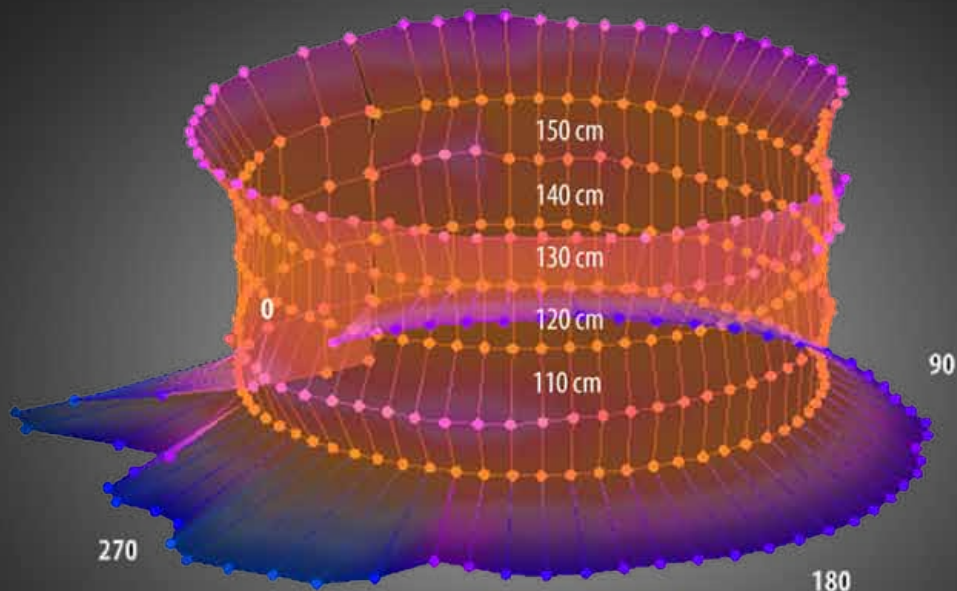


# EMI 64k automation software suite



**BOOSTING your EMC testings**  
by patented TDEMI® TECHNOLOGY



## Special Features

**GTEM**  
Measurements

**SLIDE**  
Measurements

**Conducted**  
Measurements

**Radiated**  
Measurements

**Ultra-fast radiated**  
Measurements

**Fully automated**  
Measurements



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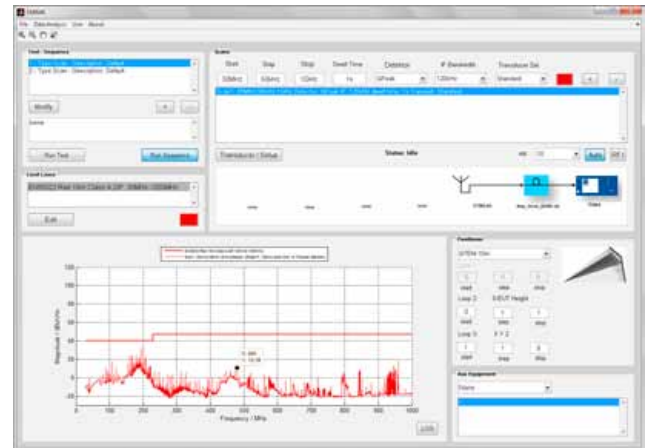
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# EMI 64k Software Suite

- › Full automation of EMI testing according to all commercial and military standards
- › Automated control of turntable, antenna and other equipment
- › Procedures according to standards as well as customized procedures
- › Cost saving by tailored packages



By the EMI 64k software suite a full automation of EMI testing according to all commercial and military standards is available. The EMI 64k software allows to embed the TDEMI<sup>®</sup> and TDEMI<sup>®</sup> X systems in a fully automated test environment. During the measurements carried out by the TDEMI<sup>®</sup> the positioning devices e.g. turntable and antenna mast, are controlled. The line impedance stabilisation network (LISN) as well as many other auxiliary equipment can be controlled via Ethernet, GPIB (IEEE-488), Sub-D 25-pin (Parallel Port), USB or RS232 (Serial Port). Each setup can be stored and later reloaded. The setup contains the drivers, transducers, hardware setup, scan settings and measurement data.

Using the capabilities of the TDEMI<sup>®</sup> X with a gapless processing and full quasi-peak detection the EMI 64k is the only software that provides a full automation even under conditions of sporadic interferences or drifting emissions. This unique technology avoids manual searching of peaks and improves the overall test quality.

The EMI 64k automation software is available for all TDEMI<sup>®</sup> product families and can be hosted on your TDEMI<sup>®</sup> System or from a separate work station via an external PC or Laptop.

The EMI 64k is very flexible regarding the definition of measurement procedures, scans, test setups and data processing. Post processing of measurement data, like generation of 2D

and 3D charts as well as peak evaluation and report generation are functions that are crucial for an automated test environment. Each test result can be stored together with the measurement procedure and the complete hardware setup.

A test setup consists of the definition of transducers, limit lines, the hardware setup and the scans. The EMI 64k provides traditional measurement procedures like pre-scanning and final maximization at individual frequencies as well as full automated EMI testing using a huge real-time bandwidth of 645 MHz with quasi-peak and Average detectors to get the spectrum at all angular positions and heights. The method of data reduction and fully automated maximization using the real-time spectrogram mode can be combined for extremely fast and accurate testing.

In order to identify and report critical frequencies peak search according to subranges or peaks is available. In addition by an interactive mode frequencies can be selected and stored in a peak list. The data representation is available in the report as graph and table. The documentation is performed according to the EMC standards e.g. FCC and CISPR. The test report is generated as a Microsoft<sup>®</sup> Word document for maximum user flexibility.

The EMI 64k software supports conducted emissions, measurement of disturbance power, radiated emission

measurements in a full anechoic room (FAR) or at an open area test site (OATS) as well as in a semi anechoic chamber (SAC). For all these typical test setups the EMI testing is fully automated. The GTEM cell is a very effective approach to test small devices. With the EMI 64k software it is possible to speed up the measurement using the quasi-peak detector for a scan with a scan time between 3s (TDEMI® X) and 64 s (TDEMI® M). The measurement is carried out at all 3 axis and the calculation of an OATS equivalent result is performed. For the TDEMI® M and M+ devices in combination with the GTEM Cell, there is also a special GTEM action pack available.

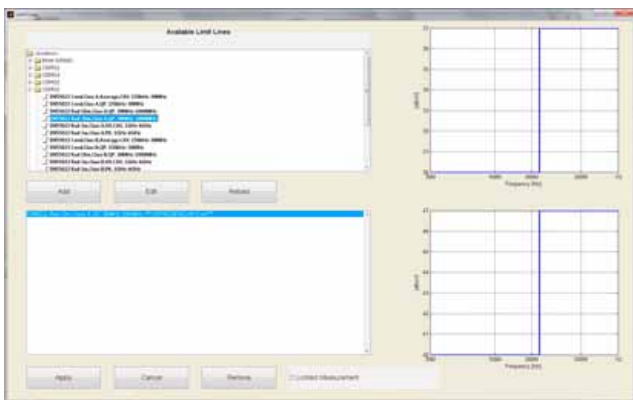


Fig. 1 – EMI 64k Software - Limit lines selection menu

Due to a full support of 64-Bit operating systems and nowadays modern Multi Core CPUs also huge amounts of data can be managed simply and safely as well as fast and efficient.

The format of the stored measurement data of the EMI 64k software is compatible with Matlab and therefore highly flexible in its use and also extendable very easy by using drivers and test setups.

The information of measurement data, test setup, hardware driver, transducer, limit lines as well as test procedures is

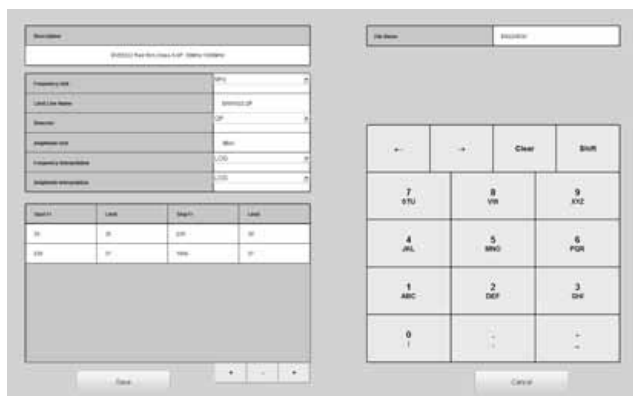


Fig. 2 – EMI 64k Software - Manual editor for limit lines

stored. These files contain the defined test procedures and hardware drivers. GAUSS INSTRUMENTS® offers tailored solutions for specific applications.

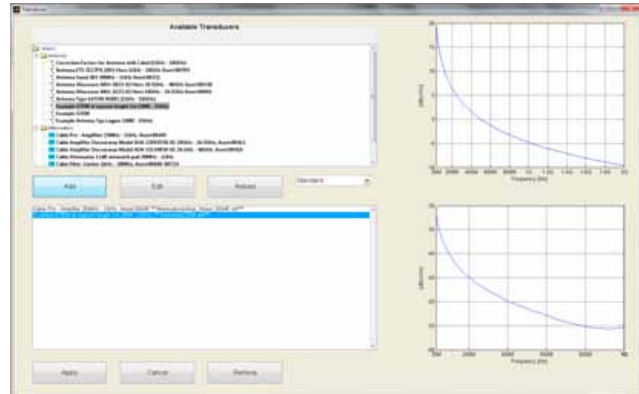


Fig. 3 – EMI 64k Software - Transducer selection menu

The EMI 64k is a bundle of packages that can be fully configured according to the customers requirements. The great advantage is the following: You only pay for the features that you need and you can upgrade anytime later with additional features that you need for future tests.

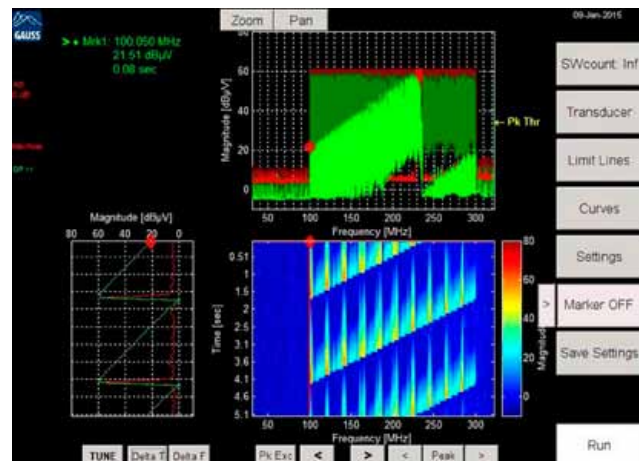


Fig. 4 – Screenshot Quasi-Peak Real-time Mode for Automated Measurements

Whether for conducted or radiated emission measurements, for your GTEM cell measurements, your measurements with your SLIDE or a combination of several modules, we provide an optimum and cost effective software solution tailored to your requirements.

- These EMI 64k modules are available and combinable:
- EMI 64k Basic Package (Requirement for all further packages)
  - EMI64k-GTEM
  - EMI64k-SLIDE
  - EMI64k-Rad
  - EMI64k-RadUF

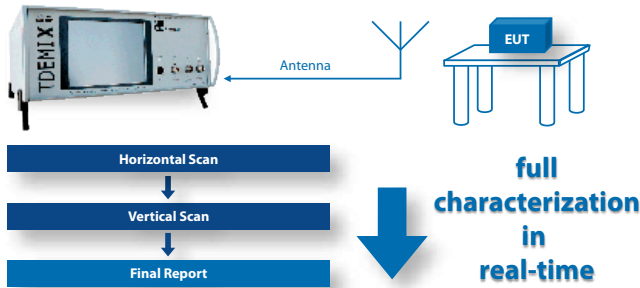


Fig. 5 – Example of a radiated measurement in an ALSE according to CISPR 25

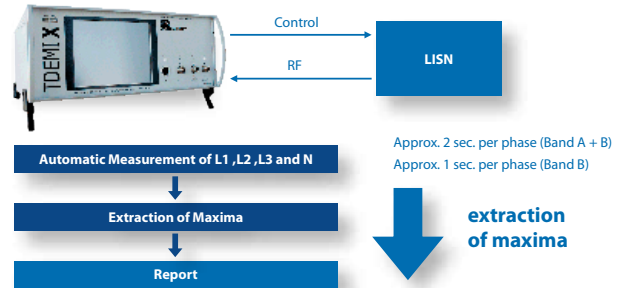


Fig. 6 – Example of a conducted emission measurement

## EMI 64k Basic Package for radiated & conducted emission measurements

The EMI 64k basic package provides the possibility to perform radiated and conducted emission measurements. The test results can be archived and later evaluated. The generation of reports via the embedded report generator is a crucial feature for daily EMI testing.

With the basic package, a software suite is available that provides limit lines, transducer sets and the definition of scans. The transducers can be combined to transducer sets, according to the available hardware setup. Additional commands to control the relay switch matrix can be added to a hardware setup. For traceability reasons the measured data are stored together with the hardware setup, the transducer, the limit lines as well as the documentation of the device under test.

With such features it is possible to recall previous settings and measurement data. After reloading the data, the measurement can be repeated. Different measurements can be carried out in a sequence.

For conducted EMI testing the phase of the LISN can be controlled via the LISN port of the TDEMI® (Option LISN-UG). The LISN port can be configured to all commercially available LISN,

in combination with a control cable (Option LISNCable-UG).

A report generator allows to generate the documentation and data representation according the EMC standards. The measurement results are evaluated according to the limit lines. The selection of individual peaks, as well as peak search according to subranges or peaks allow to achieve maximum flexibility for data representation. In the test report the measurement data is presented in a graph as well as in a table. Pass and Fail decision according to the limit lines is performed within the report generation. All relevant settings of the TDEMI® as well as transducer and limit lines are documented. Previously measured data can be stored and later recalled on a different PC. For this data the generation of the test report is anytime possible.

Due to an open file format, measurement data can also be used and imported by other programs e.g. Mathworks® Matlab, Octave or Microsoft® Excel.

The EMI 64k Basic Package can be extended by further modules that are tailored to specific tests.

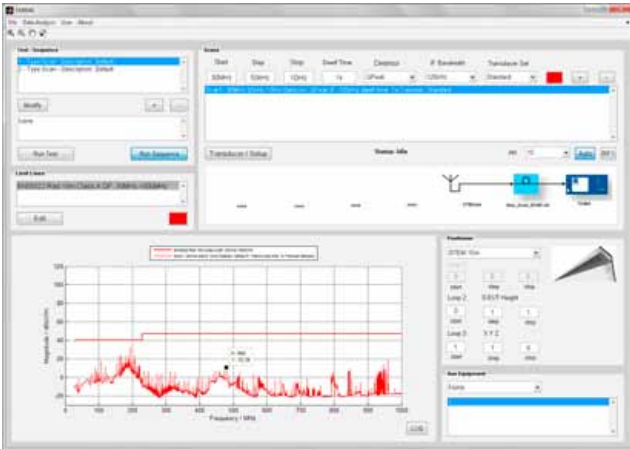


Fig. 7 – Screenshot EMI 64k Software Suite - GTEM Module

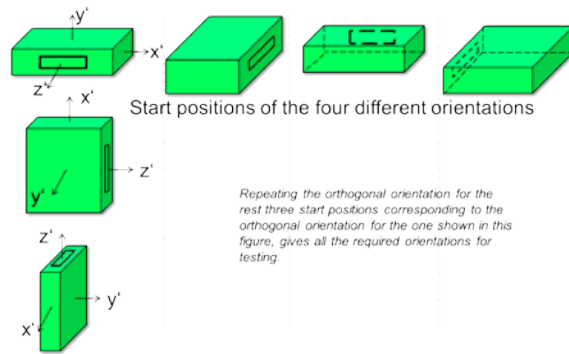


Fig. 8 – Axes orientations of a typical EUT

# EMI 64k – GTEM Module

## Software package for GTEM measurements

The Module EMI64k-GTEM is the software package for your automatized emission measurements and evaluation with a GTEM cell.

The software supports measurements with your GTEM cell at 3 respectively 6 Axis ((x, y and z) as well as (-x, -y and -z)) on your device under test.

After the measurement is performed at all orientations, the resultant magnitude using the GTEM-to-OATS correlation algorithm, is computed. Afterwards the OATS equivalent measuring result is displayed. The conversion is performed fully automated, just the data of the GTEM cell has to be insert and stored one time.

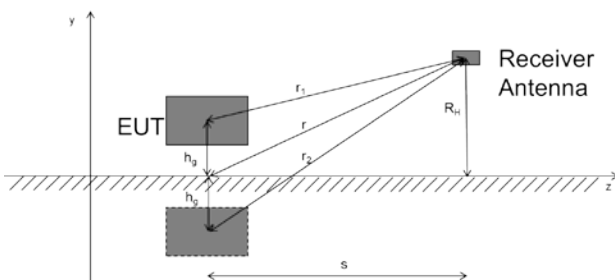


Fig. 9 – OATS geometry

A report can be generated for the individual measurements of the 3 or 6 axis as well as for OATS resultant. For the OATS resultant the limit lines according to the product standards can be used. All available features like detection of peaks as well as the comparison with the limit lines for all values are available.

EMI Testing with EMI64k-GTEM is a very fast solution. For the measurement of 3 axis with full quasi-peak measurement, the total test time with a TDEMI® M and G is about less than 4 minutes. With the TDEMI® X the total test time is less than one minute.

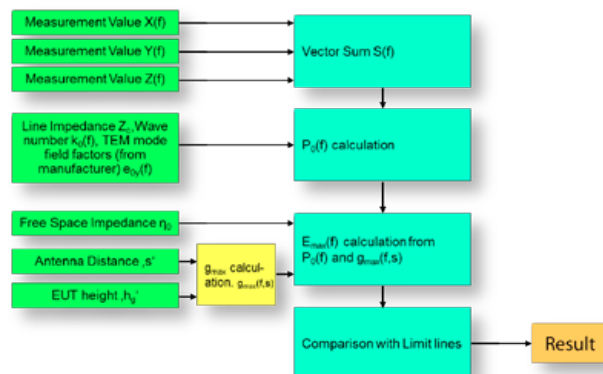


Fig. 10 – Correlation of GTEM and OATS measurement



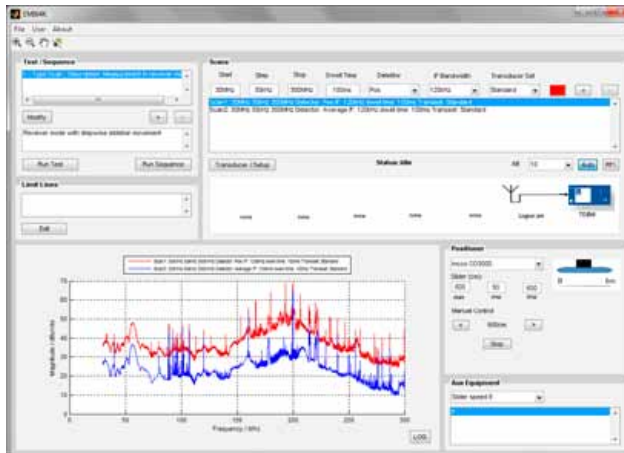


Fig. 11 – Screenshot EMI 64k Software Suite - SLIDE Module

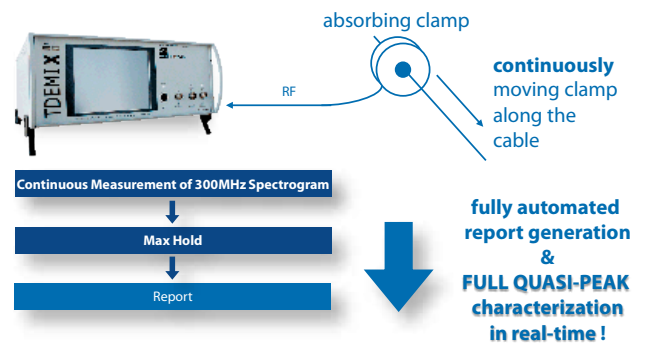


Fig. 12 – Test setup of a disturbance power measurement

# EMI 64k – SLIDE Module

## Software package for disturbance power measurements

The Module EMI64k-SLIDE is the software package for your fully automated disturbance power measurements in real-time by using a slide and absorbing clamp.

The EMI64k provides two test procedures according to CISPR 16-2-2.

A test procedure that is available for all TDEMI® systems is the stepwise movement of the slide with fixed steps and measurement with quasi-peak and CISPR AVG over the frequency range 30 MHz - 300 MHz. This procedure is fully automated and provides a complete representation of data at all position with quasi-peak and CISPR AVG. In comparison to pre-scanning and final maximization the procedure is faster and more reliable.

A test procedure that is available for the TDEMI® X is the continuous measurement with quasi-peak and CISPR Average over a real-time band of 325 MHz. The TDEMI® X can sample and evaluate the data for two parallel CISPR detectors continuously as pointed out in CISPR 16-1-1. This unique feature provides the possibility to perform that measurement at all frequencies in parallel and continuously without any gaps. While the measurement is performed continuously the slide is also moved in a continuous way. The individual spectras

are stored in a spectrogram. A synchronization of the spectrogram and position of the slide and the spectrogram is performed. A fully automated and full-compliance measurement as well as an evaluation in the range of 30 MHz - 300 MHz according to CISPR 14 is therefore possible for the first time in real-time with your TDEMI® X measurement system.

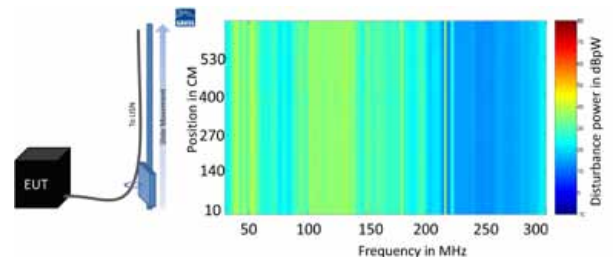


Fig. 13 – Automatization of a slide and Real-time measurement

The measurement data can be stored and processed by the report generator. The visualization of the test result in a position magnitude representation over the complete frequency range, as well as max hold and data presentation of the maxima in a table is possible. This data can be analyzed used to locate the root cause of EMI problems. The position of the absorbing clamp also gives an idea about the impedance of the source, when correlated with the frequency and the corresponding wavelength.



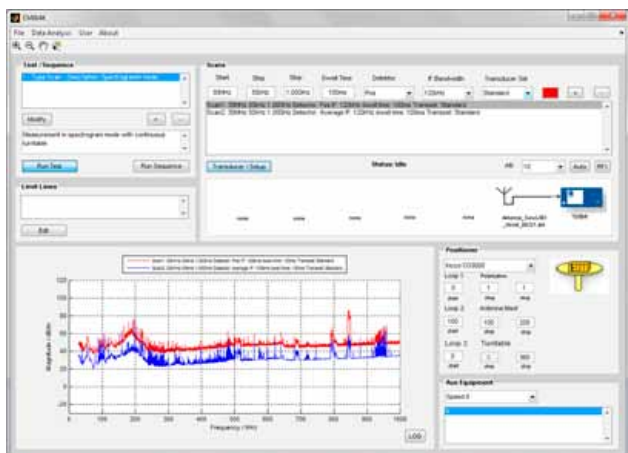


Fig. 14 – Screenshot EMI 64k Software Suite - Rad Module

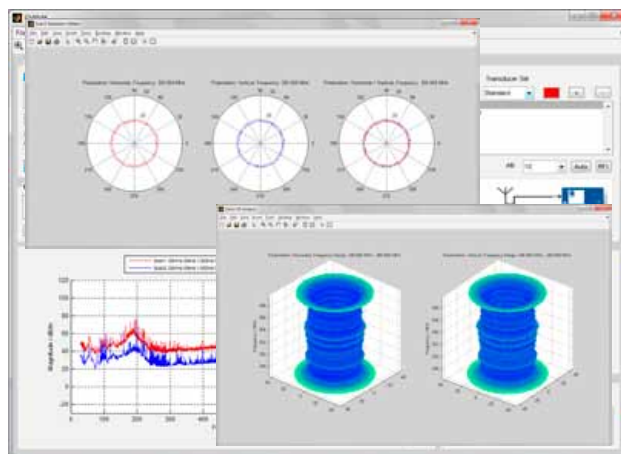


Fig. 15 – Screenshot EMI 64k Software Suite - Rad Module presentation in 2D and 3D

## EMI 64k – Rad Module & EMI 64k – RadUF Module Software package for radiated emission measurements

The module EMI64k-Rad is a software package to perform fully automated radiated emission measurements with all TDEMI® systems. The module contains procedures to perform automated EMI testing on an open area test site (OATS), a semi anechoic chamber (SAC) as well as in a full anechoic room (FAR). In addition EMI testing in an absorber-lined shielded enclosure (ALSE) environment is also supported.

During measurements in an ALSE the polarization of the antenna is typically automated. For each polarization the measurements are performed and documented. In a full anechoic room the testing is performed at a single height and emission is investigated over several positions. The software allows to perform measurements in a stepped way at individual positions. Such a measurement can be carried out either with the peak detector for pre-scanning or directly with the final detector. Selection of individual critical frequencies and final maximization can be carried out. If the test is required in a SAC or OATS in addition a height scan is performed.

The obtained measurement results can be stored and evaluated. A measurement presentation in 3D and 2D charts is possible. Also the test results including transducer, limit line and position of maximum emission can be presented in a table.

The EMI64k-RadUF module is the software package that supports the novel features of the TDEMI® X series like real-time spectrogram up to 645 MHz bandwidth.

Technologies like continuous gapless processing and continuous data streaming provide the possibility to run the turntable in a continuous way and synchronize the turntable position with the spectrogram. Such a procedure is extremely fast and allows to perform the measurement in a FAR within two segments up to 1 GHz. The total test time is reduced from hours down to several seconds. For measurements above 1 GHz, Multi GHz real-time scanning (Option UFSPA-UG) allows to reduce the test time dramatically. In addition the complete radiation pattern is measured at all frequencies with quasi-peak. Data can be presented as 3D or 2D charts as well as tables for the report.

In a SAC in addition a height scan has to be performed. This either can be done in a way that over several heights and over all angular positions the measurements are carried out, and a full characterization is performed. A typical test takes about 20-30 minutes. For faster testing a data reduction may be performed in a way that the height scan is only performed at the angular positions where suspicious emissions have been detected.

Requirement for this package is besides the basic package an EMI Receiver of the TDEMI® X series with the option QCDS-UG and 645M-UG and when indicated UFSPA-UG.

# Specifications

## EMI 64k Software Suite

Min. system requirements	<ul style="list-style-type: none"> <li>› min. Pentium 4</li> <li>› 512 MB RAM</li> <li>› 500 MB free hard disk space</li> </ul>
Recommended system requirements	<ul style="list-style-type: none"> <li>› Multi core processor</li> <li>› 2 GB RAM or more</li> <li>› Capable graphics board for 3D graphic representation</li> <li>› 2 GB free hard disk space or more</li> </ul>
Supported operating systems	<ul style="list-style-type: none"> <li>› Windows® XP (32 and 64 Bit)</li> <li>› Windows® 7 (32 and 64 Bit)</li> <li>› Windows® 8 (32 and 64 Bit)</li> <li>› Windows® 8.1 (32 and 64 Bit)</li> <li>› Windows® 10 (32 and 64 Bit)</li> </ul>
Control possibilities	<ul style="list-style-type: none"> <li>› GPIB (IEEE-488)</li> <li>› Ethernet</li> <li>› Sub-D 25-pin (Parallel Port)</li> <li>› RS232 (Serial Port)</li> <li>› USB</li> </ul>
Supported devices and controller	<ul style="list-style-type: none"> <li>› no limitations</li> <li>› Matlab script must be available or be created</li> </ul>
Supported manufacturer	<ul style="list-style-type: none"> <li>› Frankonia</li> <li>› Incco Systems</li> <li>› Maturo</li> <li>› Sunol Sciences</li> <li>› TDK</li> <li>› Support of further manufacturer if documentation about interface and control commands are available</li> </ul>
Supported Standards	<ul style="list-style-type: none"> <li>› CISPR</li> <li>› EN</li> <li>› ETSI</li> <li>› FCC</li> <li>› VCCI</li> <li>› VDE</li> <li>› MIL-STD-461</li> <li>› DO-160</li> <li>› IEC61000-6-3</li> <li>› IEC61000-6-4</li> <li>› Manufacturer standards (upon request)</li> </ul>
Export format of test reports	<ul style="list-style-type: none"> <li>› as *.doc or *.docx file (Microsoft® Word licence is required)</li> </ul>
Module packages	<ul style="list-style-type: none"> <li>› EMI 64k Basic Package Software package for conducted and radiated emission measurements</li> <li>› EMI64k-GTEM Software package for GTEM measurements (Requirement: EMI 64k Basic Package)</li> <li>› EMI64k-SLIDE Software package for disturbance power measurements (Requirement: EMI 64k Basic Package)</li> <li>› EMI64k-Rad Software package for radiated emission measurements (Requirement: EMI 64k Basic Package)</li> <li>› EMI64k-RadUF Software package for radiated emission measurements - ultra fast - (Requirement: EMI 64k Basic Package as well as TDEMI® X with option QC DSP-UG and 645M-UG, if so UFSPA-UG)</li> </ul>

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### EMI 64k Basic Package

Software package for conducted and radiated emission measurements

Requirements for remote control LISN: LISN-UG and LISNCable-UG

Supported Standards

- › CISPR
- › EN
- › FCC
- › VDE
- › MIL461
- › DO160
- › IEC61000-6-3
- › IEC61000-6-4
- › Manufacturer Standards

Main functions

- › Receiver Scanning
- › Limit Lines
- › Transducer
- › Setups
- › Automated generation of reports
- › Documentation as well as evaluation against limit lines

---

### EMI64k-GTEM

Software package for GTEM measurements according to EN6100-4-20

Requirements EMI 64k Basic Package

Main functions

- › Measurements at 3 axis / 6 axis (x, y and z) and (-x, -y and -z)
- › Automated generation of reports
- › Documentation as well as evaluation against limit lines

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### EMI64k-SLIDE

Software package for disturbance power measurements

Requirements EMI 64k Basic Package

Main functions

- › Automatic control of slide
- › Automated generation of reports
- › Documentation as well as evaluation against limit lines

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### EMI64k-Rad

Software package for radiated measurements

Requirements EMI 64k Basic Package

Main functions

- › Automatic positioning and control of turntable and antenna mast
- › Height and angular scan as well as polarization switch
- › Measurements and display of whole radiation pattern
- › Automated generation of reports
- › Documentation as well as evaluation against limit lines

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### EMI64k-RadUF

Software package for radiated measurements - ultra fast -

Requirements

- › EMI 64k Basic Package
- › TDEMI® X with option QCDS-UG and 645M-UG
- › if so UFSPA-UG

Main functions

- › Automatic positioning and control of turntable and antenna mast
- › Height and angular scan as well as polarization switch
- › Ultra fast maximization and complete characterisation up to 1 GHz by use of Real-time spectrogram mode (Quasi-peak and CISPR-Average) in two segments
- › Ultra fast maximization above 1 GHz by use of Multi-GHz Real-time analyzer mode (UFSPA-UG)
- › Measurements and display of whole radiation pattern
- › Automated generation of reports
- › Documentation as well as evaluation against limit lines

# FULL & PRE COMPLIANCE

GAUSS INSTRUMENTS®  
TDEMI® TECHNOLOGY



FULL COMPLIANCE  
TDEMI® EMI Receiver

## X&G Series

### SPECIAL FEATURES

- › Real-time Spectrum Analyzer
- › Oscilloscope
- › Signal Analyzer

# Multi<sup>GHz</sup>

Real-Time Scanning

[ X Series ]

# 645<sup>MHz</sup>

Real-Time Bandwidth

[ X Series ]

# 325<sup>MHz</sup>

Real-time Bandwidth

[ X Series ]

# 162.5<sup>MHz</sup>

Real-Time Bandwidth

[ X&G Series ]

### INFO

- [ X ] Extreme
- [ G ] Standard

# DC - 1/3/6/18/26.5/40<sup>GHz</sup>

Frequency Ranges

PRE COMPLIANCE  
TDEMI® EMI Receiver

## M&M+ Series

Upgradeable to Full Compliance

### SPECIAL FEATURES

- › Real-time Spectrum Analyzer
- › 12V Power Supply & Battery Pack

# 162.5<sup>MHz</sup>

Real-Time Bandwidth

[ M&M+ Series ]

### INFO

- [ M ] Mobile
- [ M+ ] Mobile Plus

# 10<sup>Hz</sup> - 1/3/6<sup>GHz</sup>

Frequency Ranges

[ M&M+ Series ]

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# ABOUT

## GAUSS INSTRUMENTS® TDEMI® TECHNOLOGY

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Established in the year 2007, the company GAUSS INSTRUMENTS is manufacturer of highest performance EMC test equipment and provides advanced EMI test solutions pushing your product development and testing capabilities ahead, and speeding up your time to market cycles. With GAUSS putting the turbo in EMC since 2007, product certifications as well as pre-certification tasks have become as simple as they had never been before. Across all over the world we provide our unrivaled products, advanced test solutions, and services – together with a local service partner of our worldwide network of highly qualified and dedicated team and partners.

GAUSS INSTRUMENTS traces its technical roots to basic research on short time Fourier analysis and synthesis begun in the 70's. In the early 2000's the founders of GAUSS INSTRUMENTS invented a measurement technology combining time-domain and FFT based techniques and superheterodyne technology in a massively parallel topology - the so called TDEMI® Technology which has become the new state-of-the-art in the world of EMI testing in the meanwhile. TDEMI® Technology is a registered brand and patented technology of GAUSS INSTRUMENTS. It is provided to you only by GAUSS or its' official certified local partners. Joint research projects were performed in the field of time-domain measurements of electromagnetic interferences (EMI) together with well-respected research institutes and universities. Official metrology labs, testing and certification institutes, as well as leading automotive OEMs and many other blue chip companies selected GAUSS as innovative cooperation partner and reliable solution provider for their demanding test requirements during market certification as well as product development but also research investigations. Over the past two decades about 100 publications, transaction papers, white papers and journal articles were published on selected topics of time-domain EMI measurements and EMC testing as well as intelligent methods for automated testing. As inventor of the TDEMI® Measurement Systems which use ultra high-speed analog-to-digital converters and pretty much advanced real-time digital signal processing methods we enable ultra fast tests and measurements for electromagnetic compliance that fulfill the increasing demands for measurements of today's ever increasing density and complexity of electronic equipment and systems.

And our innovation continues - combining our deep knowledge of real-time

digital signal processing, millimeter, and microwave technologies to develop receiver and analyzer solutions combining and blurring the lines between previously discrete test instruments while delivering speeds and analysis capabilities several orders of magnitude greater than any other measurement equipment available. Combining both the advantages of the 'old' analog and the 'new' digital world we keep your testing up-to-date and beyond - pushing it to the next level and ready prepared for the future coming.

Today GAUSS offers a wide range of solutions from DC to 40 GHz for all kind of test requirements in the world of emission testing - full compliance solutions as well as pre-certification solution or even customized solution perfectly fitting to your specific requirements pushing your testing capabilities ahead. We provide customized signal processing solutions based on our well-proven hardware and DSP platforms, as well as unique software solutions. With a strong knowledge in real-time and digital technology, millimeterwave and microwave technology we develop systems that are absolutely outstanding in the field of test and measurement. E. g. the fastest real-time FFT based measuring instruments on the planet with a full compliance real-time analysis bandwidth of 645 MHz as well as classical superheterodyne technology to name a few only of our outstanding and outperforming features for full compliance testing and signal analysis.

It is our true passion to develop and to produce highest quality and highest performance instruments made in Germany. With leading-edge technology we're fulfilling all the today's requirements of complex measurement tasks and beyond. Our dedicated goal and ultimate passion is to provide our customers with all the additional benefits and full competitive advantages of accelerated testing, the optimum measurement procedures, unrivaled measurement speed and accuracy - all together at the same time. Empowered by our leading test solutions and patented TDEMI® Technology, we're boosting the capabilities of today's product development and significantly speeding up the time to market of your products. Thus, your product certification as well as pre-certification challenges become just a walk-over now!

Feel the experience and make your life easy!

Driven by our ultimate mission: **Smarter testing for a smarter world.**

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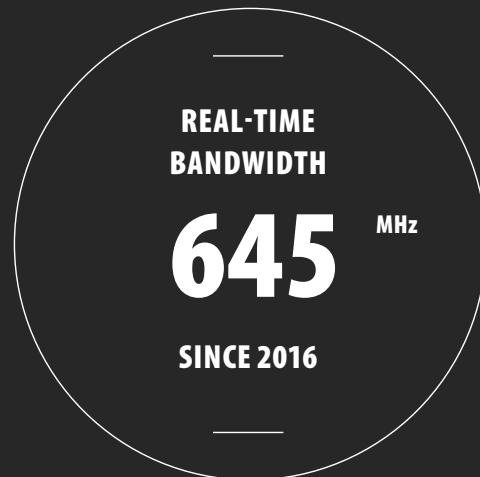
Specifications subject to be changed without notice.  
Technically conditioned color divergences are possible.

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