TDEMI 26G

- 4000x faster than conventional EMI receivers
- Measurement according to MIL and DO standards starting from 10 Hz
- Real-time analysis of single events

The TDEMI 26G system covers the frequency range 10 Hz to 26.5 GHz in its standard configuration and is ready for measurements in civil applications and especially for test ing in military applications and also avionics. It can be used for EMC tests according to CISPR, MIL461 and DO160 standard. The huge computation power of the digital signal processing unit of the TDEMI allows to reduce test time up to a factor of 4000 in comparison to traditional superheterodyn based receivers. A fast measurement at all frequencies and with higher frequency selectivities at the same time can be performed yielding in a even further reduced measurement uncertainty.

Especially in the lower frequency range up to several hundred MHz a large number of frequency points have to be measured. The parallel digital implementation of several thousand receivers using the short-term fast Fourier transform (STFFT) allows the TDEMI to reduce the overall testing time significantly. Especially for longer dwell times the scan time remains very short compared to superheterodyne EMI receivers and right after the results measured at all frequencies can be stored and documented.

The availability of the IF bandwidths according to MIL461 and DO160 are also in the weighted spectrogram mod-eand its real-time analysis bandwidth of up to 162.5 MHz makes it an ideal tool for EMC debugging. It supports the user in detecting, localizing and analyzing emissions and in finding solutions for reduction EMI of components and systems for military and avionic industry.

The noise floor of a TDEMI 26G in the Frequency 1.15 GHz up to 6 GHz is typically below 3 dBµV (1 MHz IF bandwidth, average detector) which is significantly lower than of a conventional EMI receiver. In the frequency range of 6 GHz - 26.5 GHz by an additional low-noise preamplifier the sensitivity of the TDEMI can be further improved. The recommended option LN-UG26G lowers the noise floor in the frequency range 6 GHz - 26.5 GHz below 22 dBµV.

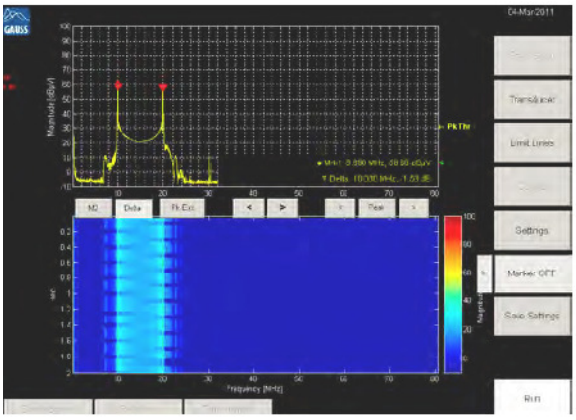

Fig. 31 – **Measurement of a frequency hopping signal at 10 MHz and 20 MHz respectivley.**

TDEMI 26G Specifications

FREQUENCY RANGE
10 Hz – 26.5 GHz

REFERENCE (OCXO)

Aging	< ± 3.5 ppm / 15 years	
Temperature Drift (0 .. 60° C)	± 1 x 10e-8	
SSB Phase Noise (1 Hz BW)	1 Hz	-95 dBc/Hz
(typ. @ 12.8 MHz)	10 Hz	-120 dBc/Hz
	100 Hz	-140 dBc/Hz
	1 kHz	-145 dBc/Hz

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 (typ. -3 dBµV)
Measurement at about 700 Frequencies in parallel
Frequency Step < 100 Hz

IF Bandwidth 9 kHz

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):
< -15 dBµV (typ. -19 dBµV)
Measurement at 4096 Frequencies in parallel
Frequency Step < 400 Hz

IF Bandwidth 120 kHz

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):
< -3 dBµV (typ. -6 dBµV)
Measurement at 1024 Frequencies in parallel
Frequency Step < 800 Hz

IF Bandwidth 1 MHz

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):
< 6 dBµV 1 MHz – 1 GHz
< 8 dBµV 1 GHz – 1.15 GHz
< 3 dBµV 1.15 GHz – 6 GHz
< 15 dBµV 6 GHz - 18 GHz (with LN - UG26G)
Measurement at 128 Frequencies in parallel
Frequency Step < 800 Hz

RECEIVER MODE (MIL/DO Standard)

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)
< -27 dBµV > 1 MHz

IF Bandwidth 10 kHz (150 kHz - 26.5 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < -17 dBµV > 1 MHz

IF Bandwidth 100 kHz (150 kHz - 26.5 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < -5 dBµV (1 MHz - 1 GHz)

IF Bandwidth 1 MHz (150 kHz - 26.5 GHz)

IF Filter: Gaussian Shaped Filter, Bandwidth Deviation < 10 %
Detector Modes: Peak, Average, RMS
Displayed Average Noise Floor typ.: < 6 dBµV 1 MHz - 1 GHz
< 8 dBµV 1 GHz - 1.15 GHz
< 3 dBµV 1.15 GHz - 6 GHz
< 22 dBµV 6 GHz - 26.5 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

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 - 55 dB, 5 dB Steps

INTERMODULATION, NONLINEARITIES

CW Signals: Two Tone	< -40 dB (typ.	-53 dB)
Harmonics (> 40 dBµV, > 1 MHz)	< -40 dB (typ.	<-50 dB)
Inherent Reception Points	< -40 dB (typ.	<-50 dB)
Total Dynamic Range (120 kHz IF Bandwidth)	> 140 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 µs – 60 s (Average, RMS)
1 µs – infinite (Peak, Quasi-Peak, CISPR-Average, CISPR-RMS-AV (Option))

MEASUREMENT ACCURACY

Sinusoidal Signals (9 kHz - 1 GHz)	± 1 dB
Pulses according to CISPR 16-1-1	

RF INPUT
50 Ohm
VSWR < 3.0 typ., 1 GHz - 26.5 GHz
VSWR < 1.2 typ., 10 Hz - 1 GHz, with 10 dB Attenuation

REMOTE CONTROL, INTERFACES
Remote control command set according to SCPI Standard
Ethernet/LAN, USB, RS232, GPIB (Option GPIB-UG), PS/2, VGA, HDMI, Audio

DISPLAY, USER INTERFACES
Resolution 800 x 600 pixels, 8.4", True Color (16.78 Mio colors)
Touchscreen

PC
Intel Core i, 2 GB RAM, 120 GB Hard Disk, or higher
Operating system: Windows XP or Windows 7

POWER SUPPLY
230 V +/-20%, 50 Hz or 110 V +/-10%, 60 Hz

WEIGHT
ca. 25 kg

MAIN OPTIONS

LN - UG26G	Low-noise Preamplifier (6 GHz - 26.5 GHz)
PRE - UG	Preselection Band A
SW - UG	Preselection Band B
LISN - UG	Controller for Measuring Accessories (TTL, 5V)
LISNCable - UG	Customized Control Cabel for Accessories, e.g. LISN
TG - UG	Carrying Handle
PC - UG	Powerful multicore processor (Intel Core i or comparable) for advanced computing power, doubled hard disk capacity, doubled RAM size
KB - UG	Compact Keyboard incl. Touchpad
RG - UG	Report Generator
CAL - UG	Manufacturer Calibration with Certificate
CALD - UG	DAkks Calibration with Certificate
CLICK - UG	Click Rate Analyzer, fully integrated
SLIDE - UG	Software for Disturbance Power Measurements