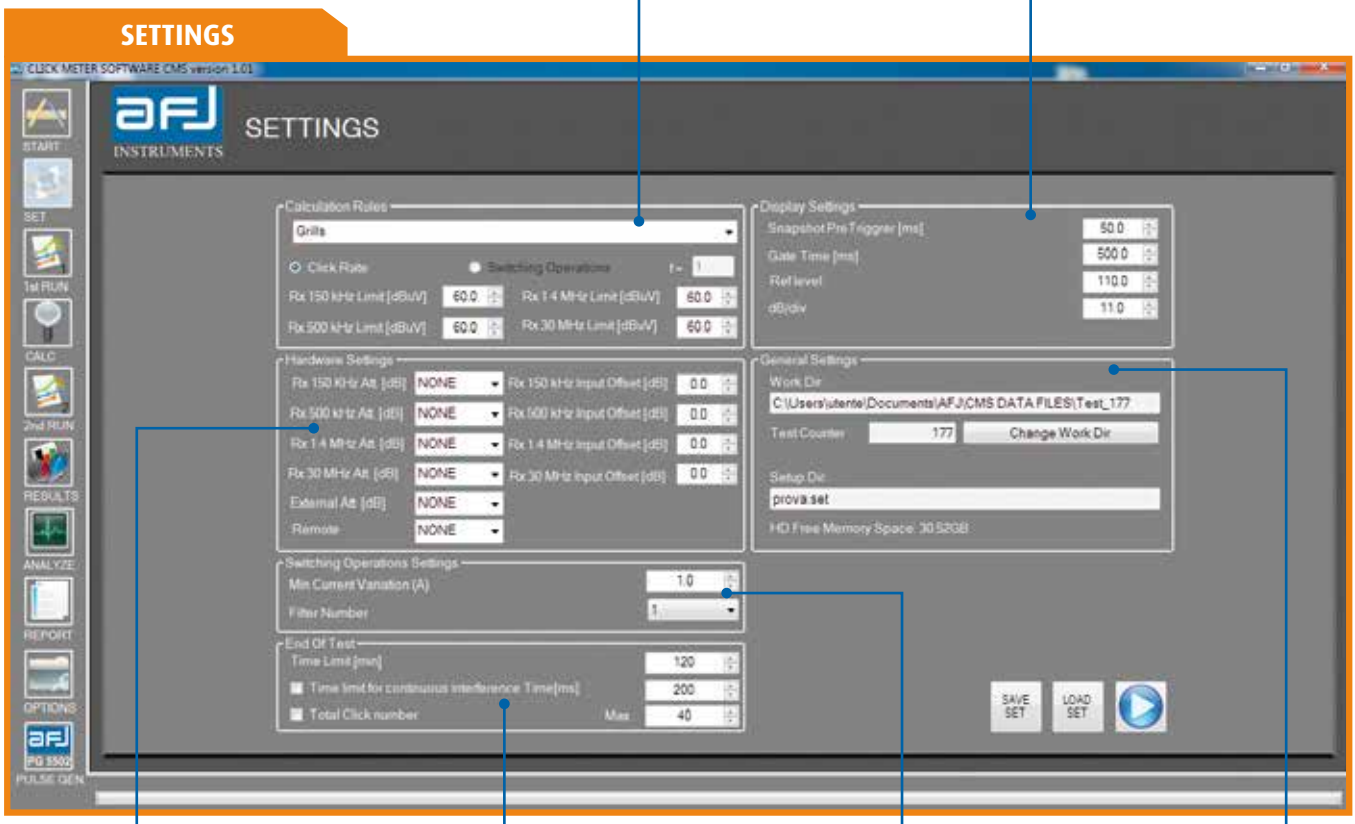
CALCULATION RULES

To set if the N click rate shall be calculated either from the number of clicks or from the number of switching operations.
The Limit for each channel can be set.

DISPLAY SETTINGS

To set the Snapshot Pre Trigger and Gate Time for the real time display during the First and the Secon Pass.
Maximum Reference Level and number of dB per division can be set.

SETTINGS



END OF TEST

By the time limit in minutes: Time Limit (min).
If the continuous disturbances exceed a set time value: Time limit for continuous interference Time (ms).
If a set maximum number of clicks is reached: Total Click number.

GENERAL SETTINGS

To set the Working Directory for a measurements session and Setup Directory indication.

HARDWARE SETTINGS

To set Internal Attenuation Level & Imput Offset for each channel, External Attenuation and the appropriate AFJ LISN model for remote controlling.

SWITCHING OPERATION SETTINGS

Min Current Variation (A) allows setting the minimum value of the EUT current variation, suitable for the detection of a switch.
Filter Number allows setting the filter time constant in order to avoid that unwanted switching operations are detected.

FIRST RUN

FIRST RUN

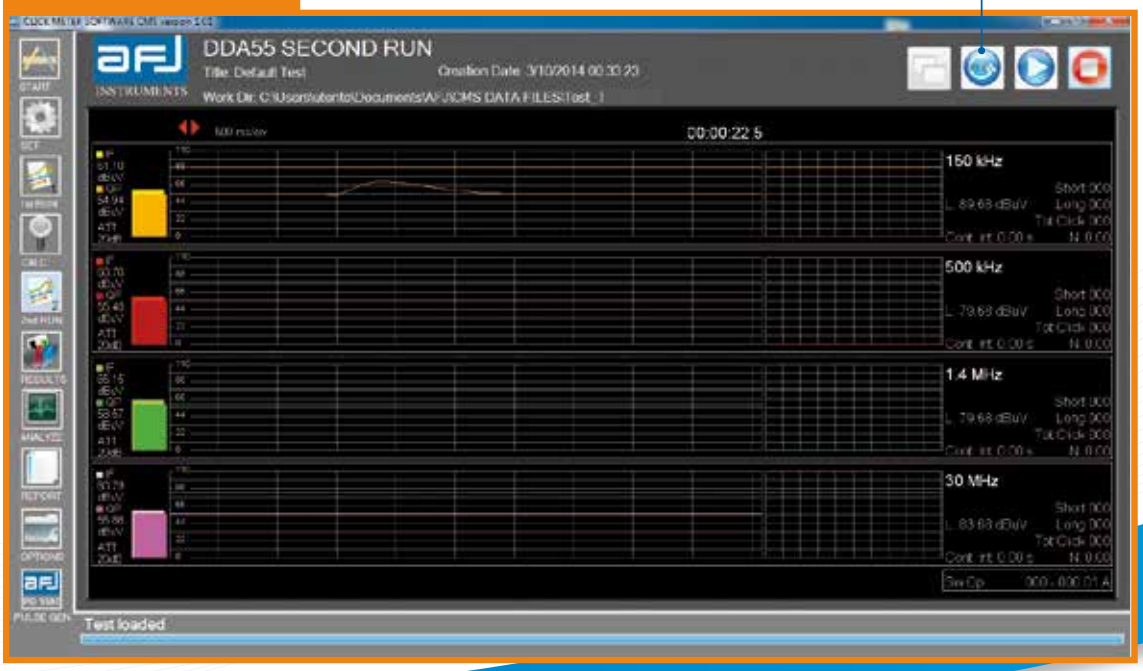
Real time display of the First Pass of the test.

SECOND PASS PREVIEW

Selecting the PREV box it is possible to compare the previously stored Quasi-Peak levels of the First Pass versus the new limits calculated with the upper quartile method, providing how many of the old clicks exceed these limits and giving so an automatic PASS/FAIL result.

In this way it is so possible to automatically obtain the final result without Second Pass, saving 50% of the measurement time.

SECOND RUN



SECOND RUN

Real time display of the Second Pass of the test.

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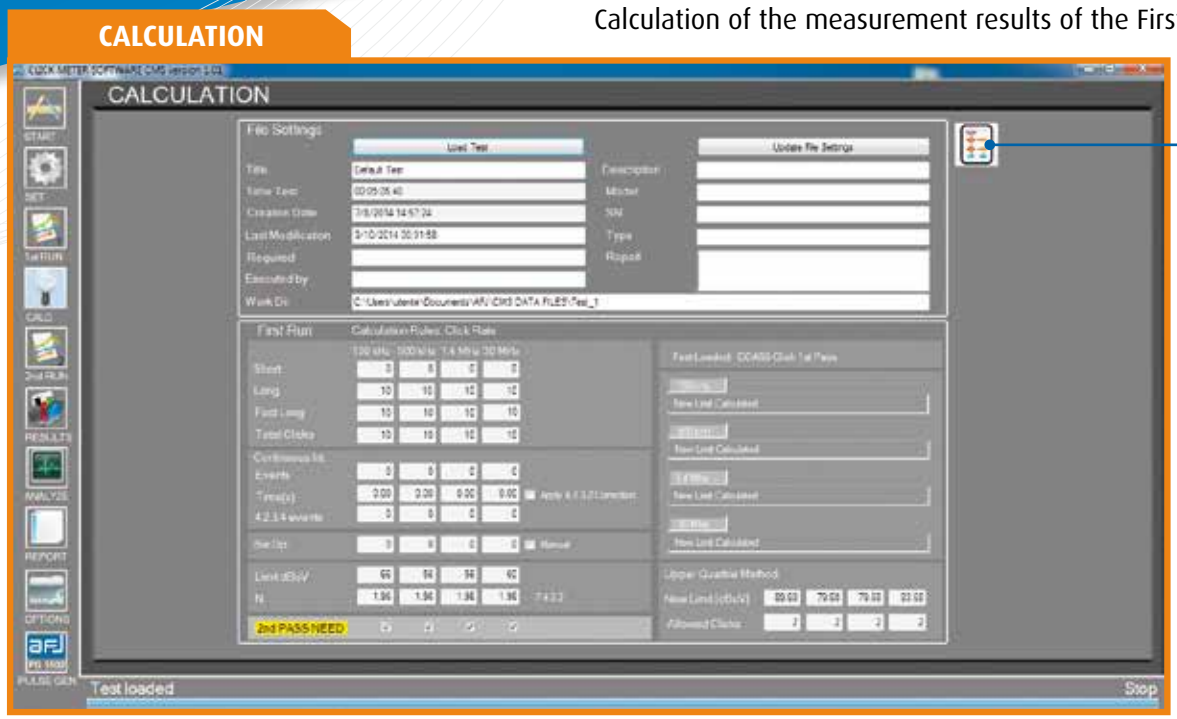
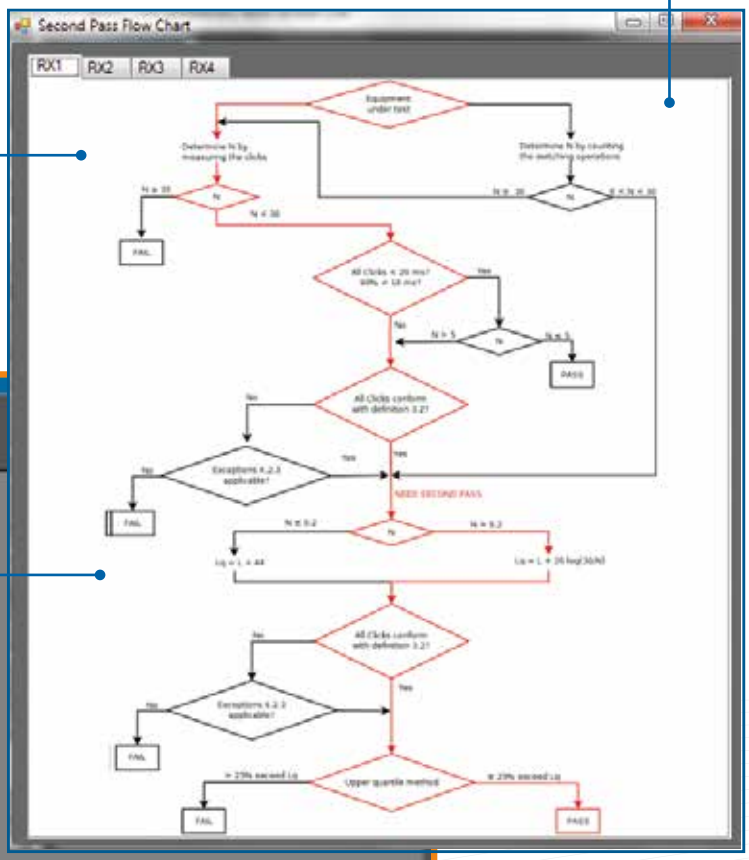
CALCULATION

Calculation of the measurement results of the First Pass.



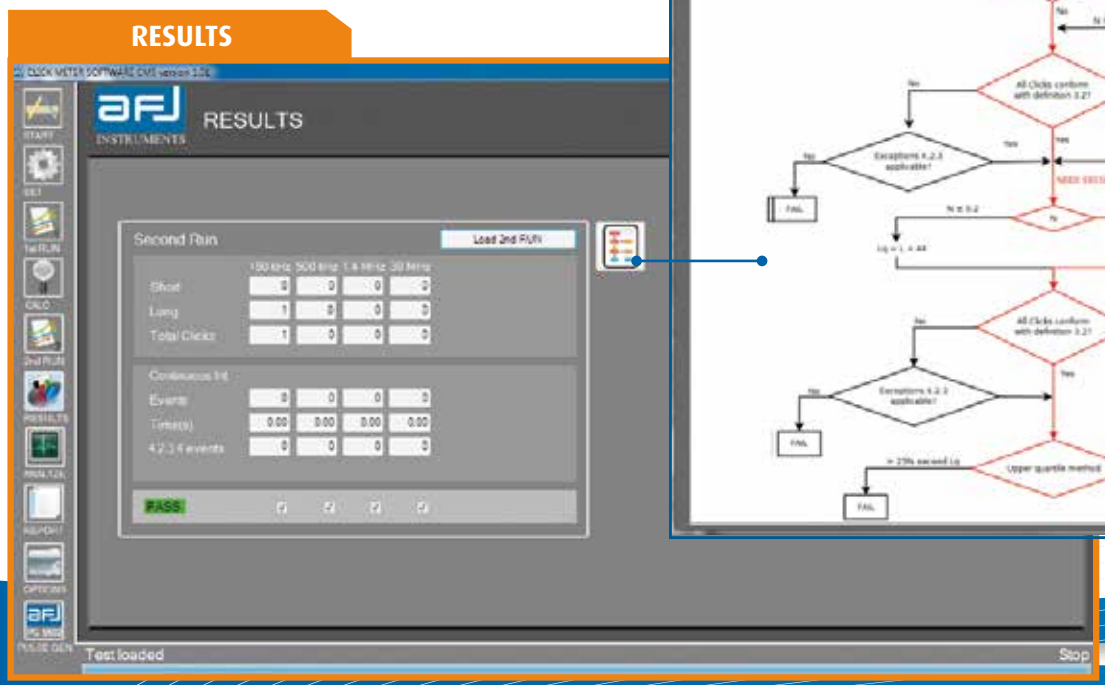
FLOW CHART

Possibility to open a form to display the results for each channel like the executed path on the flow chart defined by CISPR 14-1 standard.



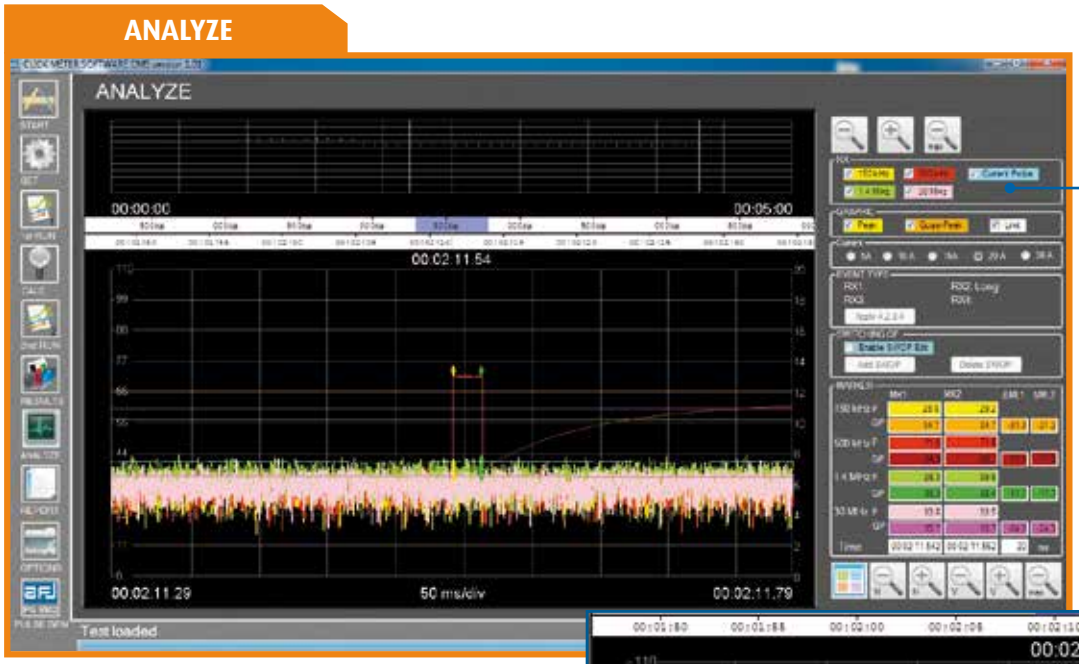
RESULTS

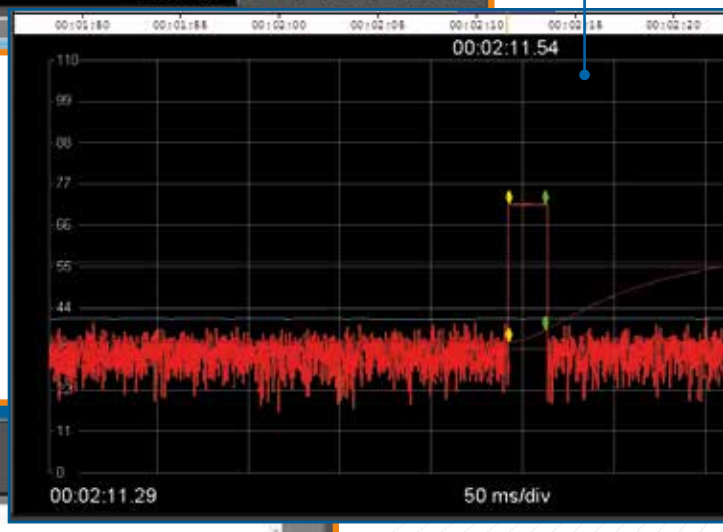
Measurement results of the Second Pass (either Real or Preview).



ANALYZE

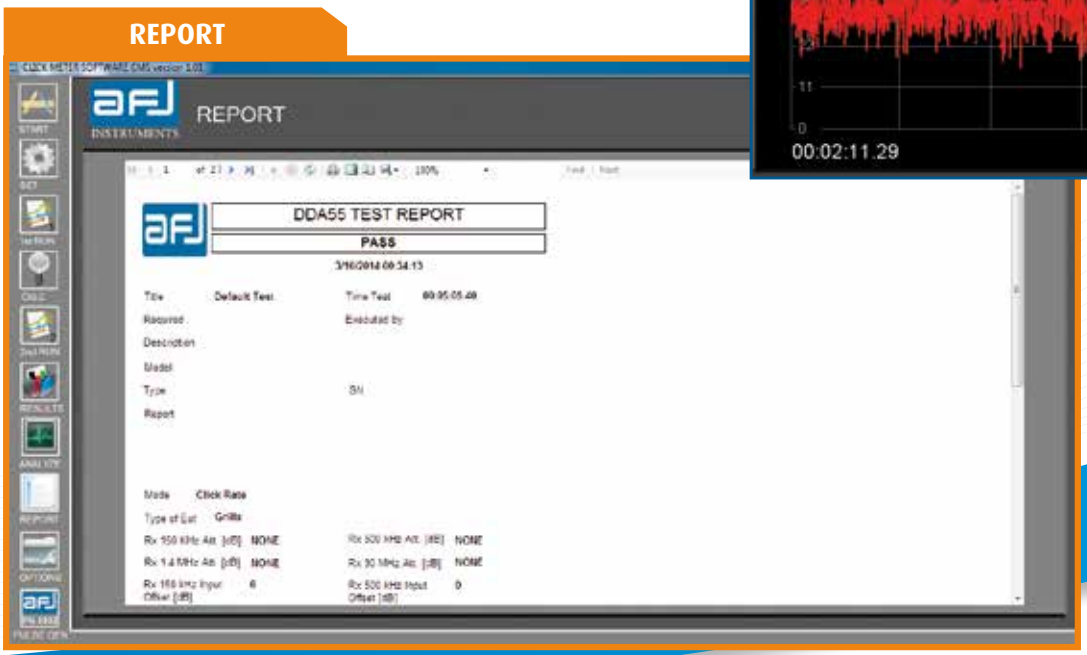
Graphical analyze of all the data stored during a measurement.





REPORT

Automatic generation of the Test Report in a suitable form including the last visualized data either on the CALCULATION page or on the RESULTS page.



TECHNICAL SPECIFICATIONS	DDA55
N. of Digital Direct Sampling Receivers	4 (ADC @ 122.88 MSamp/s)
Digital Receivers NCO Frequencies	150kHz, 500kHz, 1.4MHz, 30MHz
Frequency Stability	<10x10-6
Pulse Response	Peak and Quasi-Peak conforming to CISPR 16-1-1
Pulse Generator	Built-in conforming to CISPR 16-1-1
RF Input	50 Ω Impedance N Female Connector
VSWR Input	<1,5:1 (0dB Attenuation) <1,2:1 (≥10dB Attenuation)
Max Input	127 dBµV
Built-in Attenuator	Manual 0 ÷ 30 dB (10 dB/Step)
Sensitivity	25 dBµV Typ. (Quasi-Peak)
Measurement Accuracy with S/N > 20dB	± 0.8dB (150kHz; 500kHz; 1.4MHz; 30MHz)
Dynamic Range	75 dB Typ.
RF Shielding	3 V/m
Test Time Limit	120 minutes
Image Freq. Rejection (Alias Suppression)	90 dB Typ.
Displayed Events for each channel	Peak and Quasi-Peak levels N. of clicks: Short, Long Discontinuous interference Elapsed test time N. of Switching Operations Continuous Disturbance Time Snapshot of the last event detected Time Domain
Interface	Ethernet 10/100 MB Remotable LAN (Preset for LXI Level 0 Protocol)
Power Supply	110/230Vac ± 10%, 50/60Hz
Consumption	50VA
Operating Temperature	0° to 45°C
Storage Temperature	-20° to 70°C
Size (WxHxD)	450x135x436mm
Weight	15Kg

RELATED PRODUCTS

AFJ LISN

LS16C/10 ◆ 16A Single Phase

LT32C/10 ◆ 32A Three Phase

Subject to change without notice

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