metrix®

MTX 1052 & MTX 1054 digital recorder-analyser oscilloscopes
MTX 162 digital oscilloscope NEW
MTX 1032 differential probes
MTX 1050 spectrum analyser

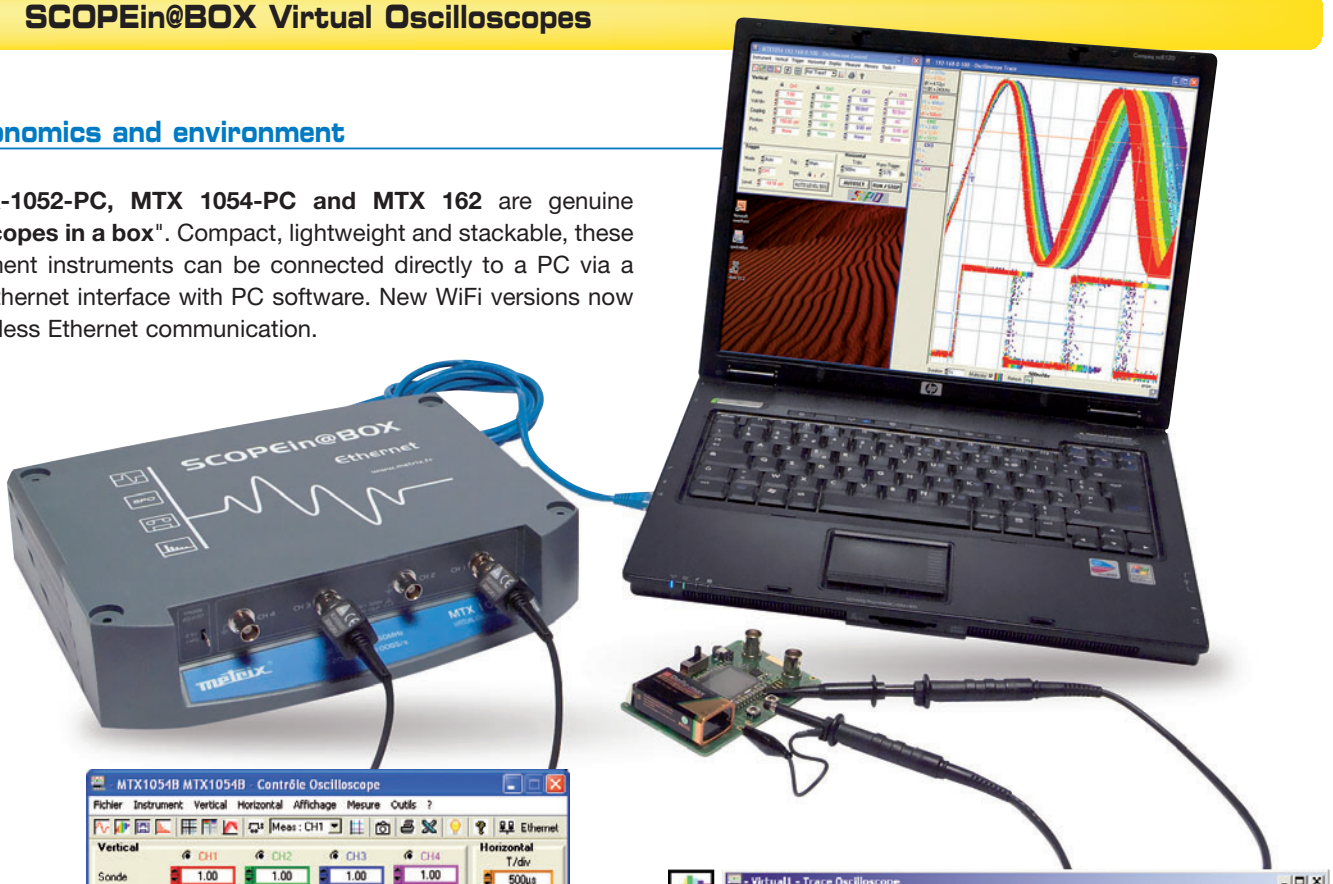
- **MTX 1052 & MTX 1054 oscilloscopes with FFT analysis, harmonic analysis and recording function**
  - 2 or 4 channels, 150 MHz, vertical sensitivity 250 µV – 100 V/div
  - Advanced trigger modes and SPO analysis
  - Communication with PC directly by USB or via Ethernet network (wired or WiFi)
- **MTX 162 low-cost oscilloscope** NEW
  - 2 channels, 60 MHz, normal or remanent display (like an analogue oscilloscope)
  - Connection to PC directly by USB or via Ethernet network (wired or WiFi)
- **MTX 1032 differential probes for measuring signals not referenced to earth**
  - Input voltage 600 V and 600 Vrms in common mode
  - Attenuation 1/10 and 1/100
  - Bandwidth 50 MHz / BNC (MTX 1032-C) or 30 MHz / banana (MTX 1032-B)
- **MTX 1050 spectrum analyser (400 kHz to 1 GHz)**
  - Ideal for EMC prequalification tests with built-in FM demodulator
  - Direct connection to PC via USB

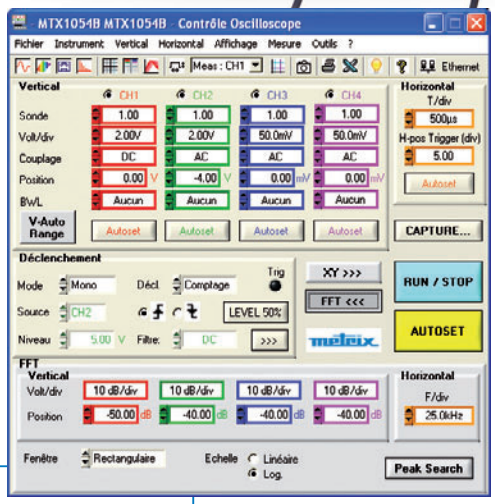
metrix® A Brand of CHAUVIN ARNOUX GROUP

SCOPEin@BOX Virtual Oscilloscopes

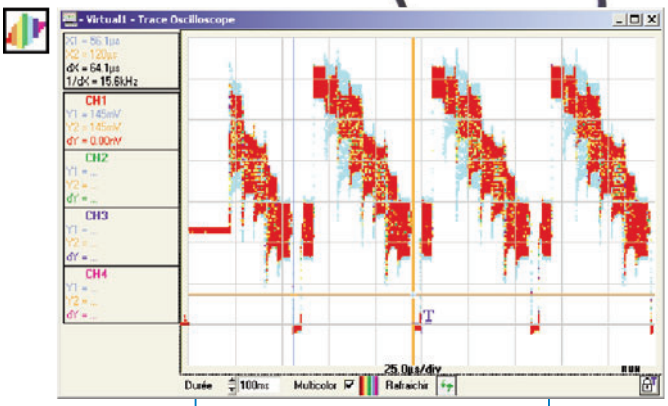
PC ergonomics and environment

The **MTX-1052-PC, MTX 1054-PC and MTX 162** are genuine "**oscilloscopes in a box**". Compact, lightweight and stackable, these measurement instruments can be connected directly to a PC via a USB or Ethernet interface with PC software. New WiFi versions now allow wireless Ethernet communication.





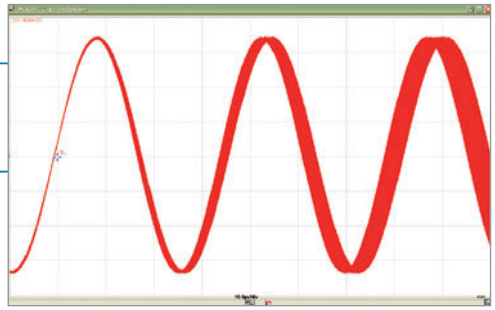
▸ **SCOPEin@BOX control panel**
General commands



▸ **SCOPEin@BOX display of "X(t)" traces in SPO mode**

Users benefit from all the PC's advantages in terms of **storage capacity** (the capacity of the PC) and display capabilities (minimum resolution 1024x768), allowing **more precise analysis of the curves**.

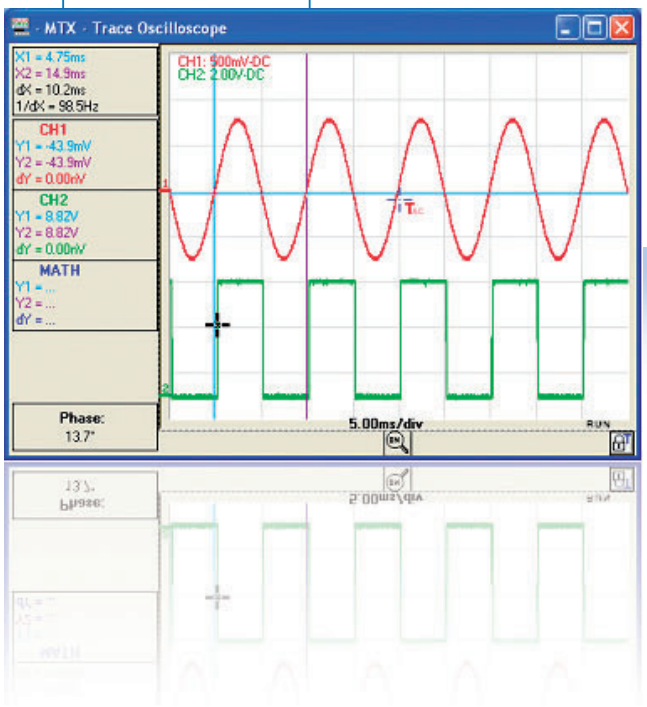
The functions are directly accessible from the menus and the "Windows" toolbar, via keyboard shortcuts or by using the mouse. Users control the oscilloscope with the "instrument" control panel, which contains all the standard commands for oscilloscopes. **Online help** is also available.



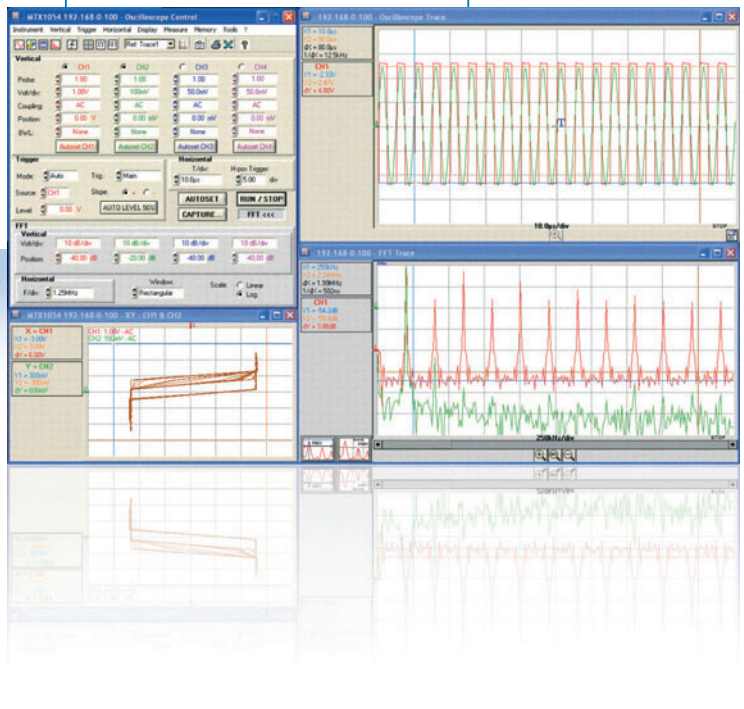
▸ **Remanent display of MTX 162**

Multi-windowing means you can simultaneously display the traces, the zoom, the FFT analysis, the measurements, etc. In this way, users can choose among multiple combinations so that they have all the useful information available at a glance.
The **MTX 1052 & MTX 1054** are both equipped with the SPO (Smart Persistence Oscilloscope) display mode which combines the advantages of analogue and digital displays.
You can use it to manage display and data acquisition simultaneously, making it possible to increase the acquisition rate up to several tens of thousands per second. With SPO, users can detect brief events, instabilities and untimely anomalies.
The MTX 162, a "double time-base" oscilloscope, offers normal or remanent display (like on an analogue oscilloscope).

▸ MTX 162
display of traces



▸ SCOPEin@BOX, simultaneous
"X(t)", "XY" and "FFT" display



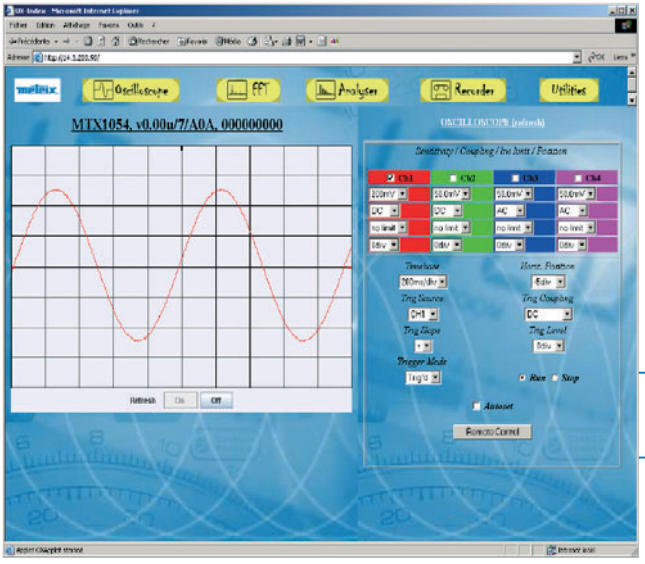
Functions

Each of these models offers functions which are rare on this type of instrument: real-time FFT analyser (lin/log), recorder or dedicated ROLL mode to simplify adjustments (MTX 162), bandwidth limiters, simultaneous automatic measurements with markers and cursors, etc.

For simpler use, an **automatic** Autorange mode is available on the **MTX 1052, MTX 1054 & MTX 162**. The Vertical Autorange function constantly adjusts the sensitivity on the signal amplitude.

NEW

The Horizontal Autorange function constantly calculates the time base to ensure the best possible display of the signal to be analysed. The **MTX 1052** & **MTX 1054** offer extensive advanced triggering possibilities: edge, pulse width, TV signal, edge with delay or edge with event counter.



Universal communication

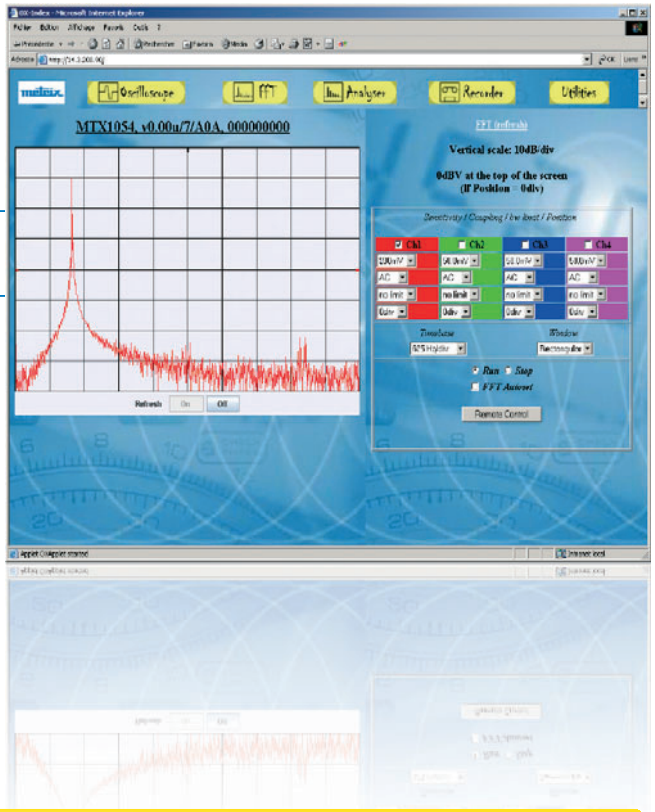
Each oscilloscope is equipped with a universal USB communication mode and a 10 Mb Ethernet interface for integration in a local or remote network. When started up in **USB or Ethernet** mode, the software automatically detects the instruments connected to the PC or network. "Unlimited" storage of the traces is possible simply by saving the files. Firmware upgrades are automatic. A click or two is all it takes to export the results into Excel or print them out in Word.

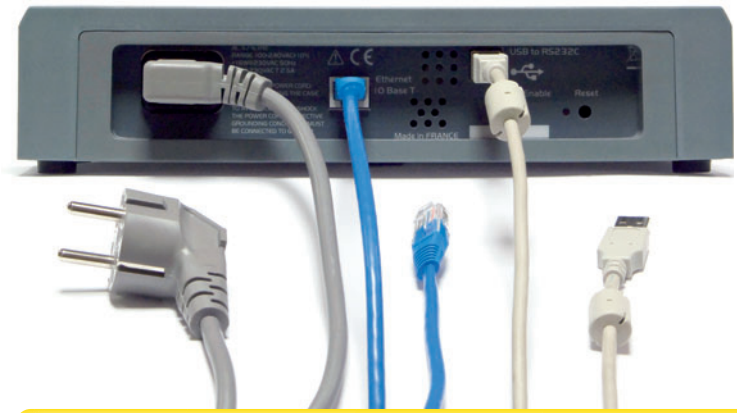
▸ The "Web Server": remote control
without extra software

The "W" versions of the **MTX 162** and **SCOPEin@BOX** models are equipped with WiFi communication.

With the "Web server" available on the MTX 1052 & MTX 1054, you can control the instruments remotely without extra software and exchange files via FTP very simply.

▸ **The "Web Server": remote control without extra software**





MTX 1032 Differential Probes

The **MTX 1032-B and MTX 1032-C** differential probes are essential tools for viewing signals not referenced to earth on analogue or digital oscilloscopes. They can be used separately or hooked up to MTX oscilloscopes or to SCOPEin@BOX models (MTX 1052 / MTX 1054 or MTX 162). They then enable the oscilloscopes to display signals in differential mode up to 600 V / CAT III.
These laboratory-grade probes powered by the mains can operate with **coaxial/banana** cables, **oscilloscope probes** (MTX1032-C) or banana leads.

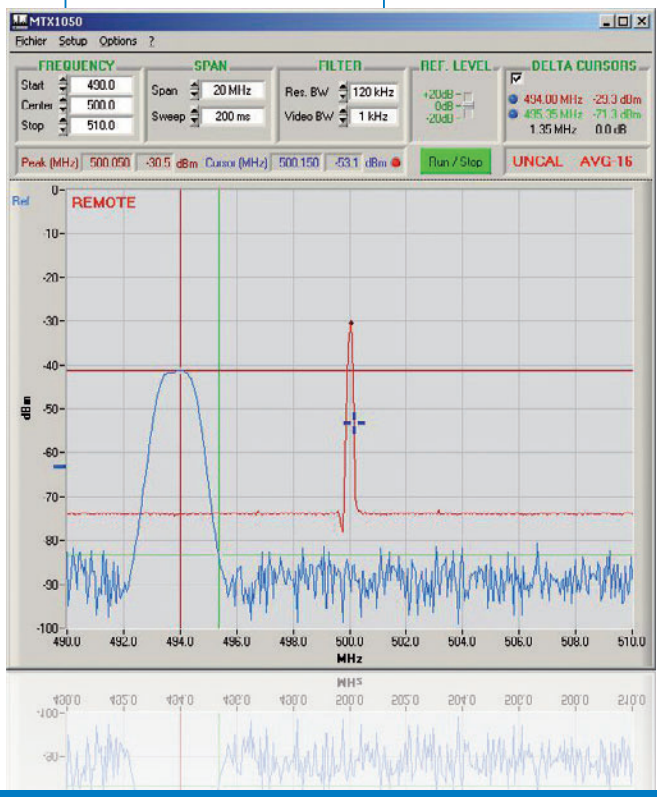
	MTX 1032-B	MTX 1032-C
Channels	2 differential channels	
Measurement connection	Banana leads	BNC / banana cables or oscilloscope probes
Bandwidth / rise time	30 MHz / 11.7 ns	50 MHz / 7 ns
Differential voltage input range	± 40 V to ± 400V	
Attenuation	1/10 and 1/100 / < 10 mVp-p	
Electrical safety	IEC 61010-1 600 V CAT III	IEC 61010-1 600 V CAT II
EMC	NF EN 61326-1 (07/97) + A1 (10/98) + A2 (2001)	
Dimensions / weight	270 x 250 x 63 mm / 1,2 kg or 19"/3U rack versions	

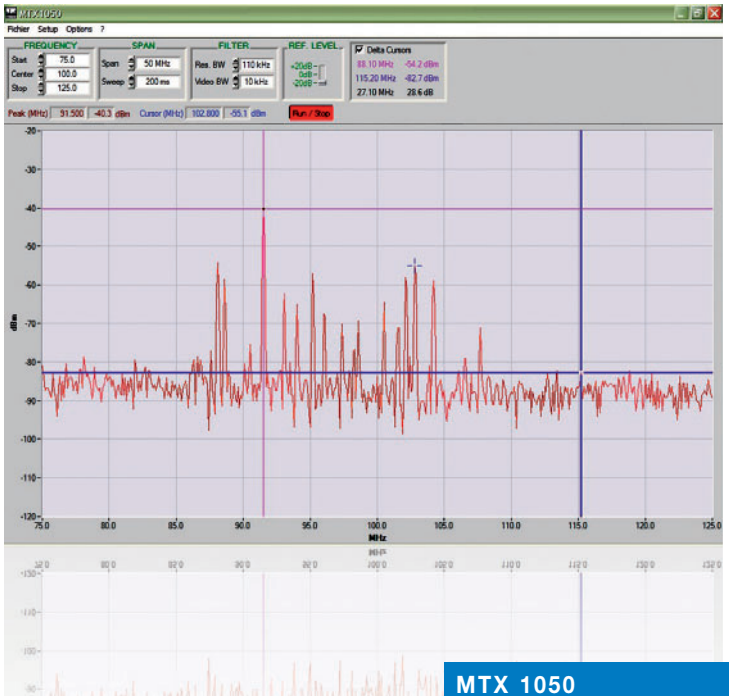
MTX 1050 Spectrum Analyser

The MTX 1050 spectrum analyser is a compact, low-cost, "screenless" instrument. Lightweight, portable and suitable for general-purpose applications, the MTX 1050 is ideal for small or medium-sized businesses and technical education (engineering schools, technical colleges, etc.).

Economical and simple to operate, the **MTX 1050-PC** includes a Windows environment that makes it easy to take screenshots for reports or data transfer into Excel. The functions and ergonomics of the SCOPEin@BOX oscilloscopes make them perfect for use with the **MTX 1050** spectrum analyser. In addition, the instruments in the SCOPEin@BOX family are particularly easy to stack due to their dimensions and the positioning slots on the casing.
Alongside all the usual functions of a "traditional" spectrum analyser, the MTX 1050 also offers built-in FM demodulation.
The MTX 1050's advantages include high stability, with a frequency drift of only ±5 ppm/year, and a wide dynamic range for measurement. It can measure 4 quantities simultaneously (Auto Peak, Marker and 2 Differential Cursors).

Example of command and display screen





MTX 1050	
Display	Up to 5,000 sweep points for horizontal resolution
Frequency / Excursion	400 kHz to 1 GHz / Zero span, 1 MHz to 100 MHz/div (1-2-5 sequences)
Frequency drift	±5 ppm/year
Analysis	6 sweep speeds, 3 analytical filters and 3 video filters.
Detection modes	Peak (standard mode) or Q-Peak (EMC analysis; 1 s sweep, RBW 120 kHz)
Measurement dynamic range	-90 dBm to +20 dBm.
Communication	USB "Plug & Play" as standard
Safety / Standards	IEC 61010-1 - Cat. II / NF EN 61326-1: 98
Dimensions / weight	270 (L) x 63 (H) x 215 (D) mm / 1.7 kg

HX0082 & HX0083 Near-field Probes

The **HX0082** kit comprises 2 near-field probes (30 MHz – 3 GHz). The proximity probe is for measuring radiofrequency magnetic fields. It can be used up to 10 cm from the target.
The contact probe offers accurate measurements on chip floorplans or printed-circuit traces.

The **HX0083** kit contains a 20 dB preamplifier for HX0082 near-field probes. This is designed to provide greater accuracy by amplifying signals close to the noise level.

	HX0083
Supply voltage	7.5 to 18V
Current consumption	50 mA
Max. input voltage	25 VDC
Gain	20 dB
Noise	4.5 dB

The spectrum analyser with its near-field probes: a dedicated EMC prequalification testing kit

These tests may take place throughout the product design and development phases. Prequalification tests help to **save time and ensure that the finished product will comply with the applicable standards**. Moreover, satisfactory results during these tests offer a better probability of successful EMC qualification later on. In this way, they avoid extra spending on modifying the product after failing the qualification tests.

These tests cover all the aspects that help to limit disturbances:

- **choice of the components** and their layout on a printed circuit board
- reduction of cable lengths and use of shielded cables if possible
- separation of circuits/cables of different types (e.g. analogue or digital)
- verification of electrical continuity (connections, welds, etc.)
- verification of the floorplan and shielding, etc.

This is not an exhaustive list. Any steps likely to reduce the electromagnetic fields should be investigated in order to optimize the product's operation.

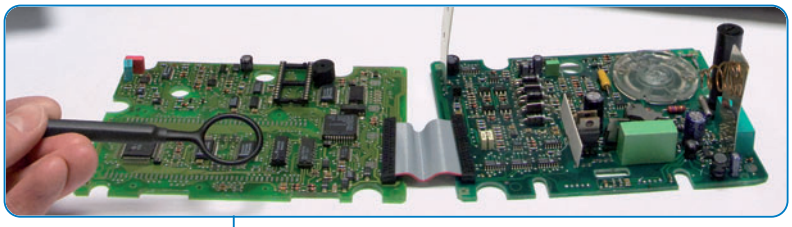
The tests are divided into 2 main categories: **immunity tests** and **emission tests**. They are also carried out using 2 distinct modes: "**conducted mode**", which covers disturbances in cables or printed-circuit traces, and "radiated mode" which covers electromagnetic fields in the air.

Use of near-field probes

The various fields measured by this type of probe help to locate the sources of high-frequency electromagnetic fields causing disturbances.
Active H-field probes work by observing the disturbance currents. Because they are not sensitive to outside disturbances, they can measure the intensity of the field directly associated with the currents flowing in the conductors.
It is not necessary to disconnect the existing wiring to use them. They are used with a spectrum analyser equipped with **Peak & Q-Peak detection modes**.

These modes are ideal for measurements in the context of EMC prequalification.

In "conducted mode", **a contact probe** will be used to detect any electromagnetic fields emitted vertically from flat surfaces (example 1). It allows precise measurements on specific areas (floorplan, trace, shielding, etc.). It is ideal for detecting disturbances emitted from surfaces which are difficult to access.
In "radiated mode", **a proximity probe** will be used to detect all the electromagnetic fields present in the space involved (example 2).
For greater accuracy, these **HX0082** probes may be used with an **HX0083** (db) amplifier to reduce the noise floor level. This makes it possible to measure very slight disturbances.



▸ **Below: using the contact probe with the amplifier connected directly to the MTX 1050.**
Above: using the proximity probe.

MTX Virtual Series

	MTX 1052 / MTX 1054*	MTX 162
MAN-MACHINE INTERFACE		
	Colour PC screen display / 8 x 10 div / Multi-windowing with up to 4 curves on screen / "Windows-like" interface & online help	
OSCILLOSCOPE MODE		
Vertical deflection		
Bandwidth	150 MHz (bandwidth limiter: 15 MHz, 1.5 MHz or 5 kHz)	60 MHz (bandwidth limiter: 15 MHz, 1.5 MHz or 5 kHz)
Number of channels	2 or 4* channels, class 1, common chassis earths	2 channels, class 1, common chassis earths
Vertical sensitivity	2.5 mV – 100V/div, up to 250µV/div with vertical expansion	5 mV to 100 V/div
Horizontal deflection		
Sweep speed	35 calibres from 1 ns to 200 s/div	32 calibres from 5 ns to 100 s/div
Triggering		
Mode	Auto, Triggered, One-shot ROLL, auto-level at 50%	
Sources	CH1, CH2, EXT, Mains or CH1 à CH4, Mains*	CH1, CH2, Mains
Type	Edge, Pulse Width or Delay (40 ns-10.5 s), Counting (2 - 16,384 events), TV (525 = NTSC, 625=PAL/SECAM), Adjustable pretriggering from 0 to 100%, Hold-off (40 ns-10.5 s)	Rising or falling edge, adjustable pretriggering from 0 to 100%
Digital memory		
Maximum sampling rate	Repetitive = 100 GS/s – One-shot = 200 MS/s	Repetitive = 20 GS/s – One-shot = 50 MS/s
Vertical resolution	10 bits (9 bits used)	8 bits
Memory capacity	Depth = 50,000 points – storage capacity depends on PC configuration	
SPO (Smart Persistence Oscilloscope)		
Persistence duration	100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s and infinite	Analogue remanent mode
Performance	Acquisition rate: 50 kwaveforms/s/channel, No. of samples acquired: 19 MS/s/channel	-
Measurement processing		
FFT analyser & MATH functions	FFT, +, -, x, / - "Made-to-measure" function editor	FFT, +, -, x, /
Manual cursors	dv, dt, 1/dt, phase – cursors linked to trace or free	
Automatic measurements	2 or 19 measurements chosen among 19 + Automatic phase – On any type of curve - Markers and limits	
RECORDER MODE		
Duration / Sampling	Duration: 2 s to 31 days / Sampling interval: 40 µs to 53.57 s	Dedicated ROLL mode from 2 s to 33 min
HARMONIC ANALYSER		
Analysis range	Fundamental from 40 Hz to 1 kHz + 31 orders on 1 to 4 channels	-
Processing	Total RMS value, THD and selected order (%F, phase , frequency, VRMS)	-

GENERAL SPECIFICATIONS - MTX 1052 / MTX 1054 / MTX 162	
Memory & printing	"Unlimited" but depending on PC configuration / Via "Windows" environment
Communication	USB, local or remote 10 Mb Ethernet, WiFi*
Power supply	100 to 240 VAC / 47-63 Hz – removable mains power cable
Electrical safety	IEC 61010-1 / CATII 300V – EMC according to EN 61326-1
Casing / Environment	270 x 213 x 63 mm – 1.8 kg or 19"/3U / Storage -20°C to +60°C - operation 0°C to 40 °C
Warranty / Origin	3 years / France

* Depending on the model

To order

MTX1052B-PC:	Digital analyser-oscilloscope, Ethernet, 2 channels, 150 MHz, colour, SCOPEin@BOX PC software, mains power cable, 1/1 - 1/10 voltage probes - 200 MHz 300 V (x2), crossed Ethernet cable, straight Ethernet cable , USB A/B lead
MTX1054B-PC:	Digital analyser-oscilloscope, Ethernet, 4 channels, 150 MHz, colour, SCOPEin@BOX PC software, mains power cable, 1/1 - 1/10 voltage probes - 200 MHz 300 V (x2), crossed Ethernet cable, straight Ethernet cable , USB A/B lead
MTX1052BW-PC:	1 MTX1052B-PC – WiFi version
MTX1054BW-PC:	1 MTX1054B-PC - WiFi version
MTX1052B-RK:	1 MTX 1052B-PC oscilloscope - 19''/3U rack version
MTX1054B-RK:	1 MTX 1054B-PC oscilloscope - 19''/3U rack version
MTX162UE:	MTX 162 oscilloscope delivered with 2 x 100 MHz probes (HX0210), 1 standard USB A/B lead, 1 removable mains power cable and a CD-ROM containing the PC software, the operating manual in 5 languages, the programming manual and the drivers
MTX162UEW:	MTX 162 WiFi oscilloscope delivered with 2 x 100 MHz probes (HX0210), 1 standard USB A/B lead, 1 removable mains power cable and a CD-Rom containing the PC software, the operating manual in 5 languages, the programming manual and the drivers
MTX1050-PC:	MTX 1050 spectrum analyser, 1 USB communication cable, 1 mains power cable, 1 CD-ROM containing the PC application software and the operating manual, 1 FM antenna with BNC connection
MTX1032-B:	1 differential probe, 2 x 50 MHz, delivered in casing with 2 BNC cables 20 cm long, 2 sets of PVC banana leads 1.10 m long, 1 European mains lead, 1 operating manual in 5 languages
MTX1032-C:	1 differential probe, 2 x 30 MHz, delivered in casing with 2 BNC cables 20 cm long, 1 set of 2 shielded BNC-banana cables 2 m long, 2 crocodile wire grips for probes, 1 European mains lead, 1 ope rating manual in 5 languages
MTX1032-BRK:	1 MTX 1032-B differential probe - 19''/3U rack version
MTX1032-CRK:	1 MTX 1032-C differential probe - 19''/3U rack version
HX0090:	WiFi access point

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