



Shielding Box MSB

An overview of the systems from
MTS Systemtechnik GmbH

Individual EMC technology





Your partner for customised solutions -
„Development, Production & Service“
all from a single source.

// High frequency technology

// EMC technology

// CNC milling technology

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// About MTS Systemtechnik

Tailor-made solutions for high frequency technology, EMC, electronics and mechanics

Our customers include manufacturers of highly sensitive equipment in the market segments of mobile communications, telecommunications, aerospace, defense, medical, automotive and electronics. Our devices, systems and components are used worldwide by leading, internationally active companies.

For over 25 years, MTS Systemtechnik stands for state-of-the-art technology, absolute reliability, discretion, transparent processes and certified quality according to DIN EN ISO 9001.

With about 50 employees we develop and manufacture individual and high-quality devices, systems and components „Made in Germany“, as well as customer-specific products.

Our electronic products include coax relays, attenuators, power splitters, systems for the distribution of LF-, video-, RF-signals, RF matrices, assembled coax cables, etc. complex switching and distribution tasks in the high frequency range have made us a leading manufacturer of relay switching units, air interface emulators, power splitter units and matrices.

For the mobile radio and telecommunications industry we supply customised shielding boxes, air interface emulators for various test scenarios and smart antenna simulators.

With our modern CNC production centre we manufacture customer-specific precision milled parts for the aerospace, optical and high-frequency industries.

The distribution of coaxial connectors from IMS Connectors and the assembly of coaxial cables complete our product range.



Systems for the distribution of LF, video and RF signals in the fields of tele- and satellite communication and radio surveillance



Production of mechanical components for the aerospace, optical and high-frequency industries



Development and production of active and passive components for high frequency technology

// Introduction

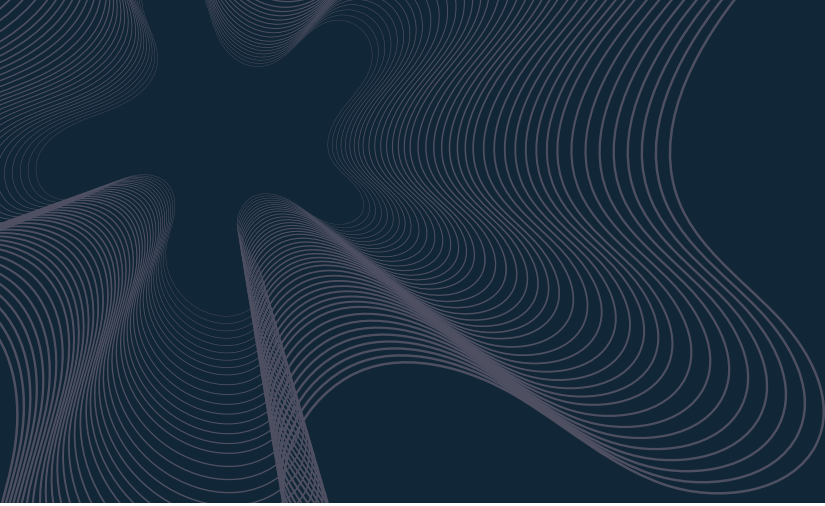
EMC shielded boxes are essential for reliable testing of radio interfaces. The RF shielded boxes enable reliable and reproducible measurements when a shielded test environment is required.

In research and development laboratories as well as in test, calibration and manufacturing processes of electronic products, a shielded environment is required to prevent spurious emissions or interference of unwanted radio signals.

Using the right equipment ensures an optimal environment, saving a considerable amount of time and reducing costs.

These processes require an appropriate shielding box. We manufacture in our own mechanical milling centre and in our own electronic production, individual shielding boxes in different sizes, with special interfaces and/or various filter components. With our many years of technological know-how and expertise in the design and manufacture of the shielding boxes, we implement the customer's requirements accordingly and are thus flexible in the realisation.

MTS Systemtechnik GmbH also already has a large number of EMC-shielded boxes in its range. This makes it possible to offer an appropriate solution for almost all areas in which a defined RF environment is required. The extremely solid and high-quality design offers an extremely long service life without having to accept any compromises in operability.



Shielding box what is it actually?

At MTS, we call a shielded box a metallic box in which almost no electromagnetic radiation is present (Faraday cage).

Why do you need such a box?

If you want to develop, test or compare in the field of radio transmission, you need a room - ideally - that is completely free of radio signals, because you want to know how your test object behaves under certain conditions. The mobile phone cells next door or your own in-house WiFi can massively influence the results or make measurements impossible.

What should be considered?

A metal box shields very well over a wide frequency range. If you want to access or operate the system inside, you need interfaces. Be it a USB interface for control, a viewing window or a mechanical operating option. And this is where it starts to get complicated, because the radio waves use every opportunity to penetrate the field-free area.

What does the MTS shielded box provide?

MTS Systemtechnik has been developing shielded boxes for over 25 years. They are manufactured in our in-house milling centres. Each box can be customised in size and equipment according to your specifications. We offer almost any type of interface, manipulation options, brackets, etc. and always keep the shielding effectiveness of the overall system in mind.

// Description

Shielding Box Interfaces

- // USB2.0 double module (2x filtered USB-interface)
- // USB3.1 single module (1x filtered USB-interface)
- // RF-interface (N-socket, SMA-socket, BNC-socket)
- // Triax-interface
- // SUB-D-interface (9-, 15-, 25- or 37-pole)
- // VGA-interface
- // HDMI 2.0 Type A
- // XLR-interface
- // 3,5 mm phone jack 4-pole. (CTIA standard)
- // LAN-interface (10/100/1000 Mbit/s, 2500/5000/10000 MBit/s)
- // Optical-interface (FC/PC 2.2 mm)
- // Fibre optics (ST/ST, FSMA/FSMA)
- // Mains voltage supply (socket country specific)
- // Voltage connectors (+VDC, -VDC), banana jack 4mm

Shielding Box example:



Shielding Box Options

- // Flexible wire mesh with one or more touch screen operating stylus
- // Mobile attachment
- // RF absorber lining
- // Ferrite absorber
- // Ventilation (integrated honeycomb vent + fan)
- // Locking for padlocks
- // Shielded window
- // ESD lining
- // Pneumatic feedthrough
- // Brass tube (waveguide)
- // Inside shelf plate
- // 19" rack integration
- // Shielded gloves

MSB-0100 Series

- // Highest quality materials for extended life-time and high test appearance.
- // An ergonomic position of the user is achieved by front side opening.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN etc.
- // Easy operation of the test samples directly through the built-in flexible wire mesh.
- // Highest safety standards through increased slip resistance and gas prop cover holder
- // Standard attached accessory: Flexible wire mesh, solid cover, Mobile phone holder
- // Capacity inside for DUT approx. 40x25x13 (WxLxH in cm)



Shielding Box, MSB-0100 Series:

MSB-0200 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN etc.
- // Easy operation of the test samples directly through the built-in flexible wire mesh.
- // Weight optimized structure improves the mobility.
- // Standard attached accessory: Flexible wire mesh, solid cover, Mobile phone holder
- // Capacity inside for DUT approx. 40x25x11 (WxLxH in cm)



Shielding Box, MSB-0200 Series:

MSB-0300 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN etc.
- // Easy operation of the test samples directly through the built-in flexible wire mesh.
- // Weight optimized structure improves the mobility.
- // Standard attached accessory: Flexible wire mesh, solid cover
- // Capacity inside for DUT approx. 65x45x17 (WxLxH in cm)



Shielding Box, MSB-0300 Series:

MSB-0400 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN / IoT etc.
- // Weight optimized structure improves the mobility.
- // Standard attached accessory: Absorber lining inside
- // Capacity inside for DUT approx. 59x44x39 or 48x33x28 (WxLxH in cm), Depending on the size of the absorbers; other sizes on request



Shielding Box, MSB-0400 Series:



MSB-0500 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 10 kHz to 8000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN etc.
- // An ergonomic position of the user is achieved by front side opening.
- // Additional full absorber lining and 20mm polystyrene bottom panel.
- // Highest safety standards through increased slip resistance.
- // A wide range of supply and communication interfaces.
- // Capacity inside for DUT approx. 65x70x80 (WxLxH in cm), Depending on the size of the absorbers; other sizes on request.



MSB-0600 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN / IoT etc.
- // Weight optimized structure improves the mobility.
- // Standard attached accessory: Absorber lining inside.
- // Capacity inside for DUT approx. 59x44x39 or 48x33x28 (WxLxH in cm), Depending on the size of the absorbers; other sizes on request.



MSB-0700 Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 400 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN etc.
- // Air circulation is given by the integrated fan and honeycomb vents.
- // An ergonomic position of the user is achieved by front side opening.
- // Additional full absorber lining for interior reflection reduction.
- // Highest safety standards through increased slip resistance and gas prop cover holder.
- // A wide range of supply and communication interfaces.
- // Cover locking (by padlock)
- // Capacity inside for DUT approx. 125 x 50 x 35 (WxLxH in cm), Depending on the size of the absorbers; other sizes on request.



MSB 19" Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN / IoT etc.
- // Air circulation is given by the integrated fans and honeycomb vents
- // An ergonomic position of the user is achieved by front side opening
- // 19" rack mount case from 5 HU upwards and front door.
- // Standard attached accessory: Absorber lining inside possible.
- // Cover locking (by padlock)
- // Integrated shelf on request
- // Capacity inside for DUT approx. 41x30xHU (WxLxH in cm),
Depending on the size of the absorbers; other sizes on request.

// Shielding Box Units MSBU

Shielding Box Unit, MSBU-6CA-4HU 19“:



MSBU 19“ Series

- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN / IoT etc.
- // An ergonomic position of the user is achieved by front side opening
- // 19” rack mount case with 2, 3 or 4 HU
- // Capacity inside for DUT depends on the number of cabinets.



Shielding Box Unit, MSBU-3CA-HI 19”:



MSBU-HI 19“ Series

- // Highly isolating RF shielding chamber .
- // Shielding effectiveness ~95dB typ.
- // Highest quality materials for extended life-time and high test appearance.
- // Economical solution for very high RF shielding levels and reproducible test scenarios to avoid time-consuming and expensive tests at laboratories.
- // Usable for frequencies between 500 MHz to 6000 MHz, such as GSM / DCS / DECT / UMTS / LTE / RFID / ZigBee / Bluetooth / WLAN / IoT etc.
- // An ergonomic position of the user is achieved by front side opening
- // 19” rack mount case with 3 HU.
- // Capacity inside for DUT 3 cabinets with approx. 12x22x11 (WxLxH in cm) each, other sizes on request.

Accessories and suitable systems

RF-Matrix FFO (full fan out)

Made of dividers and semiconductor switches. It can be used for several applications, f.e.:

- Test automation in the mobile communication area
- Remote switching of measuring instruments and test equipment
- Permanently change of components such as amplifiers, filters, attenuators, etc. without having to rewire.

Air Interface Emulations

Air interface emulators like Air Interface Adapter (AIAD) and Standard Coupling Field (SCF) from MTS Systemtechnik offer the possibility of testing mobile radio base stations and mobile stations in the lab via the air interface. Reproducible RF tests can be carried out independent of radio interference from the environment by using emulators, cables and shielding boxes. Engineers get the opportunity to efficiently emulate a variety of specific wireless network handover scenarios. The MTS air interface emulators were designed for mobile radio test from 2G up to 5G FR1, but can also be used for Wi-Fi, Bluetooth and other radio technologies (f.e. TETRA).

SIMCard Switching Test Solution

The system supports you in implementing automated software tests on mobile devices that require changing the SIM card or roaming tests of mobile phones. With the Matrix SIM Switchbox MSSB, up to 32 SIM cards can be automatically connected to up to 4 mobile devices.

Splitter-/Combiner-Units

Customised 19" rack mount units to split or combine the RF signals in different configurations (x-IN to y-OUT).

Accessories and components

- // Coaxial Cable Assemblies - Customised
- // Programmable Attenuators, Fixed Attenuators
- // Directional Coupler, Hybrid Coupler, Termination
- // Semiconductor Switch, Delay Line
- // Wilkinson Power Divider, Resistive Signal Divider
- // Small Signal Amplifiers

and much more.





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