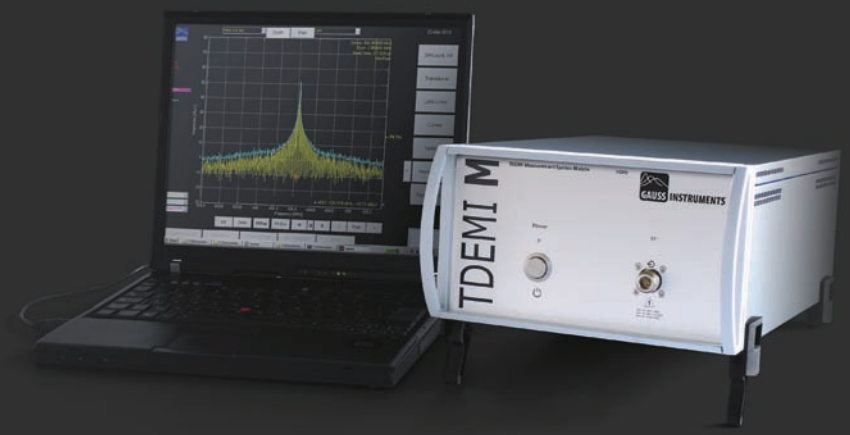
TDEMI M

- pre-certification 4000x faster than by conventional EMI receivers
- compact design and +12V supply for mobility and on board testing
- 162.5 MHz full gapless real-time analysis bandwidth



New dimensions for pre-certification. The TDEMI M product line of GAUSS INSTRUMENTS is a very compact designed instrument especially for mobile use outside or in labs on developers workbench providing a great variety of functionalities. By a standard +12V supply it can be easily used for onboard testing, e.g. in vehicles or aircrafts. Designed for pre-certification tasks the TDEMI Mobile (TDEMI M) provides the absolutely unrivaled advantages in speed and performance of the well known and approved GAUSS INSTRUMENTS time-domain and RF technology. Thus, pre-certification investigations can be performed up to 4000 times faster than by conventional receivers. The instruments can be ordered for the frequency ranges up to 1 GHz, 3 GHz or 6 GHz starting from 9 kHz or with MIL/DO option even starting from 10 Hz.

The fully gapless real-time analysis bandwidth of 162.5 MHz of the spectrogram mode makes the TDEMI M Series unique in the instrumentation market for pre-certification and provides a perfect tool for real-time EMC debugging during product development and testing. It supports the user in detecting, localizing, observing and analyzing emissions and in finding solutions for optimizing EMI of components and systems in civil applications as well as in military and avionic industries (Option MIL/DO-UG).

The receiver mode of the TDEMI M instruments can be used for easy and ultra-fast pre-certifiaction EMC tests according to CISPR, MIL461 and DO160 standard. By performing a measurement at several thousands of frequency points the TDEMI M series allows to reduce the overall test time up to a factor of 4000 in comparison to traditional superheterodyn based receivers and thus supporting shorter time to market cycles. At the same time high reliable test results with reduced measurement uncertainty by not missing any disturbance or emission, e.g. intermittent or single events ensure a very good correlation with external certification labs and avoid additional costs which makes the TDEMI M most cost effective. Measurements can be fully automated and all measurement data can be stored, documented and also evaluated automatically, e.g. by a report generator (RG-UG Option).

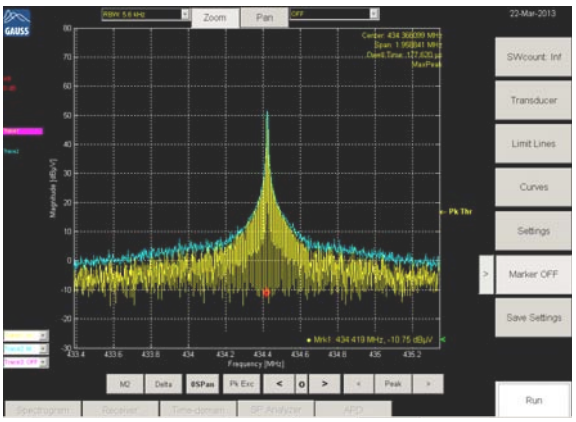


Fig. 1 – **Measurement of a remote car key in spectrum analyzer mode. Transmitting frequency located at 434.4 MHz.**

TDEMI M Specifications

FREQUENCY RANGE

TDEMI M1	9 kHz – 1GHz
TDEMI M3	9 kHz – 3 GHz
TDEMI M6	9 kHz – 6 GHz

(extendable down to 10 Hz – 9kHz, Option MIL/DO-UG)

REFERENCE OSCILLATOR

TCXO 12.8 MHz

PRESELECTION

150 kHz - 320 MHz
320 MHz - 1,1 GHz
1.1 GHz - 3 GHz, 6 GHz respectively

RECEIVER MODE (CISPR Standard)

IF Bandwidth 200 Hz, Band A

IF Filter: Gaussian Shaped Filter, Specifications according to CISPR 16-1-1, Bandwidth Deviation < 10 %
Detector Modes: Peak, Quasi-Peak, Average, RMS, CISPR-AV
Displayed Average Noise Level (Input Level < 85 dBµV Sinus): < 0 dBµV
Measurement at about 700 Frequencies in parallel
Frequency Step < 100 Hz

IF Bandwidth 9 kHz, Band B

IF Filter: Gaussian Shaped Filter, Specifications according to CISPR 16-1-1, Bandwidth Deviation < 10 %
Detector Modes: Peak, Quasi-Peak, Average, RMS, CISPR-AV
Displayed Average Noise Level (Input Level < 65 dBµV Sinus): < -12 dBµV
Measurement at 4096 Frequencies in parallel
Frequency Step < 400 Hz

IF Bandwidth 120 kHz, Band C/D

IF Filter: Gaussian Shaped Filter, Specifications according to CISPR 16-1-1, Bandwidth Deviation < 10 %
Detector Modes: Peak, Quasi-Peak, Average, RMS, CISPR-AV
Displayed Average Noise Level (Input Level < 65 dBµV Sinus): < 0 dBµV
Measurement at 1024 Frequencies in parallel
Frequency Step < 800 Hz

IF Bandwidth 1 MHz, Band E

IF Filter: Gaussian Shaped Filter, Specifications according to CISPR 16-1-1, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS, CISPR-AV
Displayed Average Noise Level (Input Level < 65 dBµV Sinus): < 10 dBµV 1 GHz – 3 GHz, 6 GHz respectively
Measurement at 128 Frequencies in parallel
Frequency Step < 800 Hz

RECEIVER MODE (MIL/DO Standards, with Option MIL/DO-UG)

IF Bandwidth 10 Hz (10 Hz - 10 kHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < 40 dBµV, 10 Hz - 500 Hz
< 25 dBµV, 500 Hz - 1 kHz

IF Bandwidth 100 Hz (1 kHz - 150 kHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < 30 dBµV

IF Bandwidth 1 kHz (10 kHz - 30 MHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < 5 dBµV, 10 kHz - 150 kHz
< -24 dBµV, > 1 MHz

IF Bandwidth 10 kHz (150 kHz - 1 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < -14 dBµV, 1 MHz - 1 GHz

IF Bandwidth 100 kHz (150 kHz - 1 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < -2 dBµV, 1 MHz - 1 GHz

IF Bandwidth 1 MHz (150 kHz - 6 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < 10 dBµV, 1 MHz - 6 GHz

WEIGHTED REAL-TIME SPECTROGRAM

Weighted Spectrogram Mode	Peak, Average, RMS
Time-domain	Fully gapless
Frequency Step	158 kHz for 120 kHz 1.2 MHz for 1 MHz
Frequency Step Interpolation	40 kHz for 120 kHz 300 kHz for 1 MHz
Frequency Span	> 150 MHz
IF Bandwidths CISPR	200 Hz, 9 kHz, 120 kHz, 1 MHz
IF Bandwidths MIL/DO	10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz
Minimum Time Step	50 ms

TIME-DOMAIN ANALYSIS (RF)

Bandwidth	1 GHz
Sampling Rate	2.6 GS/s
Acquisition Memory	32000 Samples

Trigger Edge, Post- and Pre-Trigger Function, Amplitude Trigger

ABSOLUTE MAXIMUM RATINGS (ATTENUATION 0 dB)

Maximum DC Input Level, Pulse	6 V
RF-CW Signal	120 dBµV

INDICATION (ATTENUATION 0 dB)

Maximum DC Input Level, Pulse	5 V
RF-CW Signal	65 dBµV

ATTENUATOR

0 - 50 dB, 10 dB steps

INTERMODULATION, NONLINEARITIES

CW Signals:	Two Tone	< -40 dB
	Harmonics (> 40 dBµV, > 1 MHz)	< -40 dB
	Inherent Reception Points	< -40 dB
	Total Dynamic Range (120 kHz IF Bandwidth)	> 120 dB

INHERENT RECEPTION POINTS (ATTENUATION 0 dB)

Inherent Reception Point 1⁄4 ADC Sampling Rate:
<< 25 dBµV (using Multi-sampling < -15 dBµV)
Further Inherent Reception Points
<< 5 dBµV (using Multi-sampling < -15 dBµV)

MEASUREMENT TIME

1 ms – 60 s (Average, RMS)
1 ms – infinite (Peak, Quasi-Peak)

MEASUREMENT ACCURACY

Dynamic Range: Band A, B, C, D, E (Ed. 3.1)
Pulses Indication according to CISPR 16-1-1

RF INPUT (50 Ohm, N Standard Input)

VSWR < 3.0, 1 GHz - 6 GHz
VSWR < 2.0, 9 kHz - 1 GHz, with 0 dB Attenuation

REMOTE CONTROL

via external PC, commands according to SCPI Standard

SYSTEM REQUIREMENTS (External Laptop or Computer)

Processor: Intel Celeron M 1.86 GHz or later (or comparable manufacturer)
RAM: 1 GB RAM, DDR2 (667 MHz) or later
Hard Disk: > 20 GB
Display: High Color, 800x600 Pixel or higher resolution
Interface: USB2.0
Operating Sytem: Windows XP or Windows 7 only

POWER SUPPLY

+11 V .. +14 V DC
230 V +/-20% 50 Hz or 110 V +/-10% 60 Hz (External Power Supply)
Max. Power Consumption ca. 50 W

WEIGHT

< 10 kg

MAIN OPTIONS

LISN - UG	Controller for Measuring Accessories (TTL, 5V)
COM - UG	Full Compliance for Band A, B (acc. to CISPR 16-1-1)
MIL/DO - UG	Frequency Extension down to10 Hz, IF Bandwidths 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz
RG - UG	Report Generator
CAL - UG	Manufacturer Calibration with Certificate
SAM - UG	Spectrum Analyzer Mode, fully integrated
CLICK M - UG	Click Rate Analyzer, fully integrated
SLIDE - UG	Software for Disturbance Power Measurements