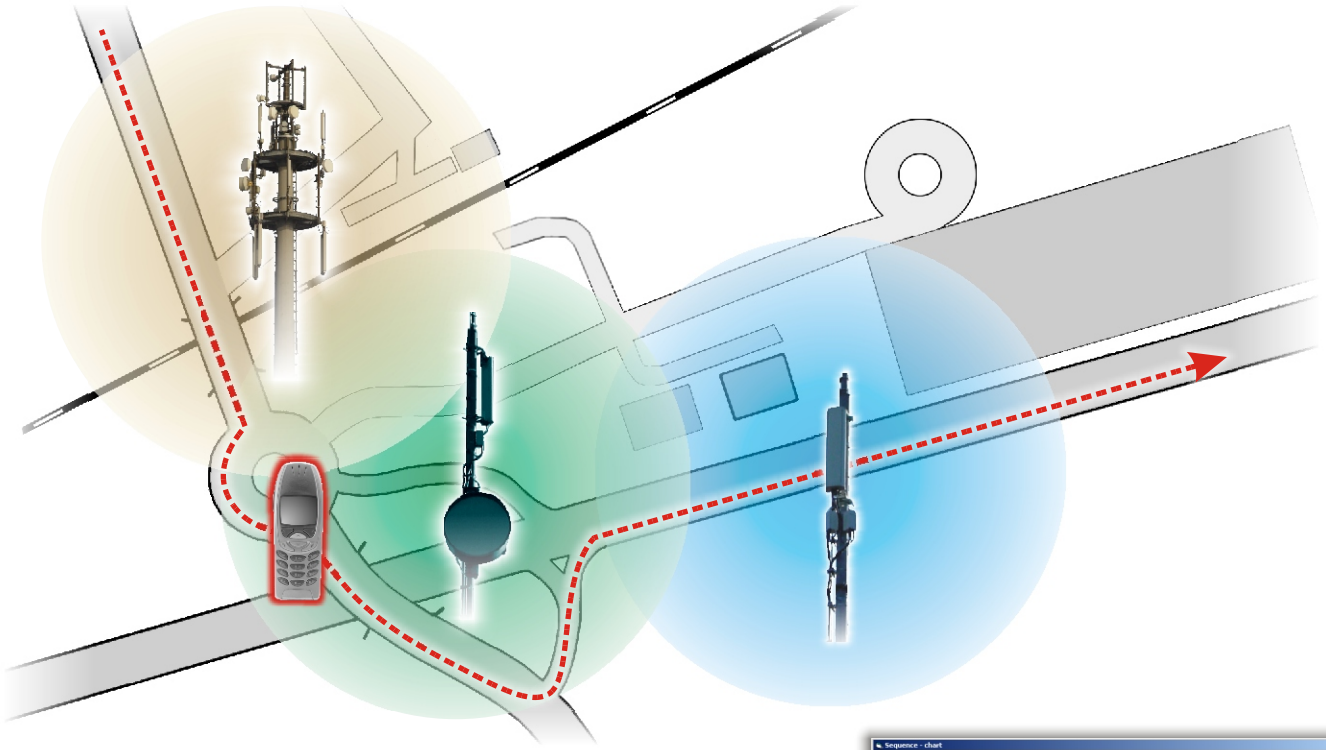
MTS Systemtechnik

Air Interface Emulations

How do you emulate an air interface in a laboratory?

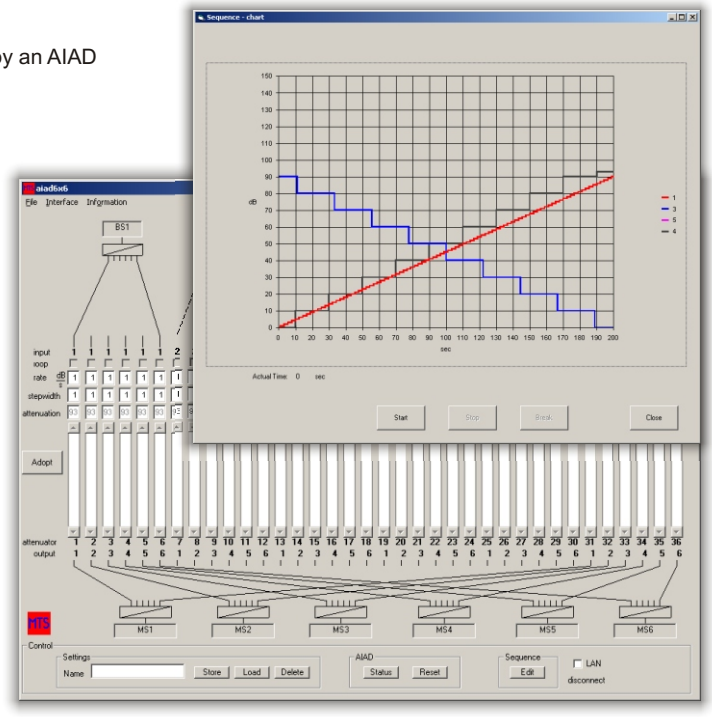
During the development or testing of radio devices always one question occurs: How can I test it? How can I emulate the movement of the subscribers? Maybe without leaving the laboratory? Maybe reproducable?
With the MTS-devices of the series AIAD, you can **emulate air interfaces** for all imaginable scenarios. To avoid the influence from the Live-Net, the signals are connected with cables direct from the different signal sources, as for example GSM or UMTS Basestations or signal generators etc. over the MTS-AIAD to mobile devices, like mobile telephones, PDA´s, data cards, WLAN-equipment etc. placed in shielding boxes. Because of adjustable attenuators, which are included in the AIAD, dynamic combinations of RF-pattern can be built-up from different RF-transmitters, controlled by the MTS-AIAD software (see chart below) or keyboard or by up-down buttons.
Due to this, it is possible to accomplish a real handover from a GSM radio cell to the next, or to a UMTS radio cell with high accuracy.



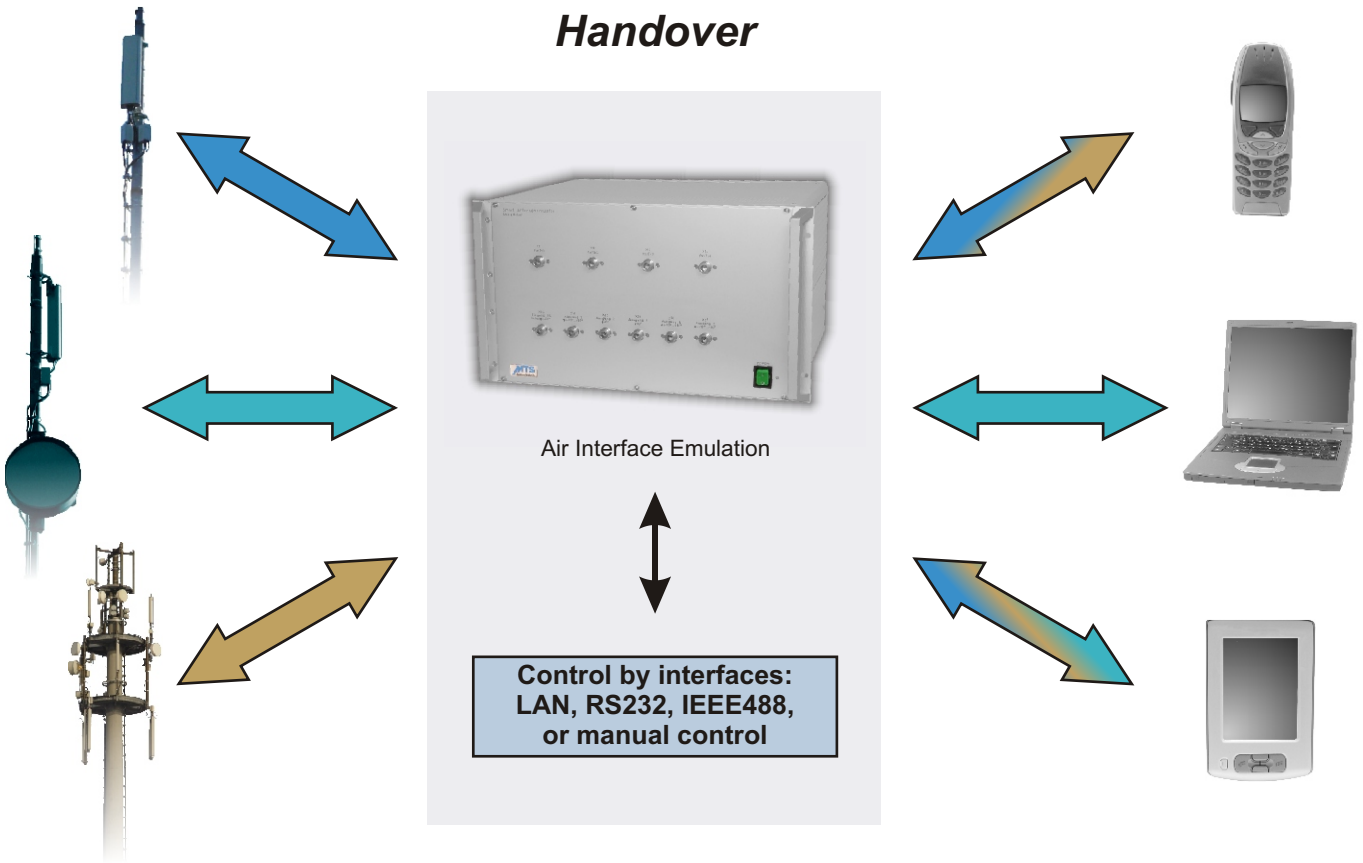
Movement of a mobile phone through various base stations emulated by an AIAD

Advantages

- Time and cost saving through fast failure search with real RF signals instead of simulations
- Less error rate in test cases compared with software simulations
- Independency from RF-radiation of the environment
- Repeatable results
- Ideal working due to customized configuration
- Easy operation by manual control or by graphic user interface



Software AIAD 6/6 desktop



Examples of Possible Configurations:

AIAD: Is our standard and most flexible solution for an air interface emulation. With the standard AIAD it is possible to emulate the in- and outputs according to the demands of the customer. This design allows program controlled attenuation of each input signal to each output signal at the same time. The function is carried out by power dividers on the input lines, which lead through programmable attenuators to output combiners. If desired, also different configurations are possible, as for example attenuator between the input paths, filters, delay lines, diplexer etc..

SCF: Is a special form of an AIAD. The frequency range is from 800 - 2.900 MHz. It emulates an air interfaces between four Base Stations and two mobile devices. You can patch each input (Base Station) through four different paths, which contain different fixed attenuators. LED´s at the front panel show the minimum suggested attenuation. With the right path you can work with two small AIADs with 2 inputs and 1 output. The variable attenuators are controlled via a keyboard and up-down buttons at the front panel or via the remote control interfaces. Additionally it contains three hybrid couplers to connect the two 2/1 AIADs to an 4/1 AIAD.

SAS: It is our latest product development for the WIMAX-technology. The frequency range is from 2.000 - 4.000 MHz and it emulates a 4 section smart antenna. The MTS SAS gives the user the opportunity to control not only the signal level of the antenna but also beam characteristics. The SAS gives you the possibility to adjust the whole signal power to one point in the emulated scenario.

Technical Characteristics AIAD:

- Very high bandwidth from 800 - 2.500 MHz already in standard version. Testing of GSM and UMTS is possible with one device.
- Available for other frequency ranges from 200 to 8.000 MHz:
  GSM 800, GSM-R, GSM 1.800, GSM 1.500, UMTS, WiMAX, CDMA, PPC, VCOma 1900 / 2.100, DECT, 802,11b/g, TETRA (GSM 400), 802,11a/h 5,5 GHz
- Any configuration available until16 inputs x 16 outputs
- Integration of further components possible, as e.g. filter, diplexer, delay lines, etc.
- Isolation > 100 dB between the paths
- Possible working range of minimum detectable signal of 104-110 dB
- Manual control or control by interfaces LAN, RS232, IEEE 488
- Available as 19” rack or as table top case

MTS Systemtechnik

RF-systems and -units

Data technology

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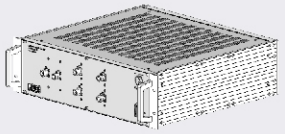
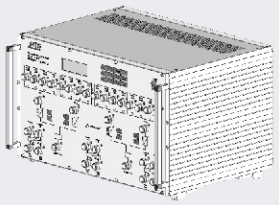
Examples of numerous types of Air Interface Emulations

Air Interface Emulator overview

AIAD 3/1

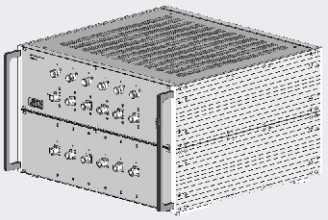


AIAD 2/4 TTL

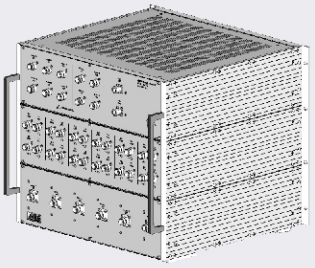


designed by T-Mobile and MTS Systemtechnik

SCF 0150



AIAD 6/6 TTL

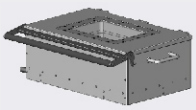


AIAD 16/2-6

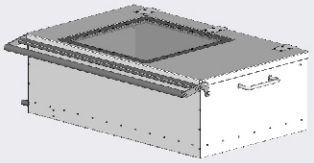
Shielding boxes as additions of Air Interface Emulations

Shielding Boxes overview

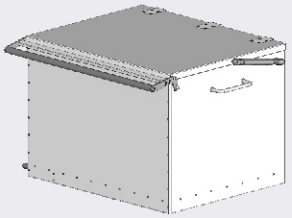
The ideal supplement to air interface emulations are shielding boxes of our MSB-series. They are suitable for the test of mobile devices independent from RF-radiation of the environment. Shielding boxes of MTS Systemtechnik are available in different sizes, also for the installation into a 19”-rack, or according to customer´s demands.



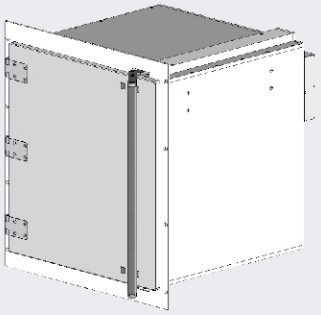
MSB 0011



MSB 0017



MSB 0021



MSB 0023

The MTS would like to introduce itself:

Product overview

The MTS Systemtechnik GmbH is a flexible and middle-sized company, which was founded in 1980 as a development and production company. Since then the MTS´s special field is the signal distribution and modification in the RF-technology. Nowadays we manufacture products and systems for the mobile radio, laboratory, satellite communication and video respectively audio field.
Following you can find our product range in extracts:

Systems and Units

- Signal distribution units
- Antenna distrib. units / multi couplers
- Combiners
- Remote controlled switching units
- Filter units
- Ventilation units
- Matrices
- Coupling units
- Air field emulations serie AIAD
- Shielding boxes serie MSB

Components

- Coaxial relays
- Multi channel switches
- Videorelays
- Feedthrough terminations
- DC-blocks
- Fixed attenuators
- Terminations
- Semiconductor -switches & - attenuators
- Coaxial short circuits
- Power attenuators and power terminations
- Signal dividers, power splitters, combiners and multi couplers
- Programmable step attenuators
- Coaxial cable assemblies
- Bias tees
- Directional couplers
- Impedance matching modules
- PC controlled components
- Amplifiers

Mechanical Modules

- RF shielded enclosures
- Structural enclosures
- Custom specified enclosures
- Milled components
- Milled cassettes
- Cassette enclosures
- 19"-racks

Data Technology

- Controller cards and accessories for operators in electronic
- Control units
- Custom specified interface units
- Development of firm- and software according to customer’s wishes

Services

- CAD development and customer specified CNC milled modules
- Mounting of components to and testing of RF printed circuit boards
- Engineering service
- Programming service

Distribution for IMS Connector Systems GmbH

- Coaxial connectors
- Terminations
- Coaxial adapters
- Coaxial cable assemblies

Technical subject to change.

Illustrations similar

January 2006