Adapter Comparison
with Test Results

Simma Software, Inc. has conducted the below tests to highlight the differences in vehicle network adapters' adherence to the Society of Automotive Engineer's (SAE) requirements. These requirements are specified in SAE J1939, SAE J1587, and SAE J1708. To learn more about our network adapters, see our **J1939 Adapter page**.

Omission of adherence to standards can cause malfunction of the network's operation, damage to vehicle's systems and mechanical devices, and cause bodily harm. Specifically, compliance of SAE J1708 5.2.2.1 is required. Lack of 5.2.2.1 compliance can cause failure of safety critical devices, such as airbag and brake controllers.

These tests represent a minimum set of requirements for compliance and communication functionality. Test setup and conditions were identical for all adapters.

	Simma Software's VNA-232	Peak-System's PCAN and Company X's Linux J1708	Autotap's HDV100A3
Always On Functionality	Passed	Passed	Failed [6]
Deterministic Host Interface	Included	Included	Omitted [5]
100% CAN Bus Load, Burst	Passed	Failed [1]	Failed
75% CAN Bus Load, Continuous	Passed	Passed	Failed
CAN and J1708 Simultaneously	Passed	Included	Failed
J1939 -11/-15 Signal Timing	Passed	Failed	Failed
J1939 Babbling Idiot Protection	Included	Omitted	Omitted
J1708 5.2.2.1 Compliance	Included	Omitted [3]	Included
J1708 Baudrate Restriction	Passed	Failed [4]	Failed [4]
J1708 Character Spacing	Passed	Omitted [8]	Failed [7]
Native J1939 Support	Included	Omitted [2]	Included
Native J1587 Support	Included	Omitted [2]	Omitted [2]

[1] PCAN dropped, reordered, and inserted additional CAN frames.
[2] Real-time protocols specify tight timing requirements which can not be guaranteed by non real-time operating systems.
[3] Lack of 5.2.2.1 compliance can cause failure of vehicle's safety critical controllers (e.g. airbag and anti-lock brake controllers).
[4] Both Company X's and Autotap's devices allow for improper baud rate, word size, and parity settings, which can cause failure of network and controllers.
[5] Autotap's host interface message structure lacks unique start of frame identifier. Communication disruption will require power cycling of device.
[6] Autotap's device frequently failed to remain functional throughout testing. Device also periodically failed to function after power cycle.
[7] Autotap's device failed to ignore messages with improper character spacing.
[8] Linux's lack of real-time performance and interrupt latency will make accurate character spacing difficult.

Simma Software, Inc. specializes in real-time embedded software for the automotive industry.

Products and services include protocol stacks, bootloaders, device drivers, training, and consultation on the following technologies:

J1939, CAN, J1587, J1708, J2497, J1922, ISO 15765, CANopen, UDS, XCP, LIN.