



**AS-CS115-CS116** Absolute EMC offers a full turnkey approach from Montena Technologies. The system has one injection probe and setup for tests. Includes All equipment needed: Test Generator, Injection Probe, Calibration Jig and loads, interconnecting cables, 500MHz Scope, and Control Software. RF Conducted immunity CS114 testing can also be added as an option using the same setup and injection clamp. This makes all testing very simple and easy for the user. CS106 testing is also an available upgrade for the same generator.

The CS116 damped sinusoidal pulse generator from montena is the only CS116 generator on the market having one single signal output only for all test frequencies. There is no need to manually neither reconnect nor exchange modules during the test. **This saves testing time and reduces the risk of errors during the test.**

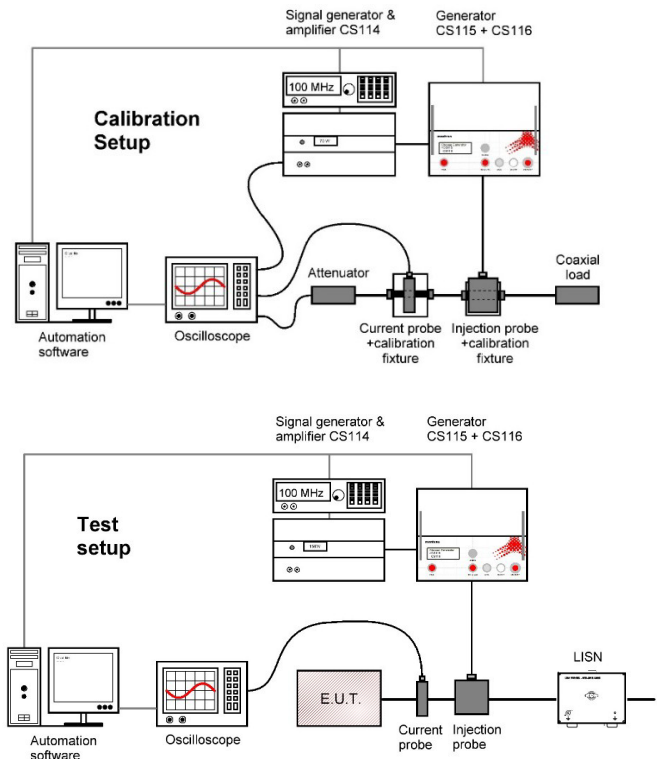
The CS116 damped sinusoidal pulse generator provides up to 17 test frequencies (instead of the minimal 6 frequencies required by the standard). **This allows a better excitation of the resonances of the equipment under test.**

The CS116 pulse generator optionally comprises a built-in module to generate the CS115 square pulse. An internal switching unit drives the CS115 and CS116 signals to the same common output.

The generator has a dedicated input to receive the CS114 signal from the external amplifier and is able to drive it to the **common output**, This enables full automation of the tests, for the CS114, CS115, and CS116 standards without having to modify the wiring of the equipment.

**Montena control software application:**

- automatically calibrates the test setup according to selected standard definitions, or user-defined injection levels, stored as templates in the control computer,
- automatically applies the test sequences,
- generates calibration and test reports,
- significantly reduces the time needed to perform the tests,
- apply the transfer functions of the elements of the measurement chain to directly provide the injected current levels, which reduces to almost zero the risk of conversion errors.



The proposed system is unique in the market. It has been optimized to ease the test procedure, to

reduce the risks of human errors, and to save testing time. Its unique features are:

### One single signal output

The generator has one signal output for the CS115 square pulse, for all CS116 discrete test frequencies as well as for the CS114 signal received from the external amplifier. The calibration or the measurement phase can be performed without any need to change the cabling nor to exchange modules.

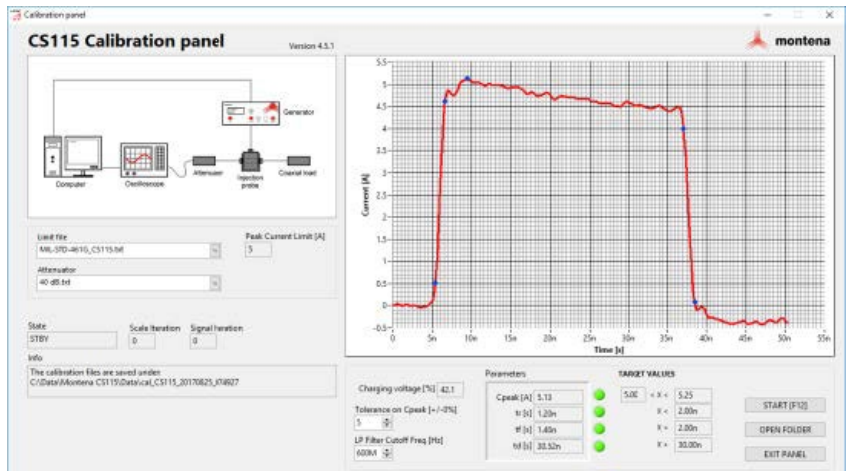
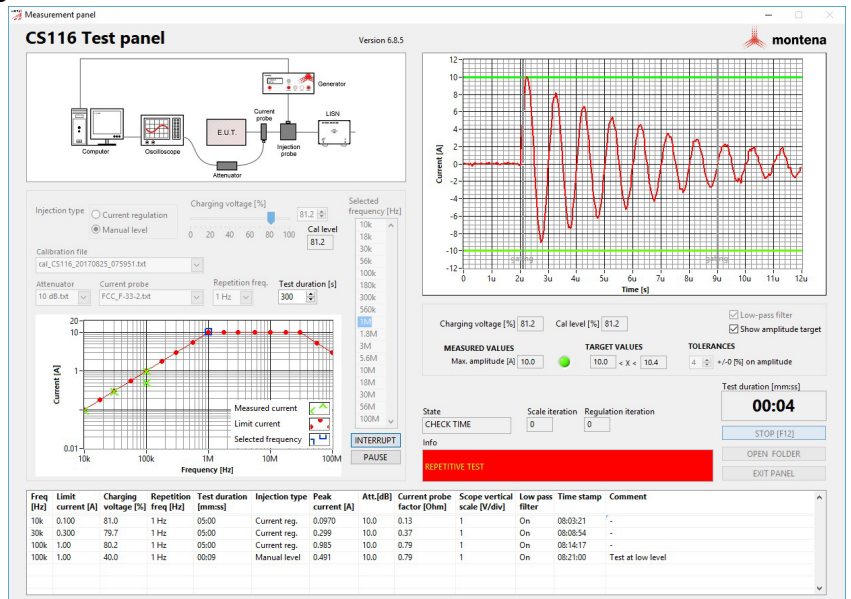
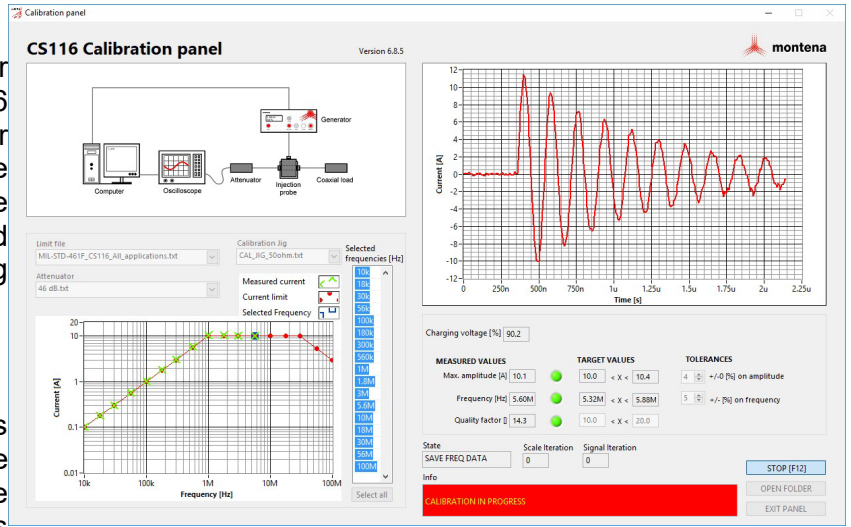
### Menu-driven control panel

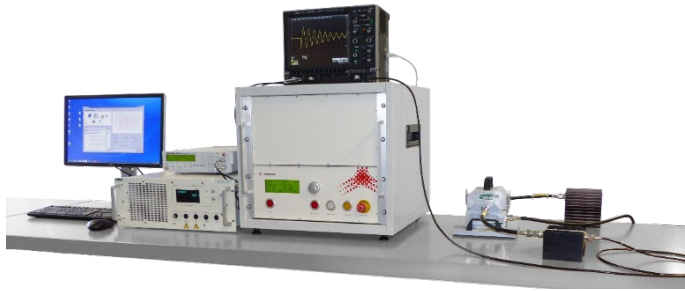
The menu-driven control panel allows the user to select the desired discrete frequency, the pulse voltage level, the repetition rate, and the number of pulses to be generated.

### Remote controlled

The generator (like all generators from montena) can be remote-controlled through its RS232 or USB interfaces. Montena proposes a dedicated software application for the automation of the tests.

- ✓ Automatic calibration for the whole test frequency range
- ✓ Application of all test frequencies automatically. Level can be selected or automatic
- ✓ NO need to manually configure the measurement equipment
- ✓ NO need to manually integrate the transfer function of probes and attenuators
- ✓ Generation of test reports, NO need to record all values read from the measurement equipment
- ✓ Generation of calibration reports, NO need to record all calibration setting parameters





Desktop Arangement Includig CS114

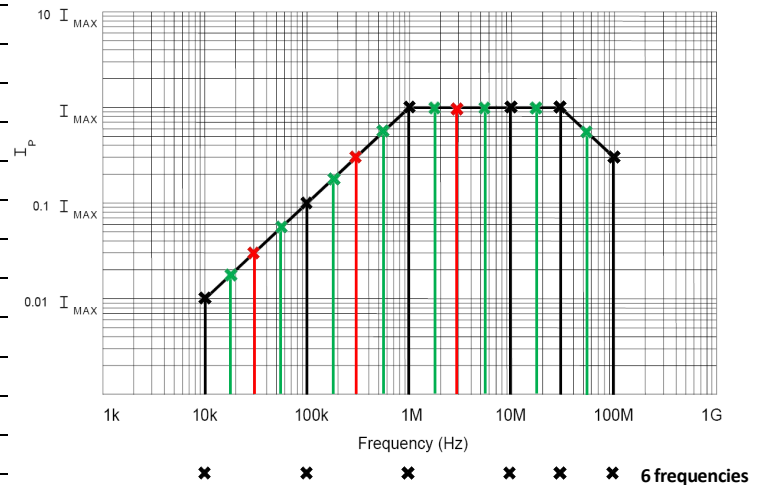


Rackmount system Includig CS114

### CS116 test frequencies (options to increase test frequency up to 17)

The MIL-STD-461 CS116 requires testing the susceptibility at 6 discrete frequencies between 10 kHz and 100 MHz. Montena's CS116 generator optionally provides additional frequencies too:

OSCILLATION FREQUENCY	MAXIMAL CURRENT <sup>1)</sup>	POG116 - 6	POG116 - 9	POG116 - 17
<b>10 kHz</b>	<b>0.1 A</b>	X	X	X
18 kHz	0.2 A			X
30 kHz	0.3 A		X	X
56 kHz	0.8 A			X
<b>100 kHz</b>	<b>1 A</b>	X	X	X
180 kHz	2 A			X
300 kHz	3 A		X	X
560 kHz	8 A			X
<b>1 MHz</b>	<b>10 A</b>	X	X	X
1.8 MHz	10 A			X
3 MHz	10 A		X	X
5.6 MHz	10 A			X
<b>10 MHz</b>	<b>10 A</b>	X	X	X
18 MHz	10 A			X
<b>30 MHz</b>	<b>10 A</b>	X	X	X
56 MHz	5 A			X
<b>100 MHz</b>	<b>3 A</b>	X	X	X



### CS114 test setup

#### Measurement with oscilloscope and FFT

The test setup comprises a digital oscilloscope for the measurement of the injected signal. For the CW signal of the CS114 test, the control software reads the measured signals and performs the FFT (Fast Fourier Transform) to extract the injected signal frequency from the ambient noise. The use of

the FFT allows much better sensitivity than competitive solutions using power meters or measuring the peak signal voltage with an oscilloscope.

### SMARTImmune automation software

The CS114 test setup is supplied with the new SMARTIMMUN control software.

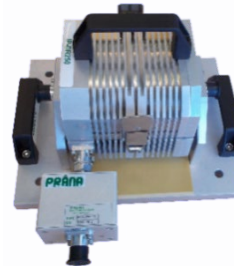
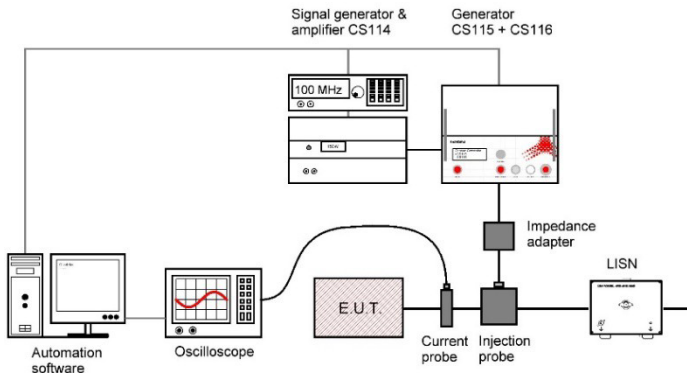


### Optional CS114 extension for ships and submarines testing

This extension enables tests starting from 4 kHz instead of 10 kHz, to cover the new MIL-STD-461 F/G CS114 common mode injection requirement of 77 dB $\mu$ A that is applicable from 4 kHz to 1 MHz on complete power cables.

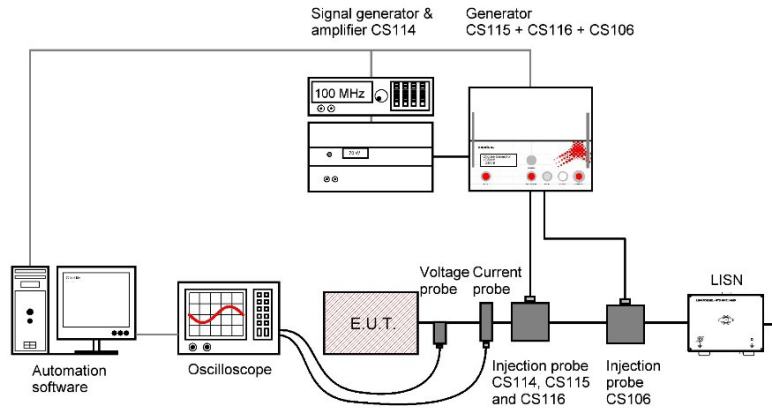
Prâna amplifier proposed in the basis offer is specified from 10 kHz but, when combined with Prâna 4kHz adaptor module and Prâna injection probe, it delivers enough current from 4 kHz without saturation. This cost-effective solution eliminates the need of a second amplifier for CS114 tests below 10 kHz.

This test uses the waveform generator (0.1 Hz - 25 MHz) that is embedded in the proposed oscilloscope.



## CS106

The POG-CS116 pulse generator optionally comprises an internal module to deliver the CS106 pulses. Due to the low-frequency content of the CS106 pulse, the injection is performed with a dedicated injection probe.



*Extended test setup for CS106*

The measurement is made using the same oscilloscope for all CS106, CS114, CS115, and CS116 current injections tests.

### AS-CS115-CS116 System:

Model	Description
POG-CS116-6	Pulse generator for MIL-STD-461 D/E/F/G CS116, 6 test freq., 19" rack version.
SW-CS-DOW	Control software for MIL-STD-461 CS116 test setup
M-CS115	Module for MIL-STD-461 D/E/F/G CS115, built into POG-CS116 generator
SW-CS115	Test control software application for MIL-STD-461 CS115
HOUSING-9U	Instrument case for standalone use of the POG-CS116 generator, 9HU, 520mm
IPDR250	Injection probe, 10 kHz – 400 MHz, 500 W, internal diameter 43 mm
CJDR250	Calibration jig for the injection probe IPDR250
8705C	Current probe, 10 kHz – 400 MHz, 15 A peak, CW: 4 A RMS, max EUT current (DC / 50Hz): 5 A / 20 A, aperture 50.8mm, for MIL-STD 461 CS114, CS115, and CS116
Set of coaxial load and attenuators	1 x Diconex 17-3874MON: load 25 W, connector N(m) special version for HV pulses 1 x Diconex 16-6805IMP: attenuator 40 dB, 25 W, N(m) – N(f), for >2.5 KV pulses 1 x Diconex 16-6573: attenuator 10 dB, 2 W, connectors N(m) – N(f)
Cables and accessories	
RTM3004	Rhode & Schwarz, Oscilloscope 500 MHz, 10-bit, 4 channels, 2.5 GS/s (or similar)
TT-SX 9001	Differential Voltage Probe
online training	1-day (2 half-day) online training given by one engineer from Montena. The training covers the system installation and the test procedure.

### AS-CS114 Upgrade:

Model	Description
M-CS114	Module to drive the output of the CS114 amplifier to the common injection probe
Rigol DSG815	RF Signal generator, 9 kHz to 1.5 GHz
VBA 400-110	Power amplifier 110 W, 9kHz - 400 MHz, with integrated directional coupler
4kHz CS114 Kit (ZF22102)	For tests from 4 kHz up to 1 MHz (extension for ships and submarines testing), including: 1 x IPDR-AD4KHZ Prâna impedance adapter module for IPDR250 injection probe 1 x Diconex 16-6573: attenuator 10 dB, 2 W, connectors N(m) – N(f) 1 x Coaxial adapter BNC(m)-N(f)
Pearson F-3	Calibration fixture for the current probe 8705C
SMARTImmun-CS114	SMARTImmun base software application for MIL-STD-461 CW immunity test, lifetime license for 1 computer, SMARTImmun license option for MIL-STD-461 E/F/G CS114

### AS-CS106 Upgrade:

Model	Description
M-CS106	Module for MIL-STD-461 F CS106, built into the POG-CS116 generator
IC10M	Injection probe for MIL-STD-461 CS106, aperture 34 x 43 mm
R5-2-400	Precision resistor 5 ohm from MIL-STD-461, CS106 calibration setup
SW-CS106	Test control software application for MIL-STD-461, CS106