



Operation Manual

System Verification Software Operation

Revision: 2024-01

This document is a manual that describes how to operate the SysVeri2 software.

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1 Introduction

The scope of this document is a description of how to operate the SysVeri2 system verification software step-by-step. A detailed description of the individual tests, the according settings and permitted deviations of measured values is summarized in the document “Verification of the AE signal processor, parametric input channels and system performance according to EN 13477-2”. The system verification described in this document includes the verification of AE signal processors, parametric input channels, pulsing function and data acquisition rate.

2 Required equipment

Measurement system under test is an AMSY-6 or AMSY-5 chassis with ASIP-2 boards (AMSY-5 with single channel ASIPP boards is not supported) and possibly with parametric channels in it such as MB2, MB6, MB19, or MR19. An AMSY-6 chassis without parametric channels is an expansion box such as the EB21 or ER21.

Stimulator or generating device for test signals is an arbitrary function generator of type Keysight 33511B or better model of Keysight 33500B family.

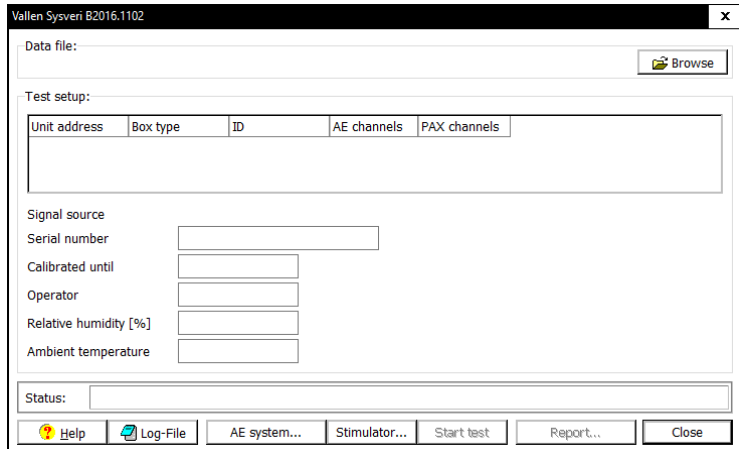
A BNC cable (type RG58C/U) is needed to connect the output socket of the arbitrary function generator with the ASIP-2 channel’s input socket. To test more than 1 channel in parallel – possible is a maximum of 4 AE channels – the connecting cable can be configured to have 1 connector on input side and 4 connectors on output side.

Software module SysVeri2 of release R2016.0811 or later is required to perform a semi-automated system verification.

3 Step-by-step instructions

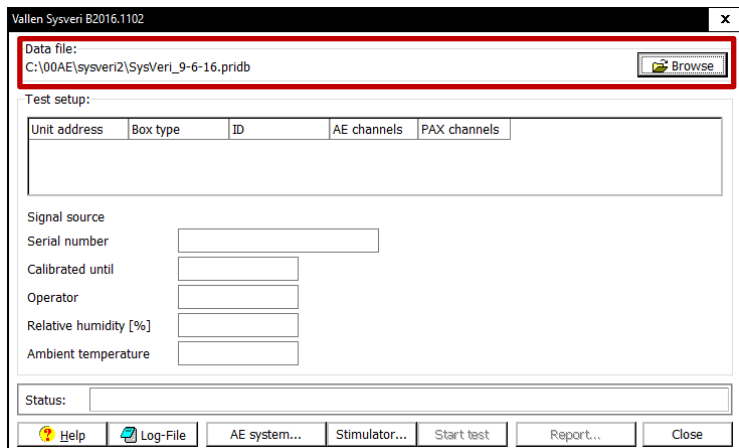
Step 1 – starting up SysVeri2 software

Dialogue of the SysVeri2 software module. Two setting groups are available: *Data file* and *Test setup*. A status line is shown below the group *Test setup*. At the bottom of the dialogue buttons for filling in information in an automated way, performing the test, generating reports and providing additional information are present.



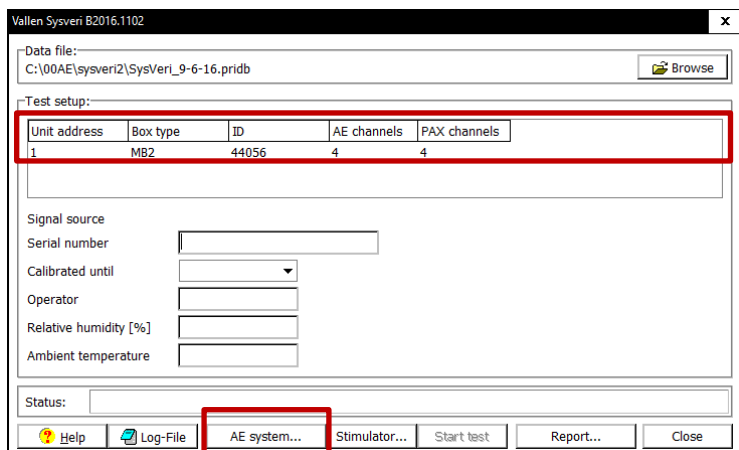
Step 2 – selecting or defining a data file

First thing is providing or generating a data file. Click button *Browse* to generate a new data file or select a data file containing already data from a system verification with the SysVeri2 software module.



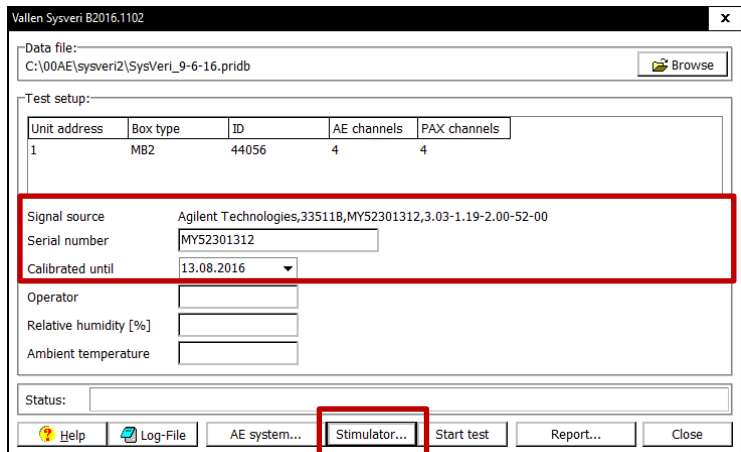
Step 3 – providing information about the AE system

In a next step information about the AE system under test needs to be provided. Clicking the button "*AE system...*" performs a hardware detection. Unit address, number of AE channels and number of PAX channels is automatically detected. Box type is suggested based on the number of detected AE channels and can be corrected by the operator (click in field and provide correct information). ID has to be filled in by the operator (click in field and enter identifier of the chassis)



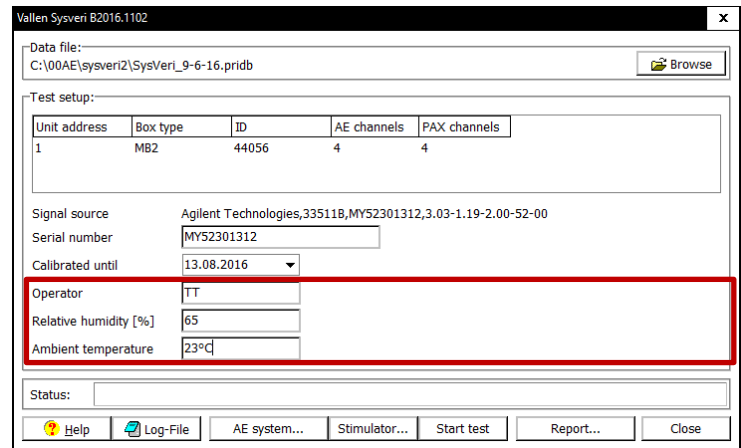
Step 4 – provide information about the signal source / stimulator / arbitrary function generator

Clicking the button „*Stimulator...*“ tries to open a connection to the arbitrary function generator (either via USB or LAN). Serial number is detected automatically. Date “*calibrated until*” needs to be provided by the operator.



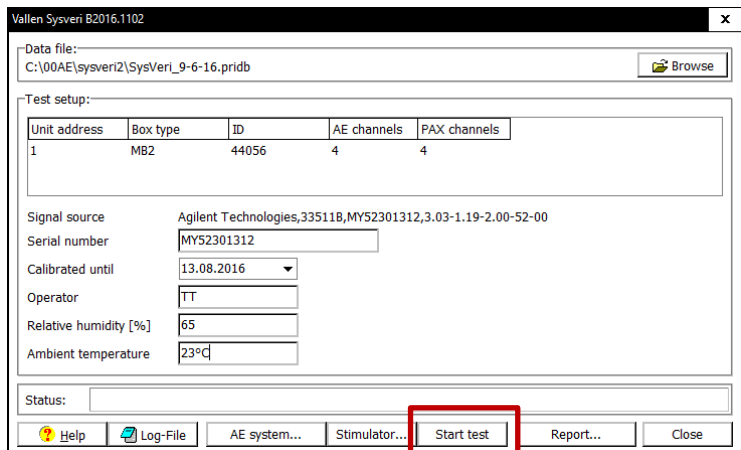
Step 5 – fill in additional information

Additional information needs to be provided in order that the system verification conforms to EN 13477-2. This is the operator’s name, relative humidity and ambient temperature. All this data needs to be provided by the operator.



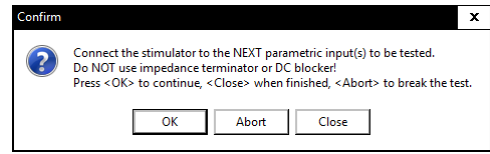
Step 6 – start test

Clicking button „*Start test*“ is going to start the system verification procedure.



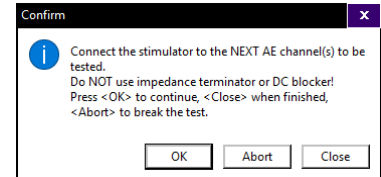
Step 7 – verification of parametric channels

First pop up window informs user to connect stimulator/arb output to a parametric input. If a special BNC cable is available then all four parametric input channels can be tested at once. If such a cable is not available, then each parametric input channel has to be tested by itself. To start the test procedure click “OK”. “Abort” will exit the test procedure and “Close” will continue system verification procedure with starting the verification of ASIP-2 channels



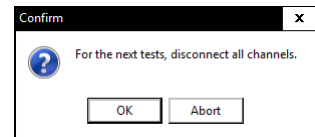
Step 8 – verification of ASIP-2 channels

After finishing the parametric input verification procedure by clicking „Close“ in the previous pop up window, the pop up window for verifying the ASIP boards is shown. If a special BNC cable is available then up to four AE channels can be tested at once. If such a cable is not available, then each AE channel has to be tested by itself. To start the test procedure click “OK”. “Abort” will exit the test procedure and “Close” will continue system verification procedure with measuring the system performance.



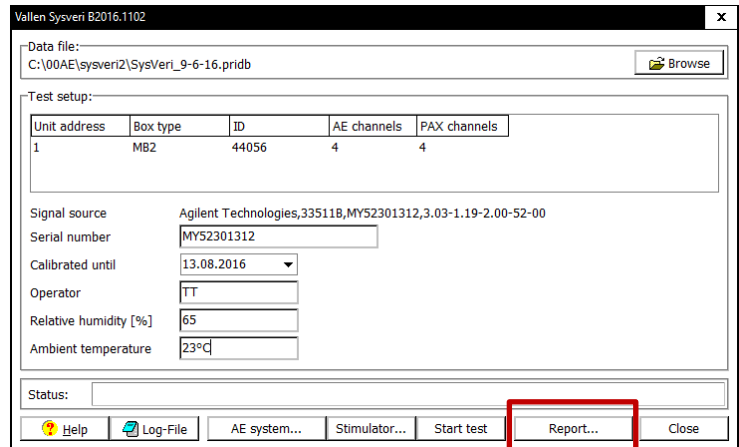
Step 9 – verification of system performance and finishing the verification

After finishing the AE channel verification by clicking „Close“ in the previous pop-up window, the remaining tests are performed. It is necessary to disconnect all channels from the function generator. Otherwise the function generator can get damaged during subsequent tests. To start the test procedure click “OK”. “Abort” will exit the test procedure.



Step 10 – create the test report

Once all tests of the system verification have been performed a report can be generated by clicking the “Report...” button. A report can be printed, saved to PDF- or to ODT format.



4 Test Report

The automatically generated test report has 6 sections.

Section: General information

General information

Verification	Date	11.11.2016 17:39
	Software	Vallen Sysveri 02016.1102
	Operator	TT
Signal source	Type	Agilent Technologies,33511B,MY52301312,3.03-1.19-2.00-52-00
	Serial number	MY52301312
	Calibrated until	11.04.2018
Environmental	Relative humidity [%]	65
	Ambient temperature	23°C

Figure 1: general information about system, verification date and function generator that was used.

Section: System information

System information

Manufacturer	System type	System ID	Model	AE channels	Parametric inputs
Vallen Systeme	AMSY-6	44056	MB2	4	4

Figure 2: table mentions serial number and type of chassis. Additionally, the number of AE channels and parametric inputs is mentioned.

Section: AE channels

AE channels

Chan	HWAddr	ID	Risettime	Amplitude variation			Duration variation				Continuous signal		Filter				Pulser	Threshold	Noise
				Amplitude	Energy	Sig.strength	Duration	Counts	Energy	Sig.strength	RMS	Thr	25kHz-45kHz	50kHz-300kHz	95kHz-300kHz	230kHz-850kHz			
1	01.01.a	110293-02-0055	26%	32%	80%	43%	6%	0%	12%	18%	31%	4%	51%	39%	35%	44%	16%	11%	70%
2	01.01.b	110293-02-0055	25%	31%	78%	40%	6%	0%	13%	20%	32%	4%	51%	39%	34%	43%	15%	11%	70%

Figure 3: part of a channel verification result report (first two channels of an AMSY-6 system. First column indicates the channel number, second column the hardware address of the ASIP-2 board, third column the unique ID of an ASIP-2 board. Columns 4 to 17 report the results of a verification. A green cell background indicates that results are within specified limits. The percentage is a measure for the deviation from setpoint value: 0% means measurement value matches setpoint value; 100% means measurement value is off setpoint value by maximum tolerated deviation.

Section: Parametric inputs

Parametric inputs			
Chan	HWAddr	DC Avg	DC Noise
0	01.00	34%	31%
1	01.01	35%	47%
2	01.02	33%	17%
3	01.03	33%	36%

Figure 4: results of parametric inputs verification. Column one indicates channel number, column 2 hardware address, column 3 and 4 verification results. A green cell background indicates that results are within specified limits. The percentage is a measure for the deviation from setpoint value: 0% means measurement value matches setpoint value; 100% means measurement value is off setpoint value by maximum tolerated deviation.

Section: Performance test

Performance test: activity rate: 100000 hits/s

Figure 5: results of the performance test (i.e. how much of data can be processed within a second).

Section: Verification results

All tests passed

Tests are done in accordance to European Standard EN 13477-2

Figure 6: final test result which can be "All tests passed" or "Verification failed". The reference to the current EN 13477-2 is stated in the report.