

# CWS 500N1.3

## CONTINUOUS WAVE SIMULATOR, 80W



### FOR TESTS ACCORDING TO ...

- > BMW GS 95002 (2010)
- > DaimlerChrysler DC-10614
- > DaimlerChrysler DC-11224
- > EN 300329
- > EN 300340
- > EN 300342-1
- > EN 300386 V1.3.2
- > EN 301489-1
- > EN 301489-24
- > EN 301489-7
- > EN 55024
- > EN 61000-6-1
- > EN 61000-6-2
- > Ford EMC-CS-2009.1
- > GMW 3097 (2006)
- > IEC 60601-1-2
- > IEC 61000-4-6
- > IEC 61326
- > IEC 61850-3
- > ISO 11452-4
- > Namur NE 21
- > Telcordia GR-1089

### CWS 500N1.3 - THE SINGLE BOX SOLUTION FOR RF CONDUCTED IMMUNITY TESTING

The CWS 500N1.3 is the most compact single box test equipment for testing conducted rf immunity per IEC 61000-4-6 Ed. 3 and Ed. 4 and related standards with a frequency range of 10 kHz to 400 MHz. Apart from the 1 kHz 80 % AM signal the generator also generates a 2 Hz 80 % AM signal to test medical appliances and a 1 Hz PM signal with 50 % duty cycle required to test safety equipment like fire alarms. Equipped with a 1 GHz current monitor the CWS 500N1.3 can be used up to 1 GHz by means of an external amplifier. EM TEST supplies a large range of CDNs, EM clamp and current injection clamps as well as the corresponding calibration accessories. Full compliant levelling can be run from the front panel of the CWS 500N1.3 storing the results in 5 memory spaces is available.

### HIGHLIGHTS

- > **Test procedure acc. IEC 61000-4-6 Ed. 4**
- > **Built-in amplifier saturation and linearity check**
- > **Built-in amplifier, 10 kHz to 400 MHz**
- > **Built-in power meter, 9 kHz to 1 GHz**
- > **Built-in dual directional coupler**
- > **Automatic calibration via built-in power meter**

### APPLICATION AREAS

- |             |                  |
|-------------|------------------|
| INDUSTRY    | RENEWABLE ENERGY |
| MEDICAL     | AUTOMOTIVE       |
| BROADCAST   | MILITARY         |
| RESIDENTIAL | TELECOM          |

## TECHNICAL DETAILS

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## OUTPUT

Output level	1 V - max. 30 V (emf) all standard test levels are guaranteed with all coupling methods
Output power	80 W (49 dBm) at 1dB compression
Output impedance	50 ohm
Harmonic distortion	< -20 dBc at max. power
Amplifier gain	48 dB
Output impedance	50 ohm

## TEST FREQUENCIES

Sinus (CW)	10 kHz to 400 MHz
Frequency bands	10 kHz to 9.999 MHz 10 MHz to 99.99 MHz 100 MHz to 400 MHz in the Quick Start menu the step size can be selected by the operator
Unmodulated signal	CW (continuous wave)
Amplitude modulation	1 kHz, 80 % AM per IEC 61000-4-6 2 Hz, 80 % AM per IEC 60601-1-2 400 Hz, 80 % AM
Pulse modulation	1 Hz, 50% duty cycle per EN 50130-4

## MEASUREMENTS

Monitor	Integrated RF power meter, measuring input for CDN and clamp calibration as well as current monitor for clamp applications
RF indicator	LED indicating the RF output status
LCD	Online display of the test level and the preselected frequency value
Cal data F1 - F5	5 internal memories to save calibration data, 1 % step width as required by the standard

## TECHNICAL DETAILS

## TIME PARAMETERS

Dwell time for CW & AM	td = 0.3 s to 9,999 s
Dwell time for PM	td = 3 s to 9,999 s
Pause time	tr = 0/0.3 s to 9,999 s

## OUTPUT

Direct RF output	N connector (on the front panel)
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## TEST ROUTINES

Quick Start	Immediate test start; easy-to-use and fast
User Test routines	Voltage sweep Frequency sweep Dwell time sweep
Standard Test routines	Level 1 to Level 3 (IEC 61000-4-6) Automatic Level X to Level Y
Cal procedure	Calibration of the complete test set-up, calibration data saved in internal memory
Service	Service, set-up

## SIGNAL GENERATOR

Output level	-63.5 dBm to 0 dBm
Frequency range	9 kHz to 1 GHz
Output impedance	50 ohm
Direct RF output	To control an external amplifier

## DUAL DIRECTIONAL COUPLER

Frequency range	10 kHz to 1 GHz
Power	150 W max.
Insertion loss	0.6 dB max.
Mainline VSWR	1.1:1 max.

## MEASUREMENTS FOR BCI APPLICATION

PM 1000	3-channel power meter up to 1 GHz - to measure the Forward power - to measure the Reverse power - to measure the injected current
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## TECHNICAL DETAILS

## GENERAL DATA

INTERFACE	
Serial interface	USB
Parallel interface	IEEE 488, addresses 1 to 30
Fail 1	BNC input; test will be stopped when active low
Fail 2	BNC input; test status will be saved (max. 10 events) when active low. Test will continue.

GENERAL DATA	
Dimensions, weight	19"/3 HU, approx. 17 kg
Supply voltage	115 V to 230 V +10/-15 %, 50/60 Hz
Input power	Max. 380 W
Power factor	cos (phi) = 0.98 at max. output power as per IEC 555
Fuses	2 x 6.3 AT (115 V) or 2 x 3.15 AT (230 V)
Cooling	Active cooling, air ventilation
Temperature	10° C to 35° C
Rel. humidity	Max. 85 %, non condensing
Atmospheric pressure	86 kPa (860 mbar) to 106 kPa (1,060 mbar)

## ACCESSORIES

ACCESSORIES	
ATT 20/0.5	20 dB attenuator, 0.5 W for the calibration of CDNs and clamps
icd.control	Extensive and most versatile remote control and reporting software. A standard library helps to configure the test setup. Multiple interruption functions automated by instruments (GPIB, USB, Ethernet, RS232) or manually. Easy to use or expandable to complex test routines on the base of vector definitions.
Cable N	1 x
Cable BNC	2 x
Cable USB	3 m length
CD	With manual and software

## TECHNICAL DETAILS

## OPTIONS

OPTIONS	
ATT6/80	6 dB attenuator, 80 W connectors: BNC/N
ATT 3/100	Attenuator for BCI, 3 dB/100 W
CDNs	As per IEC 61000-4-6 (refer to separate data sheet)
EM 101	RF Injection clamp, (10 kHz) 150 kHz - 1,000 MHz, 100 W, max. cable diameter 23 mm
FTC 101	Decoupling clamp for EM 101 RF injection clamp, 150 kHz - 1,000 MHz, max. cable diameter 23 mm
T-50	50 ohm termination resistor for CDNs and clamps

## OPTIONS BCI CLAMPS

F-120-6A	Clamp-on injection probe, 10 kHz - 400 MHz, 40 mm diameter
F-120-9A	Clamp-on injection probe, 10 kHz - 230 MHz, 40 mm diameter
F-130A-1	Clamp-on injection probe, 1 MHz to 400 MHz, 40 mm diameter
F-140	Clamp-on injection probe, 1 MHz to 1000 MHz, 40 mm diameter

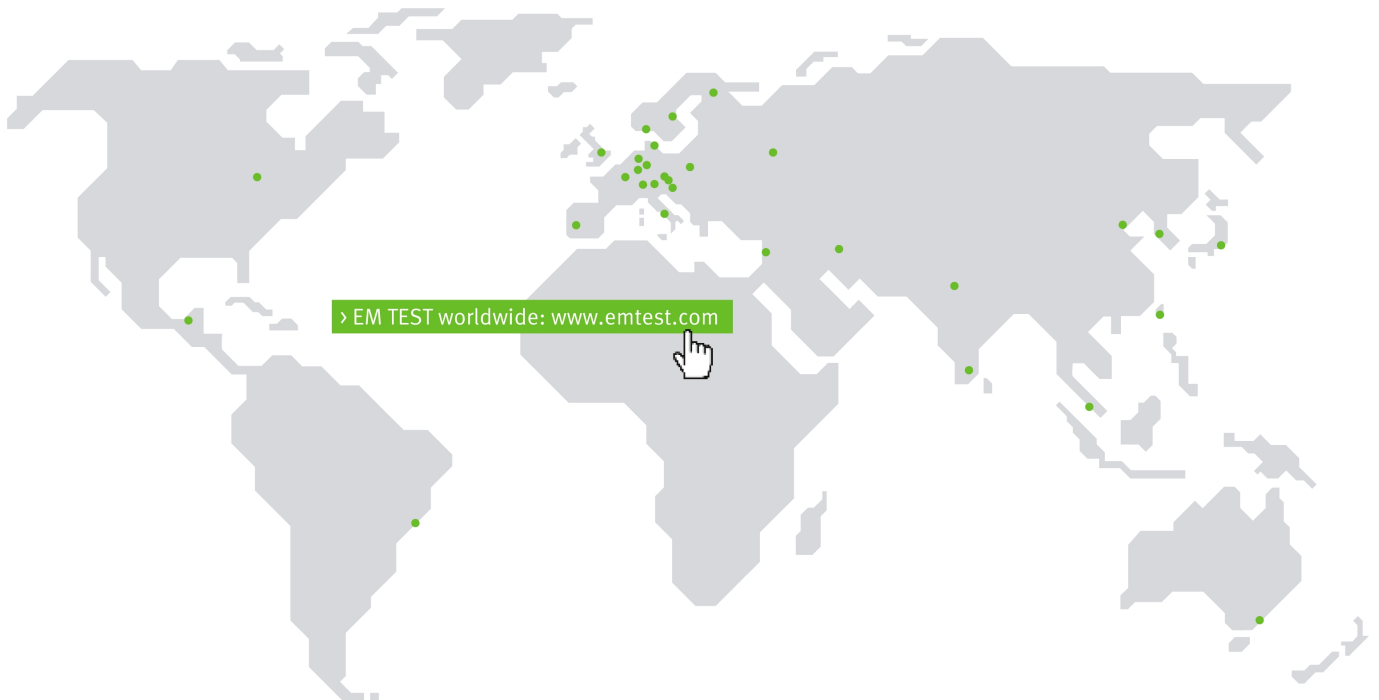
## OPTION CURRENT MONITOR CLAMPS

F-33-2	HF Strom Messzange, 100 kHz - 250 MHz, 32mm Durchmesser
F-55	HF Strom Messzange, 10 kHz - 500 MHz, 32mm Durchmesser
F-65	HF Strom Messzange, 100 kHz to 1000 MHz, 32mm Durchmesser

## OPTIONS

OPTIONAL CALIBRATION ACCESSORIES	
Connector plate size	Size as per IEC 61000-4-6 Ed.4, The CDN output connector height h defines the connector plate size for the calibration procedure, h = 30 mm => 100 mm x 100 mm h > 30 mm => 150 mm x 150 mm
R-100N	150 ohm-to-50 ohm matching impedance for CDN calibration acc. IEC 61000-4-6 Ed. 4 Connector plate: 100 mm x 100 mm
R-100N1	150 ohm-to-50 ohm matching impedance for CDN calibration acc. IEC 61000-4-6 Ed. 4 Connector plate: 150 mm x 150 mm
R-100A	150 ohm-to-50 ohm matching impedance with N-type connector for BCI-clamp calibration
Cal adapters	For all types of CDNs and clamps
CWS-CAL	Basic calibration kit including 1 x R-100N, 1 x 50 cm BNC cable, plastic case
CA EM Ed. 4	Calibration kit for EM 101 as per IEC 61000-4-6 Ed. 4
FCC-BCICF-1	Injection probe calibration fixture (jig) for F-120-6A / F-130-1A probe types
FCC-BCICF-2	Injection probe calibration fixture (jig) for F-140 probe
FCC-BCICF-4	Injection probe calibration fixture (jig) for F-120-9A probe

# COMPETENCE WHEREVER YOU ARE



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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.