

CWS 500N2

CONTINUOUS WAVE SIMULATOR



FOR TESTS ACCORDING TO ...

- > BMW GS 95002 (2001)
- > DaimlerChrysler DC-10614
- > DaimlerChrysler DC-11224
- > DO 160 Section 20
- > EN 61000-4-6
- > EN 61000-6-1
- > EN 61000-6-2
- > Fiat 9.90110
- > Ford ES-XW7T-1A278-AB
- > Ford ES-XW7T-1A278-AC
- > GMW 3097 (2001)
- > GMW 3097 (2004)
- > IEC 60601-1-2
- > IEC 61000-4-6
- > IEC 61326
- > IEC 61850-3
- > ISO 11452-4
- > ISO 11452-5
- > MBN 10284-2
- > MIL STD 461 D CS 114
- > MIL STD 461 E CS 114
- > ...

BULK CURRENT INJECTION (BCI) TESTING









Bulk Current Injection (BCI) is a test procedure to proof the immunity to electrical disturbances by narrowband electromagnetic energy. The test signal is injected by means of a current injection probe physically being a current transformer laid around the wiring harness. Immunity tests are performed varying the level and the frequency of the injected test signal. The BCI test method is widely known in the automotive industry as well as in the military/aircraft industry to test single components of a complex system.

The CWS 500N2 is designed to be used also for tests with CDNs and EM clamps for tests according to EN/IEC 61000-4-6 and related standards.

HIGHLIGHTS

- > **Most compact equipment**
- > **Supports BCI testing as per various standard requirements**
- > **Basic frequency range 9kHz up to 400MHz**
- > **Extendable frequency range up to 1GHz**
- > **Built-in 100W class A amplifier up to 400MHz**

APPLICATION AREAS

- | | |
|--|---|
|  AUTOMOTIVE |  INDUSTRY |
|  TELECOM |  MEDICAL |
|  AVIONICS |  BROADCAST |
|  MILITARY |  RESIDENTIAL |

TECHNICAL DETAILS

BULK CURRENT INJECTION AS PER ISO 11452-4

| | |
|--------------|--|
| Output level | As required in ISO 11452-4, using closed loop or substitution method |
|--------------|--|

BULK CURRENT INJECTION AS PER MIL 461 CS 114

| | |
|--------------|---|
| Output level | As required in MIL 461 CS 114, using the closed loop method |
|--------------|---|

MEASUREMENTS FOR BULK CURRENT INJECTION

| | |
|---------------------|---|
| Directional coupler | Included to measure forward power and reverse power |
| Forward power | Internal power meter #1 |
| Reverse power | Internal power meter #2 |
| Injected current | Internal power meter #3 |

TEST ROUTINES FOR BULK CURRENT INJECTION

| | |
|---------------|---------------------------|
| ISO 11452-4 | Operation via icd.control |
| MIL 461 CS114 | Operation via icd.control |

IEC 61000-4-6

| | |
|--------------|--|
| Output level | 1V - 30Vrms (emf) all standard test levels are guaranteed with all coupling methods |
|--------------|--|

MEASUREMENTS, IEC 61000-4-6

| | |
|------------------|--|
| Cal in (BNC) | Integrated power meter to record the calibration data of a coupling device |
| Injected current | Measured by internal power meter |
| RF indicator | LED indicating the RF output status |
| LCD | Display of the test level and the preselected frequency value |

TEST ROUTINES FOR IEC 61000-4-6

| | |
|--------------------|--|
| Quick Start | Immediate start; easy-to-use and fast test routine |
| User Test routines | Frequency sweep |
| Service | Service, Set-up |

OUTPUT

| | |
|---------------------|---|
| RF output | N connector at the front panel |
| Output power | Built-in amplifier 50dBm (9kHz - 400MHz) at 1dB compression. |
| Gain amplifier | > 50dB |
| Output impedance | 50ohm |
| Harmonic distortion | < -20dBc at max. power |
| Insertion loss | Approx. 1dB (directional coupler + RF relay) |

TIME PARAMETERS

| | |
|------------|----------------------|
| Dwell time | td = 0.3s - 9,999s |
| Pause time | tr = 0/0.3s - 9,999s |

TEST FREQUENCIES

| | |
|----------------------|---|
| Frequency range | 9kHz - 400MHz (built-in amplifier) 9kHz - 1,000MHz (ext. amplifier) |
| Unmodulated signal | CW (continuous wave) |
| Amplitude modulation | 1kHz, 80% AM (EN/IEC 61000-4-6) 1kHz, 95% AM (automotive) 400Hz, 80% AM 50Hz, 80% AM (automotive) 2Hz, 80% AM (IEC 60601-1-2) |
| Pulse modulation | 1Hz, 50% duty cycle (EN 50130-4) 1kHz, 50% duty cycle (MIL 461) |

INTERFACE

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

TECHNICAL DETAILS

GENERAL DATA

| | |
|--------------------|---|
| Dimensions, weight | 19"/6HU, approx. 31kg |
| Supply voltage | 115V or 230V +10/-15%, 50/60Hz |
| Input power | Max. 380W |
| Power factor | cos(phi) = 0.96 at max. output power as per IEC 555 |
| Fuses | 2x6.3AT (115V) or 2x3.15AT (230V) |
| Cooling | Active cooling, air ventilation |
| Temperature | 10°C - 40°C |
| Rel. humidity | Max. 85%, non-condensing |

ACCESSORIES

| | |
|-------------|--|
| Cables | N-type coaxial cables to connect the 3dB attenuator and/or the injection probe, BNC-coaxial cable to connect the current monitoring probe, with N-to-BNC adapter |
| icd.control | Extensive and most versatile remote control and reporting software. The standard library helps to configure the test setup. Multiple interruption functions automated by IEEE instruments or manually. Easy-to-use as well as expandable to complex test routines based on vector definitions. |

OPTIONS

| | |
|-------------|--|
| ATT3/100 | 3dB attenuator, 100W |
| ATT20/15 | 20dB attenuator for current monitor path, the set includes 2 units |
| ATT20/100 | 20dB attenuator, 100W for small level RF signals as per MIL STD 461 an DO-160 |
| T-50A | 50ohm, 6W termination resistor |
| Calibration | Adaptors and cal jigs |
| CDNs | as per IEC 61000-4-6 (refer to separate list) |
| Clamps | EM clamp as per IEC 61000-4-6 Current injection clamps Current monitoring clamps |
| R-100x | 150ohm-to-50ohm matching impedance |

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. Technical data subject to change without further notice.