SNA5000A Series

Vector Network Analyzer

Service Manual SM09050-E01B

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1.Safety Summary

This section contains information and warnings that must be observed to keep the instrument operating under the corresponding safety conditions. In addition to the safety precautions specified in this section, you also have to follow common safe operating procedures.

Safety Symbols

When the following terms or symbols appear on the front panel, rear panel, or this manual, it indicates particular attention should be paid.

	Indicates potential injuries or hazards that may happen.
	Indicates electric shock that may happen.
	Indicates measurement grounding
	Indicates safety grounding.
	This is a start/standby switch. Press the switch, the VNA will switch between the working state and the standby state. The switch could not power off the device, to completely power off the VNA, the power cord must be removed from the AC socket.
	Indicates “AC”.
CAUTION	Indicates potential damages to the instrument or other property that may happen.
WARNING	Indicates potential injuries or hazards that may happen.

General Safety Considerations

Safety Earth Ground

The instrument includes a grounded cord set containing a molded three-terminal polarized plug and a standard IEC320 (Type C13) connector for making line voltage and safety ground connection. The AC inlet ground terminal is connected directly to the frame of the instrument. For adequate protection against electrical shock hazard, the power cord plug must be inserted into a mating AC outlet containing a safety ground contact. Use only the power cord specified for this instrument and certified for the country of use.

	**Warning:** Electrical Shock Hazard! Any interruption of the protective conductor inside or outside of the scope, or disconnection of the safety ground terminal creates a hazardous situation. Intentional interruption is prohibited.

The position of the oscilloscope should allow easy access to the socket. To make the oscilloscope completely power off, unplug the instrument power cord from AC socket.

The power cord should be unplugged from the AC outlet if the scope is not to be used for an extended period of time.

	**CAUTION:** The outer shells of the front panel terminals (CH1, CH2, CH3, CH4, EXT) are connected to the instrument's chassis and therefore to the safety ground.

Servicing

These servicing instructions are for use by qualified personnel only。To avoid electrical shock, do not perform any servicing unless you are qualified to do so。

Electrostatic Discharge Protection

Protection against electrostatic discharge (ESD) is essential while removing assemblies from or connecting cables to the network analyzer。Static electricity can build up on your body and can easily damage sensitive internal circuit elements when discharged。Static discharges too small to be felt can cause permanent damage. To prevent damage to the instrument:

Always have a grounded, conductive table mat in front of your test equipment.

2.General Information

Maintenance

To prevent electrical shock, disconnect the analyzer from the mains source before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally。Clean the cabinet, including the front panel, using a dry or slightly damp cloth only.

Applicable Model and Options

Options	Status	Description	2 Port Option	4 Port Option
5002A	Action	2-port Test Set 9KHz-4.5GHz	YES	NO
5012A	Action	2-port Test Set 9KHz-8.5GHz	YES	NO

5004A	Action	4-port Test Set 9KHz-8.5GHz	NO	YES
5014A	Action	4-port Test Set 9KHz-8.5GHz	NO	YES

Recommended Test Equipment

Equipment	Critical Specifications	Device brand	Recommended Model or Part Number
Test Instruments and Software	N/A	N/A	EasyVNA
Signal generator	30MHz	SIGLENT	SDG1000X
Power meter	8 kHz -18 GHz -70 dBm- +23 dBm	ROHDE&SCHWARZ	NRP18A（ROHDE&SCHWARZ）
Frequency meter	30MHz	SIGLENT	SDG1000X

Spectrum analyzer	26.5GHz RBW:1Hz	SIGLENT	SSA5000A
Mouse	N/A	Any	Any
Keyboard	N/A	Any	Any
Display	N/A	Any	Any
Calibration and Verification Kits	Open(M),Short(M), Match(M),Through (M-M), 50 Ω, 9 GHz	SIGLENT	F504MS
Cables	0-18GHz	Rosenberger	L72-C1807-1000(Rosenberger) 1m N(M)-SMA(M)
Adapters	DC ~ 18GHz	Any	Any
VTS18	9KHz-18GHz	SIGLENT	VTP18
VTS18	9KHz-18GHz	SIGLENT	VTC18

Oscilloscope	100 MHz	SIGLENT	SDS1000X-E 4
Power supply	32V /1mV	SIGLENT	SPD3303
Digital multi-meter	N/A	Any	Any
T-10 TORX driver	N/A	Any	Any
T-20 TORX driver	N/A	Any	Any
20 mm, open-end torque wrench	0.9 N-m (8 in-lb) setting (for measurement port connections)	Any	Any
9-mm, socket or open-end wrench		Any	Any
wrench		Any	Any
ESD grounding	N/A	Any	Any

wrist strap			

Alternative Test Equipment

Equipment	Critical Specifications	Device brand	Recommended Model or Part Number
F604TS	3.5 mm Open (M,F), Short (M,F), Match/Load (M,F 50 Ohms), Through (M-M, M-F, F-F), DC - 9 GHz	SIGLENT	Any
Cables	NMD 3.5 female-NMD 3.5MM Male DC-26.5GHz	Any	V26-N35MN35F-25IN
Cables	NMD 3.5 female-APC 3.5MM female DC-26.5GHz	Any	V26-N35FA35F-25IN

N-N-18L	18GHz Bandwidth Length 1.0m	Any	Any
N-SMA-18L	18GHz Bandwidth Length 1.0m	Any	Any
N-BNC-2lL	2GHz Bandwidth Length 0.7m(26.7inches)	Any	Any

Support, Services, and Assistance

Information on the Following Topics is Included in this Section

- Service and Support Options
- Contacting SIGLENT
- Shipping Your Analyzer to SIGLENT for Service or Repair

Service and Support Options

The analyzer's standard warranty is a one-year return to SIGLENT

Technologies service warranty.

Contacting SIGLENT

America

SIGLENT Technologies NA, Inc

6557 Cochran Rd Solon, Ohio 44139

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Toll Free: 877-515-5551

Fax: 440-399-1211

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Fax: +49(0)40-819-95947

info-eu@siglent.com

www.siglenteu.com

Shipping Your Analyzer to SIGLENT for Service or Repair

If you wish to send your network analyzer to SIGLENT Technologies for service or repair:

- Include a complete description of the service requested or of the failure and a description of any failed test and any error message

-Remove and retain the front handles and all rack mount hardware. The analyzer should be sent to SIGLENT in the same configuration as it was originally shipped

-Ship the analyzer using the original or comparable antistatic packaging Materials

-Contact SIGLENT for instructions on where to ship your analyzer. Refer to "Contacting SIGLENT"

3.Service Guide

Before You Begin

Before checking, verifying, or adjusting the analyzer, refer to the following paragraphs to:

-make sure the operating environment is within its requirements

-make sure that proper electrostatic discharge (ESD) protection is provided

-make sure the analyzer has warmed up properly to achieve system stability

-review the principles of connector care.

Operating Environment

Use in a clean and dry indoor environment with an ambient temperature range from 0°C to 40°C.

Note: Direct sunlight, electric heaters, and other direct heat sources, should be considered when evaluating the ambient temperature.

	**WARNING:** Do not operate the VNA in an explosive, dusty or humid environment.

This instrument meets the EN 61010-1 standard, and has the following

restrictions:

Installation (overvoltage) category: Class II (electric supply connector) and Class I (measure terminal)

Pollution level: Class II

Protection level: Class I

Note:

Installation (overvoltage) category Class II indicates the local supply level is suitable for equipment connected to the AC power supply.

Installation (overvoltage) category Class I indicates the signal levels suitable for terminals connected to the RF source.

Pollution level Class II indicates it only occurs in a dry and non-conductive environment, sometimes we should consider the temporary conductivity caused by concentration.

Protection level Class I indicates grounding equipment, it prevents electric shock by connecting the equipment to the ground wire.

	**CAUTION:** Do not apply excessive pressure or strike the surface of the touch screen.
	**CAUTION:** Do not exceed the maximum voltage marked on the front panel connectors.

Protect Against Electrostatic Discharge (ESD)

This is important. If not properly protected against, electrostatic discharge can seriously damage your analyzer, resulting in costly repair.

CAUTION:

To reduce the chance of electrostatic discharge , follow all of the recommendations outlined in "Electrostatic Discharge Protection" .

Allow the Analyzer to Warm Up

Note:

To achieve the maximum system stability, allow the analyzer to warm up for at least 90 minutes

Preliminary Self Test

PV

After the analyzer is warmed up, you can preliminarily check whether the working performance of the instrument is normal through "Performance Verification" in the

internal self test function of the instrument.

Under “Utility”, find “Self Test”, select “Performance Verification”, and then select “PV”. Finally, click “Start”. See Figure 3-1.

Figure3-1 “PV” in “Self Test”

After clicking “Start”, you need to select different tools to connect different ports according to the “screen prompts”. See Figure 3-2.

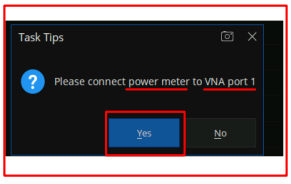


Figure 3-2 Screen prompt

If the “Self Test” inspection fails, please follow the following “Service Process”.

Adjustment

In the self test, the adjustment operation steps were consistent with the pv. As shown in Figure 3-3 below.

Figure 3-3 PV and adjustment in self test

For more operation steps, please refer to the "SNA5000A Vector Network Analyzer User Manual" in Chapter 9 for “More Product Information”.

Service Process

When the customer reports that the instrument has faults, please follow the following procedure to repair the instrument.

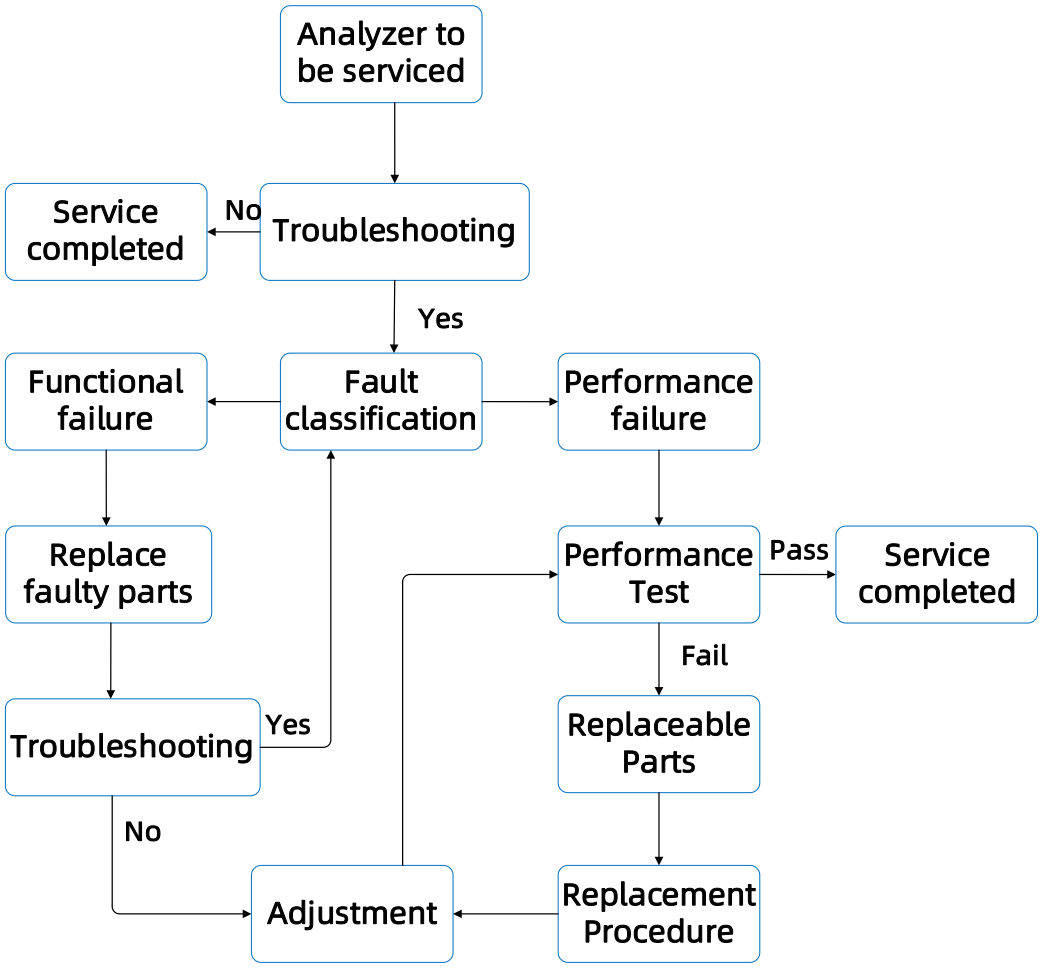


Figure3-4 Maintenance process

Troubleshooting

The troubleshooting is used to verify whether the problems reported by the customer are true. For more specific troubleshooting, please refer to Chapter 6 – "Troubleshooting". The fault can be reproduced by observing the instrument externally, operating the instrument manually, etc.

The external observation of the instrument should first be familiar with the composition of the instrument. If the vector network analyzer is divided according to the front and rear structures, it mainly consists of the front panel and the back panel.

The front panel mainly includes USB board, key board and screen. The USB board includes the power button, port connector, indicator light and USB interface. See Figure 3-5.

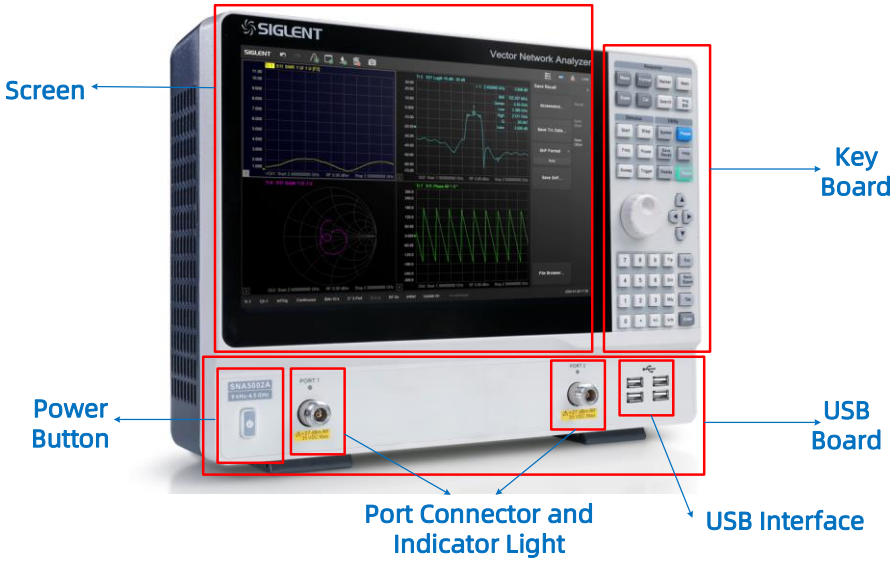


Figure 3-5 Front panel

The back panel mainly includes IOB board, OCXO, fan and DC offset. The IOB board includes LAN, USB, HDMI interfaces, 10MHz reference port and TRIG port. See Figure 3-6.

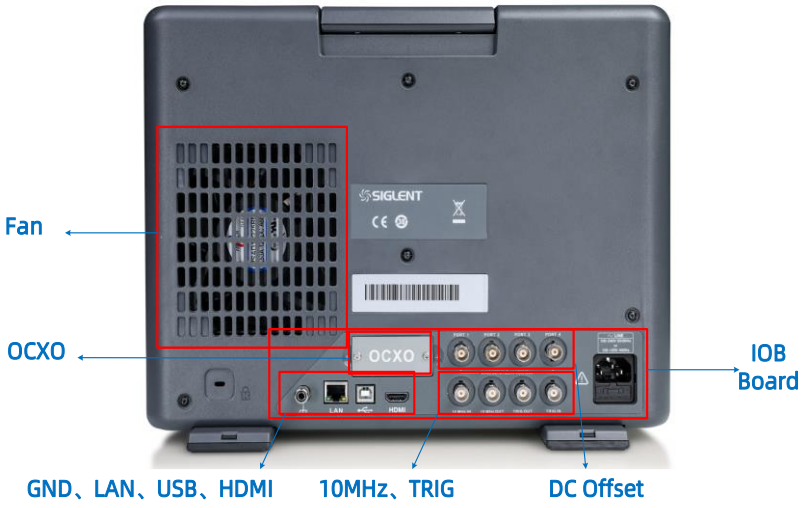


Figure 3-6 Back panel

Operate the instrument manually, mainly according to the customer's feedback, to check whether the instrument performance is consistent with the problems reported by the customer.

If the fault occurs again, it is necessary to further classify the fault; If the problem fed back by the customer cannot be reproduced, it is considered that the instrument is not faulty.

Fault Classification

After the fault is confirmed, it is necessary to classify the fault. It is mainly divided into functional failure and performance failure. It is mainly to operate the instrument according to the customer's feedback and check whether the instrument performance is consistent with the problems reported by the customer.

Functional failure mainly refers to the failure of some functions that can be easily judged from the appearance of the instrument, such as the appearance and physical damage of functional areas such as power supply, screen, key board, fan, USB interface, LAN interface, HDMI interface, 10MHz reference interface, TRIG interface, DC offset interface, aging of internal circuits, falling off of collision parts, and the impact of different working environments such as temperature, humidity, static electricity, The failure of devices thus

caused belongs to functional failure.

The performance failure mainly refers to the problems that the instrument cannot measure normally, the measurement error is large, the trace is uneven, and the trace displays as bottom noise.

Functional Failure

When the appearance and physical damage of the instrument cause the failure of the instrument function, the specific fault location can be confirmed through the "Front Panel" of the vector network analyzer and the "Back Panel" of the vector network analyzer.

If the appearance of the instrument is intact, but it is not a performance fault, you can enter Chapter 6 - "Troubleshooting" to analyze in detail whether the power supply component of the instrument is faulty, or whether the components in the front panel are faulty, or whether the components in the back panel are faulty.

Replace Faulty Parts

After confirming the specific part of the fault in the functional fault, first find the code "XX" of the fault part in Chapter 7 - "Replaceable Parts", then find the specific replacement

step "Removing and Replacing XX" according to the code "XX" in Chapter 8 - "Replacement Procedures", and finally complete the replacement. The replacement of all failed components is consistent with this step.

If it is confirmed that the key board of the instrument fails, first find the "Keypad PCBA" code "A4" in Chapter 7 - "Replaceable Parts", then find the specific replacement step "Removing the Keypad Assembly A4" in Chapter 8 - "Replacement Procedures" according to the code "A4", and finally complete the replacement.

After replacing the parts, it is necessary to confirm whether the instrument fault has been solved. If the problem has been solved, you can go to the next step to "Adjustments", and then "PV" to complete the maintenance task; If the problem still exists after replacing the parts, it is necessary to return to the "Fault classification" step and repair the instrument according to the process again.

Performance Failure

When a performance failure occurs to the instrument, the PV test should be carried out on the failed instrument first, and the results of the PV test can be used to further analyze

how to repair the failed instrument. For details on PV testing, see Chapter 4 - "Performance Tests".

Find out the faulty module through PV data, and then replace the module in Chapter 7 - "Replaceable Parts Listings". After replacement, calibrate the whole instrument, and finally conduct PV test on the instrument performance.

If the PV test result of the instrument is Pass, the maintenance task is considered completed; If the PV result of the instrument is failed, the faulty module shall be found again according to the failed items according to the maintenance process, and the module shall be replaced, calibrated, PV tested, etc. until all PV data are passed.

Replaceable Parts

Find out the failure module according to the failure items in the PV test results. First, confirm which item failed in Chapter 4 - "Performance Tests".

If the PV result is Pass, the maintenance task is considered completed; If the PV result of the instrument is failed, the failure module shall be found again according to the failure item according to the maintenance process.

In PV projects, it mainly includes 10M Output Ref Freq, Transmitting Power Precision,

Transmitting Power Linearity, Receiver Power Precision, Receiver Dynamic Precision, Receiver Noise Floor, Ports Crosstalk. As shown in Table 3-1 below, failure of different PV projects corresponds to failure of different modules.

Table 3-1 PV result corresponding fault table

Output Power Precision	Output Power Linearity	Receiver Power Precision	Receiver Dynamic Precision	Recceiver Noise Floor	Ports Crosstalk and Dynamic Range	Fault module priority	Code priority
Pass	Pass	Pass	Pass	Pass	Pass	Mb	A1
Fail	Fail	Pass	Pass	Pass	Pass	Tx >LO > Mb	A13> A15>

							A1
Pass	Pass	Fail	Fail	Pass	Pass	Tx >LO > Mb	A13> A15> A1
Fail	Fail	Fail	Fail	Pass	Pass	Mb>LO>Tx	A1>A15>A13
Pass	Pass	Pass	Pass	Fail	Pass	Tx	A13
Pass	Pass	Pass	Pass	Pass	Fail	Tx	A13

The higher the priority of the faulty module, the greater the probability of its damage. Therefore, it is recommended to replace the faulty module according to the priority.

For example, when the two items Transmitting Power Precision and Transmitting Power Linearity fail, and the other items are PASS, the Tx module should be replaced first, and then the whole instrument should be calibrated and PV according to the maintenance process.

If the PV result still fails after replacing the Tx board, it indicates that the Tx board may not have failed. At this time, replace the LO board according to the priority of the faulty module and replace the original Tx board. Follow this step to replace the faulty modules in

turn until all PV results are PASS.

In the process of troubleshooting the faulty module, if the faulty module is replaced in turn according to the above troubleshooting process and the problem is not solved, it is recommended that the Tx module, LO module and Mb module be replaced at the same time.

Replacement Procedure

If you want to replace the Mb board, first find the digital board "A1 Mb panel" code "A1" in Chapter 7 - "Replaceable Parts", then find the specific replacement step "Removing and Replacing A1 Mb Panel" in Chapter 8 - "Replacement Procedures" according to the code "A1", and finally complete the replacement.

If you want to replace the LO board, first find the digital board "A15 LO panel" code "A15" in Chapter 7 - "Replaceable Parts", then find the specific replacement step "Removing and Replacing A15 LO Panel" in Chapter 8 - "Replacement Procedures" according to the code "A15", and finally complete the replacement.

If you want to replace the Tx board, first find the digital board "A13 TX panel 1" code "A13" in Chapter 7 - "Replaceable Parts", then find the specific replacement step "Removing and

Replacing A13 TX panel 1 or A14 TX panel 2" in Chapter 8 - "Replacement Procedures" according to the code "A13", and finally complete the replacement.

Adjustments

The complete instrument calibration is described in Chapter 5 - "Adjustments".

PV

PV testing is described in Chapter 4 - "Performance Tests".

4.Performance Tests

About Performance Tests

The performance of the network analyzer is specified in two ways: system specifications, and instrument specifications，It is the end user's responsibility to determine which set of specifications is applicable to their use of the VNA

A network analyzer measurement "system" includes the analyzer, calibration kit, test cables, and any necessary adapters

Instrument Specifications

The analyzer's instrument specifications are described in the "SNA5000A Data Sheet," available online at https://siglentna.com/wp-content/uploads/dlm_uploads/2021/07/SNA5000A_DataSheet_DS09050_E01B.pdf

Certificate of Calibration

SIGLENT certifies that the above product meets or exceeds published measurement specifications and has been calibrated using standards traceable

to National Metrology Institutes(NIM, NIST, NPL, PTB) that are linked to the international system of units(SI). The policies and procedures used at SIGLENT facility are based on ISO9001/IEC 17025:2005.

Performance Tests

The performance tests verify the electrical performance of your VNA. Your analyzer is automatically configured for each individual test

The model numbers of the equipment used by these performance tests are specified under "Recommended Test Equipment".

There are eleven tests in the performance test package:

- Output Power Precision
- Output Power Linearity
- Receiver Power Precision
- Receiver Power Dynamic Accuracy
- Receiver Noise Floor
- Ports Crosstalk and Dynamic Range

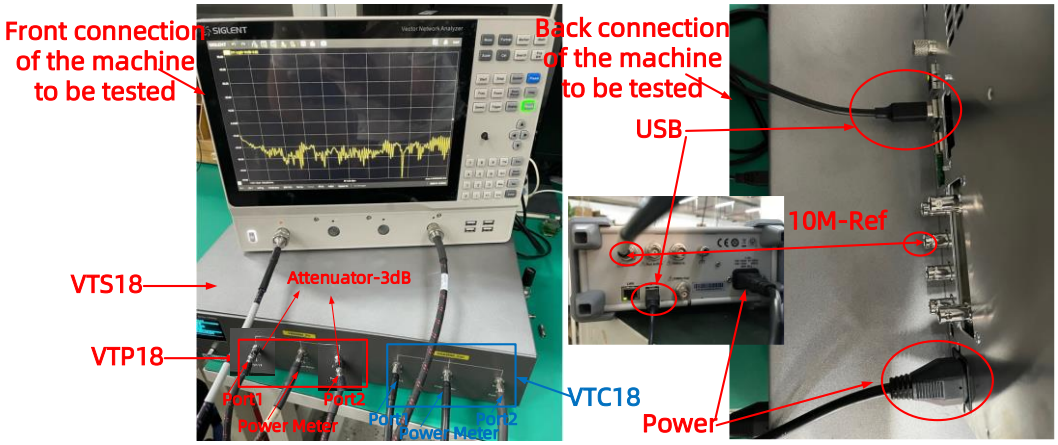


Figure 4-1 Connection mode of the instrument to be tested

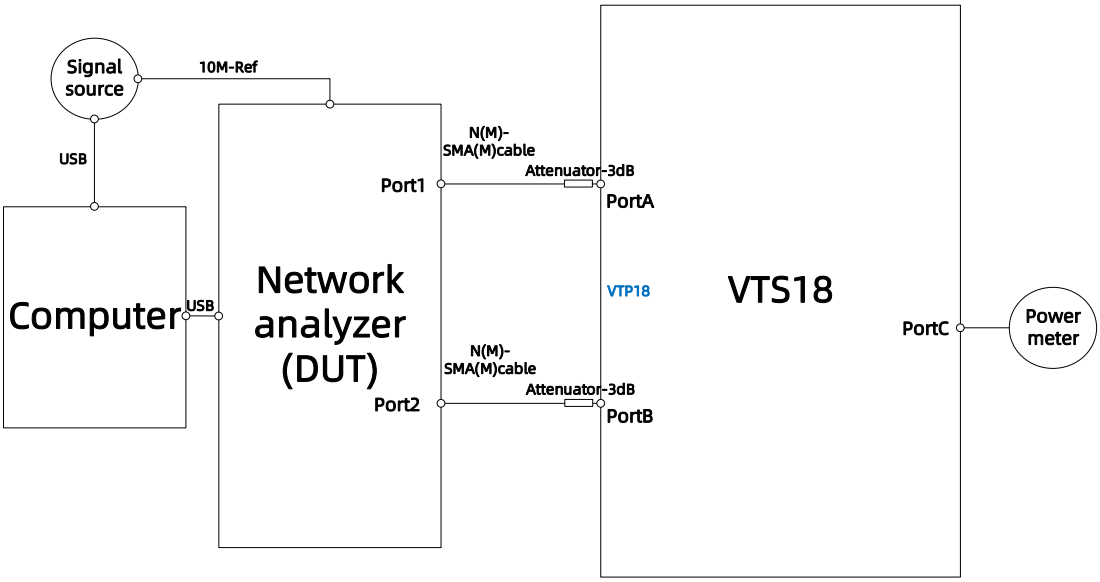


Figure 4-2 Connecting frame structure

Equipment Used:

-Power meter

-Any necessary adapters

- Cables

- VTS18

Performance Test of the Test Environment

VTS18 is a test tool integrating calibration and PV. It supports the working frequency band of 9K-18GHz, mainly including VTC18 and VTP18. VTP18 tooling is shown by the red mark in Figure 4-1, which represents PV tooling and has three ports, namely Port1, Port2 and Power Meter.

When using PV tooling for testing, it is only necessary to connect Port 1 to Port 1 of the instrument port to be tested, Port 2 to Port 2 of the instrument port to be tested, Power Meter to Power Meter, and USB to computer, as shown in Figure 4-2.

Before testing, it is necessary to confirm whether the line loss needs to be measured. If you are connecting the instrument for the first time or have been connecting the instrument for more than three months, you need to retest the line loss of the VTP18 tooling and replace the line loss file. The specific operation is as follows:

Measurement of line loss in PV process

When the connection relationship of PV tooling changes, the line loss needs to be

renewed. For example: replacement of connecting wire, loose adapter, etc. When the connection relationship of PV tooling has not changed, it is also necessary to update the line loss every two months. The specific operation steps of line loss update are as follows:

First log in to the EasyVNA interface

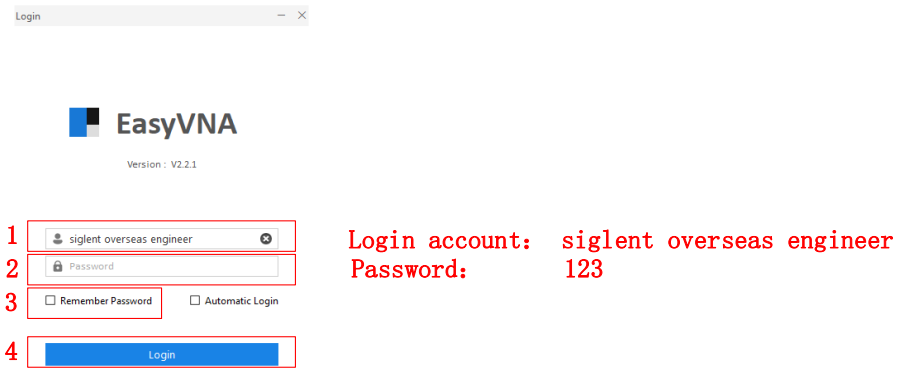


Figure 4-3 Login interface

Then start measuring the line loss. Before measuring the line loss, a calibrated and accurate vector network analyzer is required to heat up the engine for more than half an hour, and then use it to measure the line loss. The specific steps are as follows:

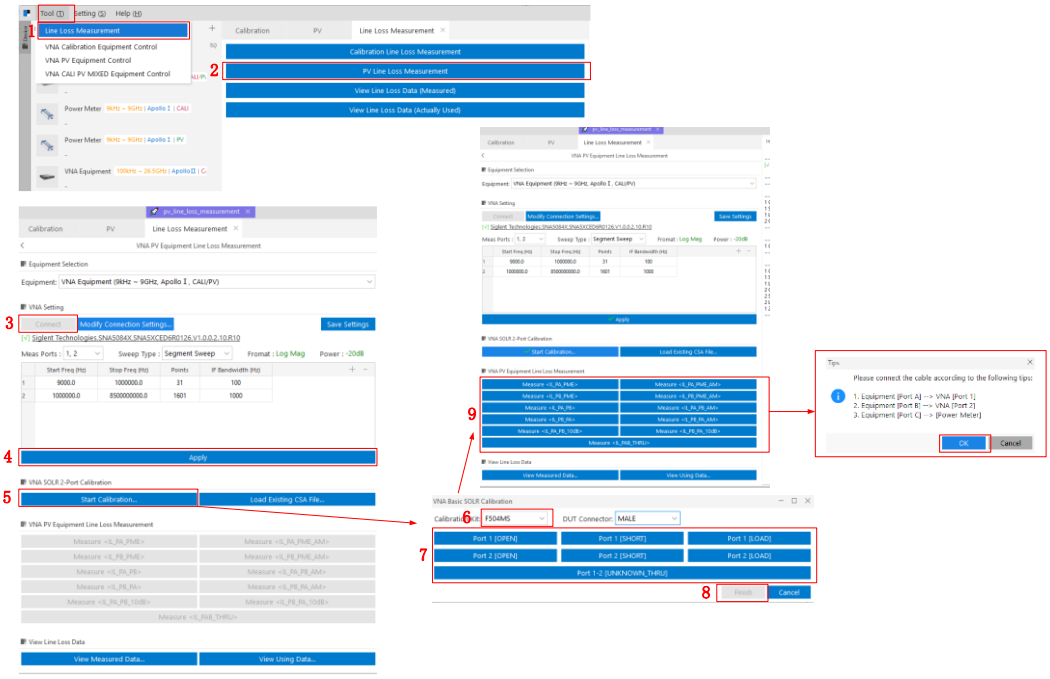


Figure 4-4 PV Line loss measurement

As shown in Figure 4-4, before measuring line loss, it is necessary to calibrate the calibration piece of the vector network analyzer, specifically steps 4, 5, 6, 7 and 8. After calibration, if the trace is found to be uneven, such as wave trace, it needs to be recalibrated.

After the calibration of the calibration piece is completed, start to measure the line loss. It is worth noting that in the process of testing the line loss, if there is an abnormal prompt, such as the line loss is too large or too small, first stop to check whether the wiring of the tooling environment is normal.

Measure [IL_PA_PME] and Measure [IL_PA_PME_AM]

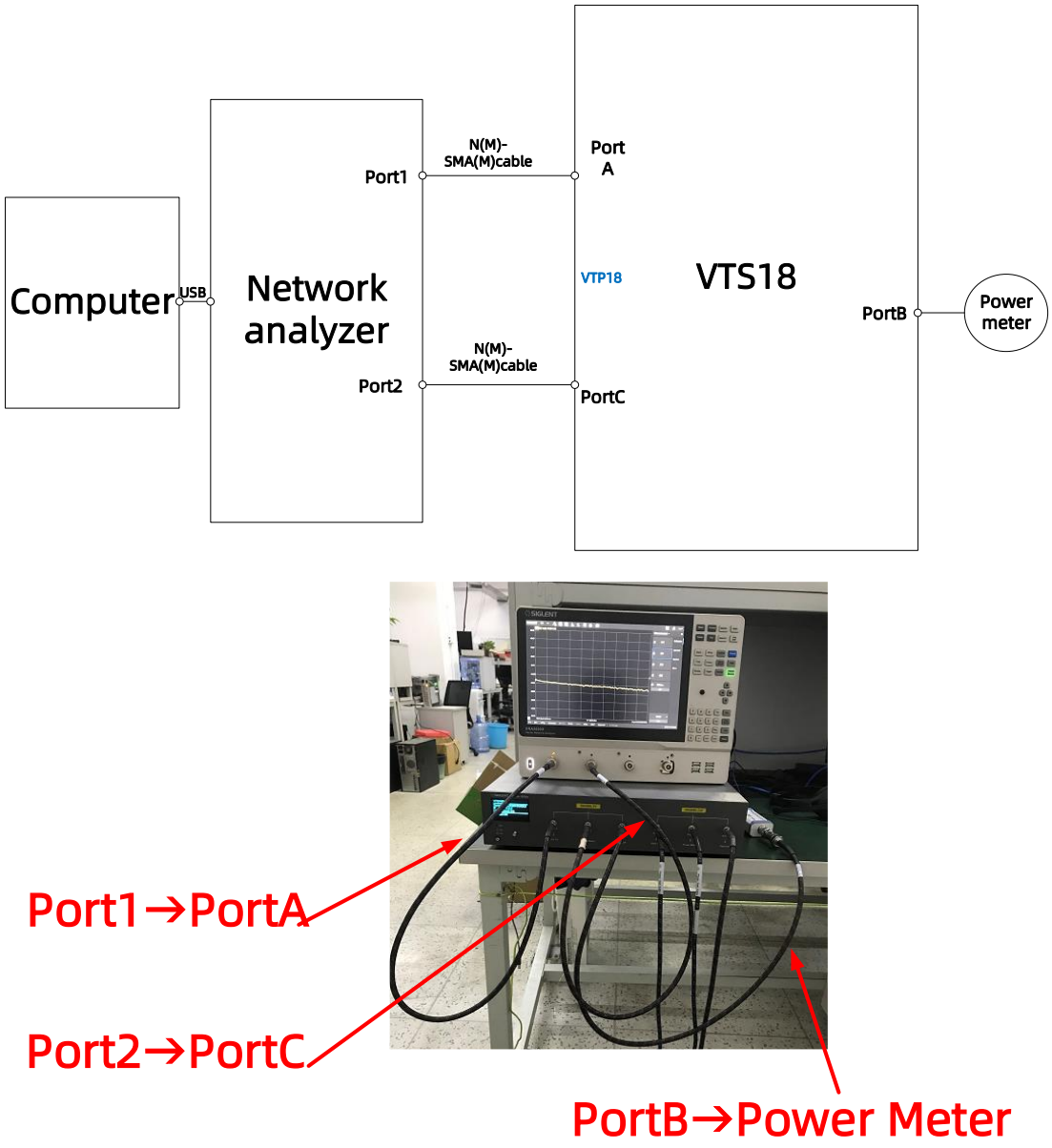
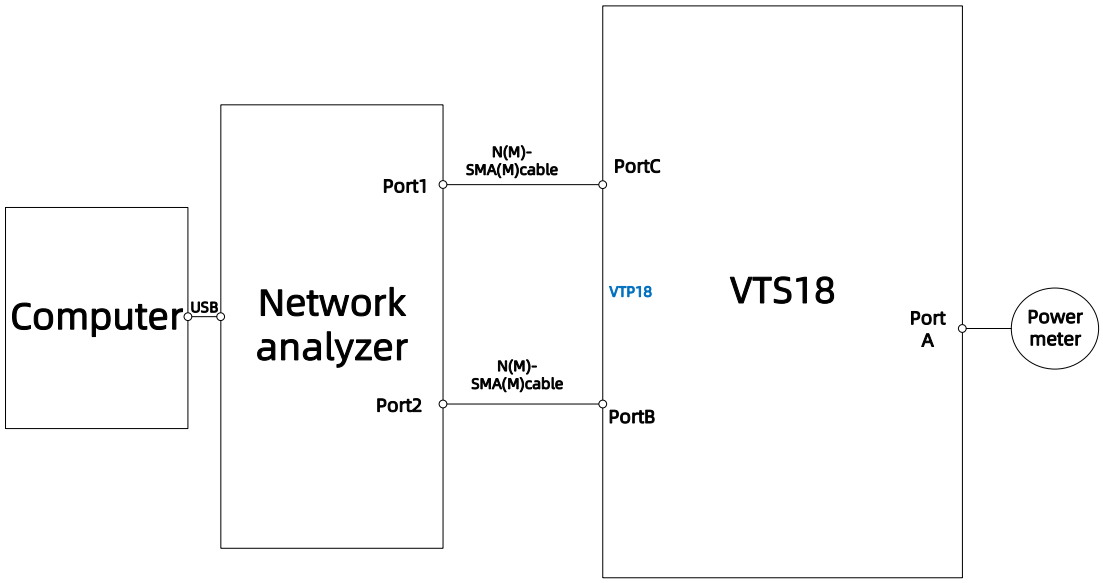


Figure 4-5 Measure [IL_ PA_ PME] and measure [IL_ PA_ PME_ AM] frame connections

When the connection is completed according to the above, click OK in step 9 of Figure 4-4.

Measure [IL_PB_PME] and measure [IL_PB_PME_AM]



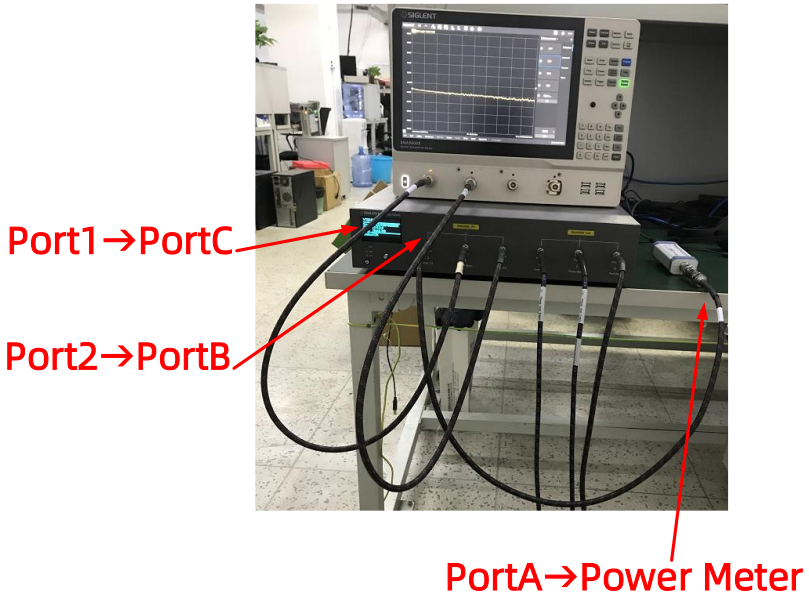


Figure 4-6 Measure [IL_ PB_ PME] and measure [IL_ PB_ PME_ AM] frame connections

When the connection is completed according to the above, click OK in step 9 of Figure 4-4.

Measure [IL_PA_PB], measure [IL_PB_PA], measure [IL_PA_PB_AM], measure [IL_PB_PA_AM] and measure [IL_PAB_THRU]

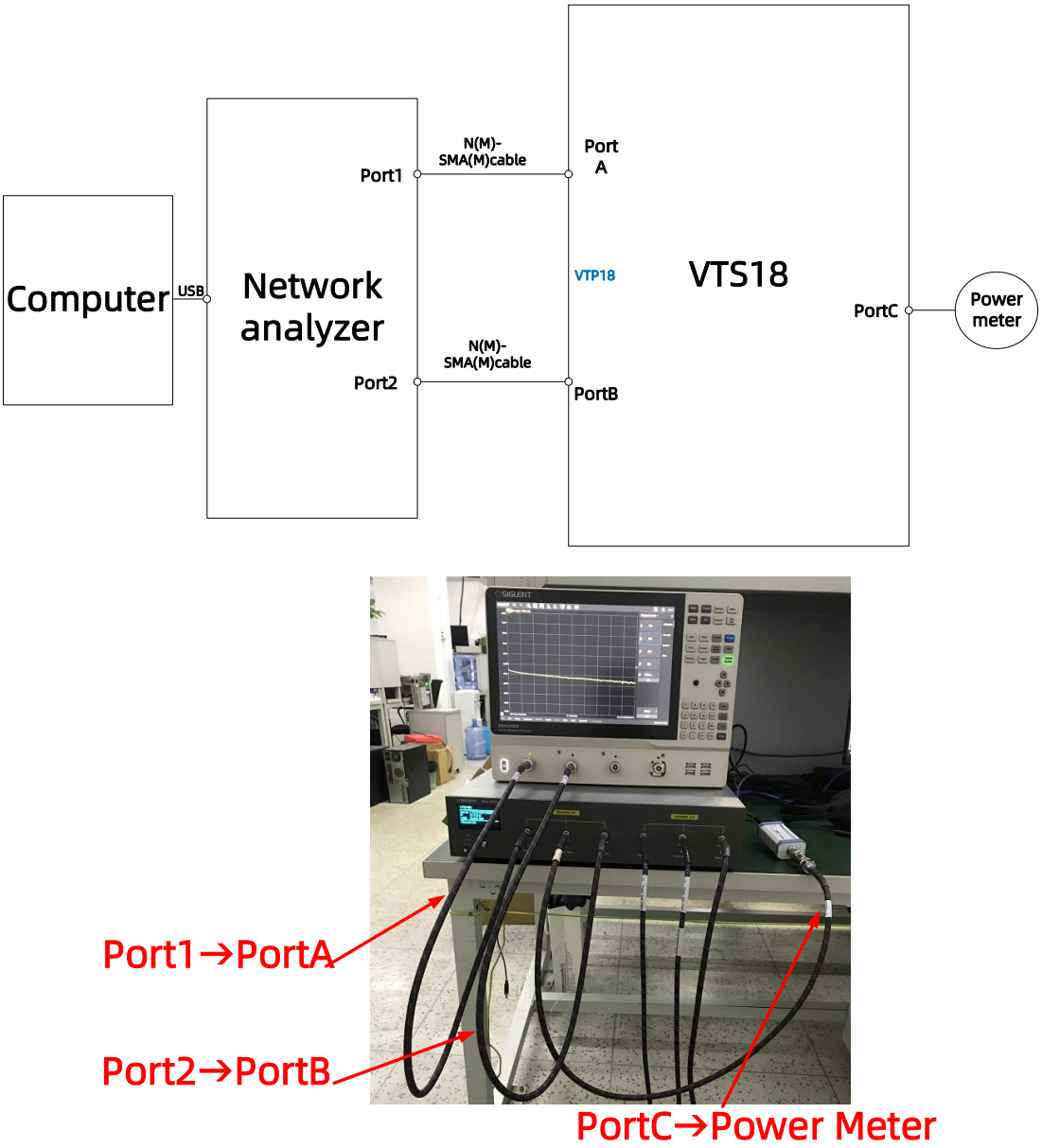


Figure 4-7 Measure [IL_PA_PB], measure [IL_PB_PA], measure [IL_PA_PB_AM], measure [IL_PB_PA_AM] and measure [IL_PAB_THRU] frame connections

When the connection is completed according to the above, click OK in step 9 of Figure 4-4.

The line loss measurement required for the calibration process is completed.

Update of line loss in PV process

The directory where the tested line loss data is stored and the directory where the software calls the line loss data are two different paths. The tested line loss needs to be copied to the location where the software calls. The following is a detailed introduction.

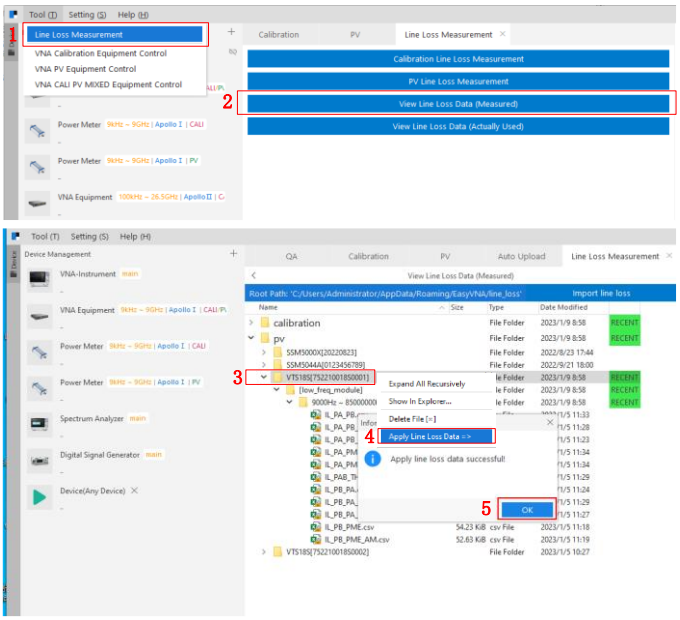


Figure 4-8 Update of line loss

PV Test

When the above connection is completed, open the PV interface, as shown in Figure 4-9 below. The account number is siglent overseas engineer, and the password is 123.

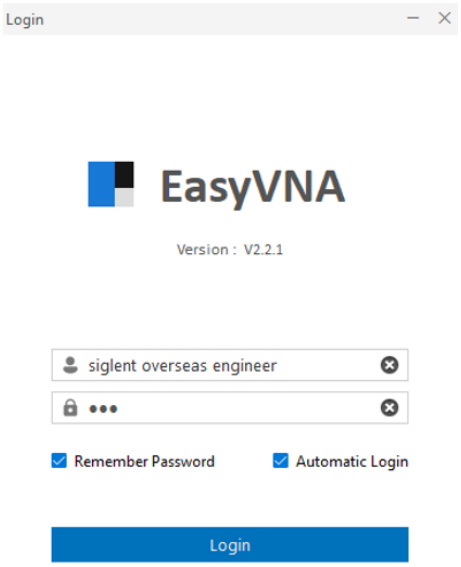


Figure 4-9 Login interface

After logging in, storage location setting and connect the instrument, as shown in Figure 4-10 below.

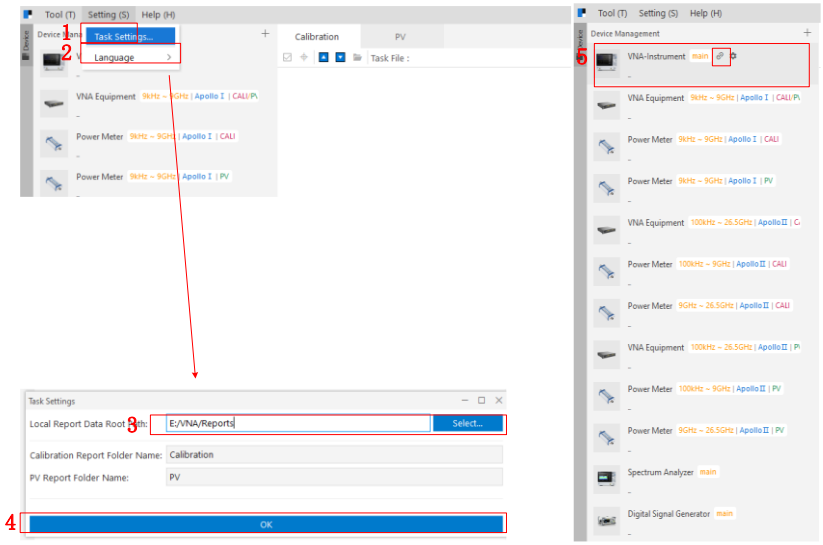


Figure 4-10 Storage location setting and connecting the instrument

After the instrument is successfully connected, select Start under the PV item bar. The specific steps are shown in Figure 4-11 below.

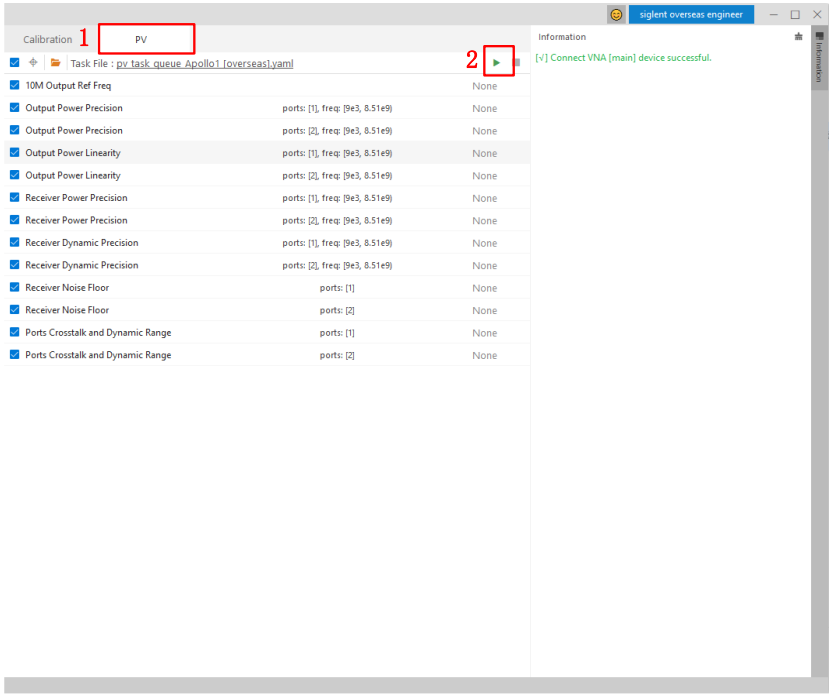


Figure 4-11 PV interface

The test results will be prompted by the words Pass and Fail on the right side of the screen.

Test Log

Location of test log：C:\Users\Administrator\AppData\Local\EasyVNA.

The printed information during the test will be stored in the log. If there is a problem, please send the test report and test log to the headquarters for analysis.

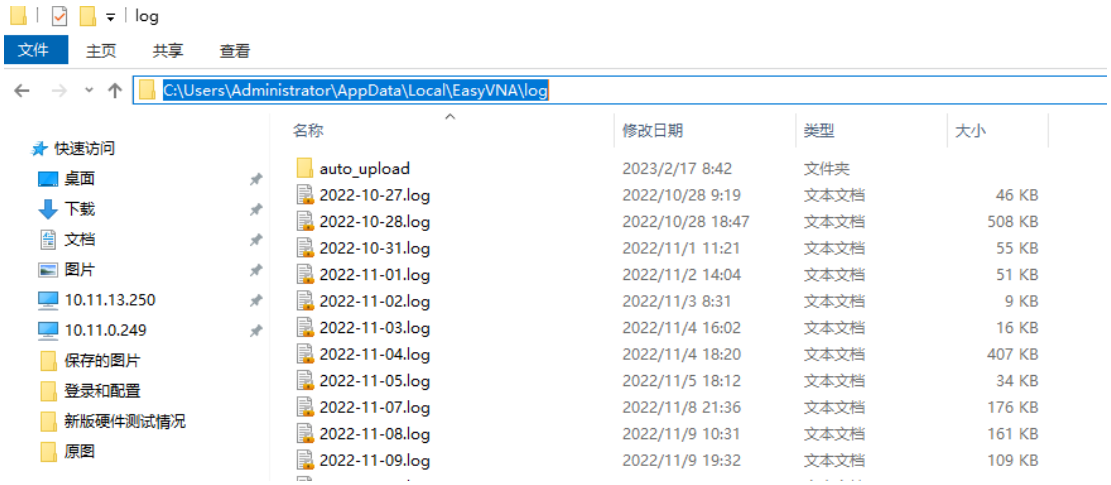


Figure 4-12 Test log

5. Adjustments

Adjustments

These adjustments are firmware-driven tests that are used to fine-tune your analyzer.

If multiple adjustments are to be performed, perform them in the order listed

- “FPGA LODELAY Tap”
- “Output Power Calibration”
- “Receiver Freq Response”
- “System Performance Calibration”

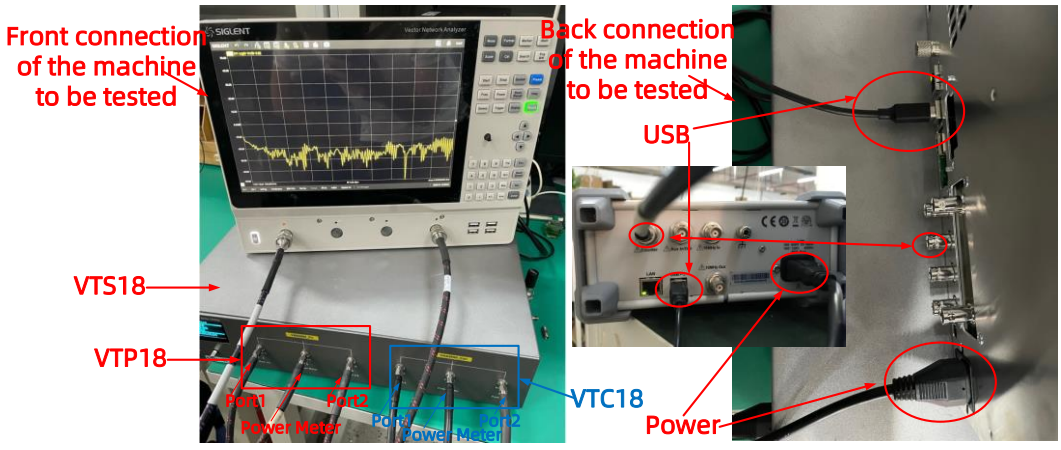


Figure 5-1 Connection mode of the instrument to be tested

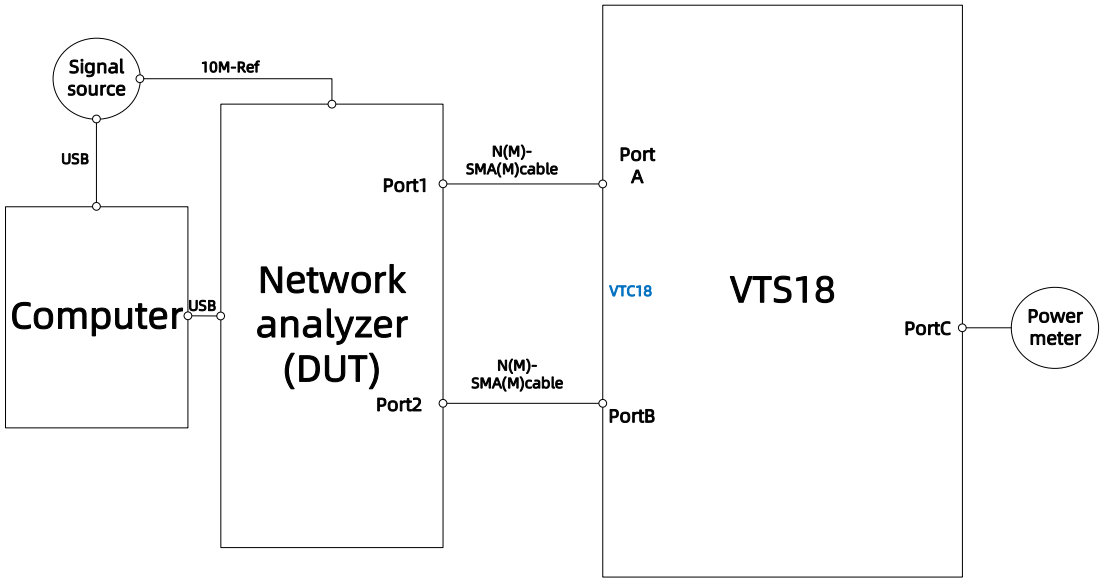


Figure 5-2 Connecting frame structure

Adjustments of the Test Environment

VTS18 is a test tool integrated with calibration and PV. It supports the working frequency band of 9K-18GHz, mainly including VTC18 and VTP18. The VTC18 calibration tooling is shown by the blue mark in Figure 5-1. It has three ports, namely Port1, Port2 and Power Meter.

When it is necessary to use calibration tooling for testing, you only need to connect Port 1 to Port 1 of the instrument port to be tested, Port 2 to Port 2 of the instrument port to be tested, Power Meter to Power Meter, and USB to computer, as shown in Figure 5-2.

Before testing, it is necessary to confirm whether the line loss needs to be measured. If

you are connecting the instrument for the first time or have been connecting the instrument for more than three months, you need to retest the line loss of the VTC18 tooling and replace the line loss file. The specific operation is as follows:

Measurement of Line Loss During Calibration

When the connection relationship of the calibration tooling changes, the line loss needs to be updated again. For example: replacement of connecting wire, loose adapter, etc. When the connection relationship of the calibration tooling has not changed, it is also necessary to update the line loss every two months. The specific operation steps of line loss update are as follows:

When the connection relationship of the calibration tooling changes, the line loss needs to be updated again. For example: replacement of connecting wire, loose adapter, etc. When the connection relationship of the calibration tooling has not changed, it is also necessary to update the line loss every two months. The specific operation steps of line loss update are as follows:

First log in to the EasyVNA interface

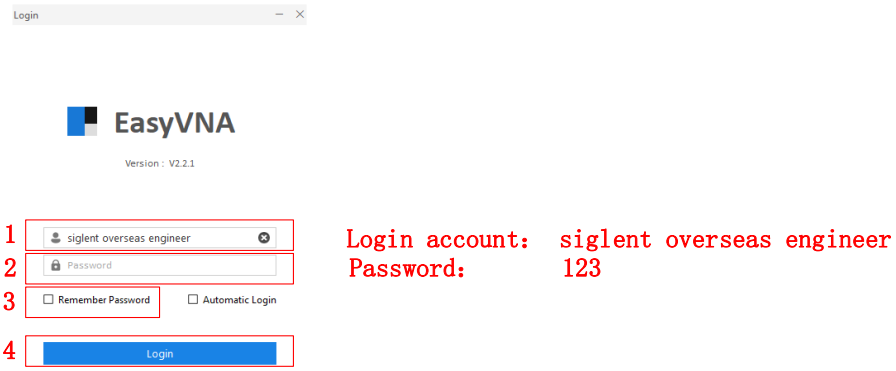


Figure 5-3 Login interface

Then start measuring the line loss. Before measuring the line loss, a calibrated and accurate vector network analyzer is required to heat up the engine for more than half an hour, and then use it to measure the line loss. The specific steps are as follows:

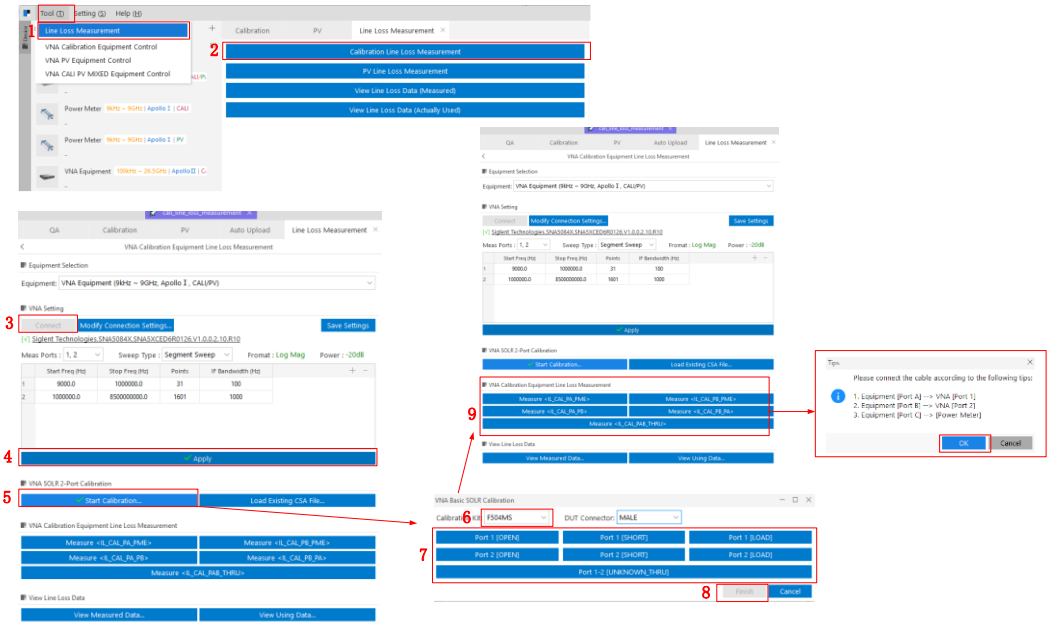


Figure 5-4 Line loss measurement

As shown in Figure 5-4, before measuring line loss, it is necessary to calibrate the calibration piece of the vector network analyzer, specifically steps 4, 5, 6, 7 and 8. After calibration, if the trace is found to be uneven, such as wave trace, it needs to be recalibrated.

After the calibration of the calibration piece is completed, start to measure the line loss. It is worth noting that in the process of testing the line loss, if there is an abnormal prompt, such as the line loss is too large or too small, first stop to check whether the wiring of the tooling environment is normal.

Measure [IL_CAL_PA_PME]

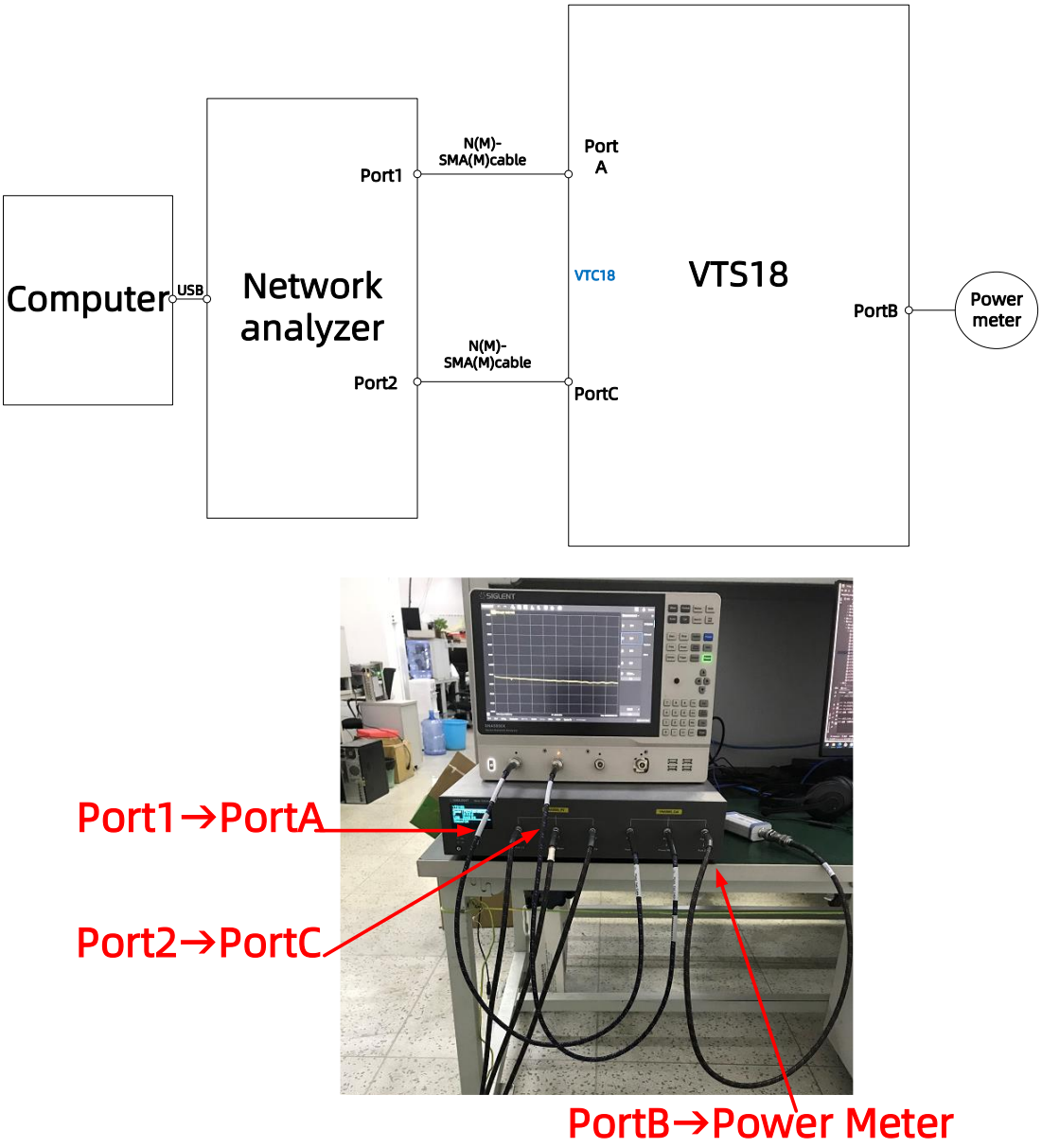
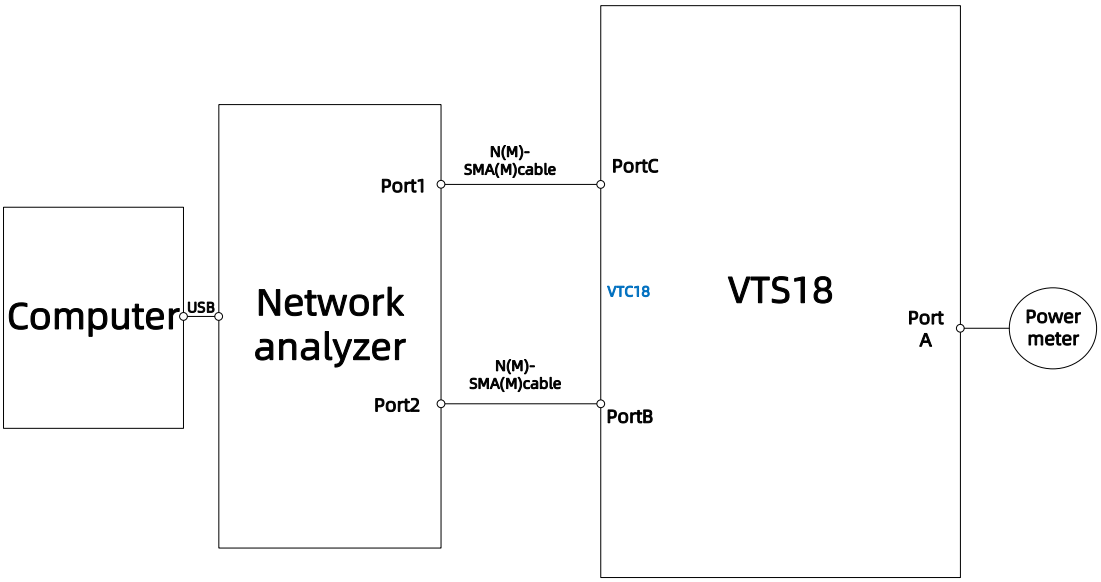


Figure 5-5 Measure [IL_CAL_PA_PME] frame connection

When the connection is completed according to the above, click OK in step 9 of Figure

5-4.

Measure [IL_CAL_PB_PME]



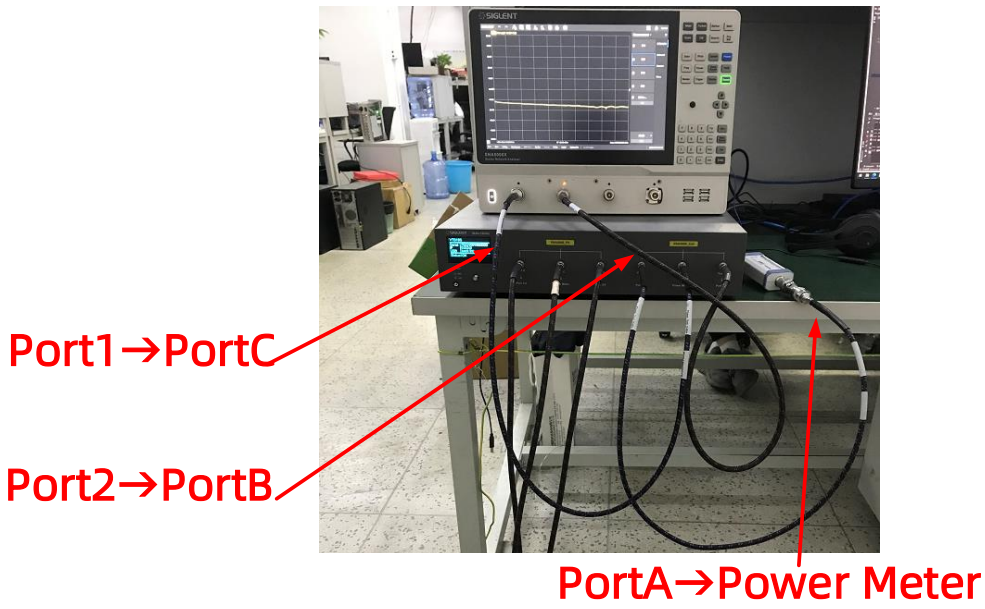
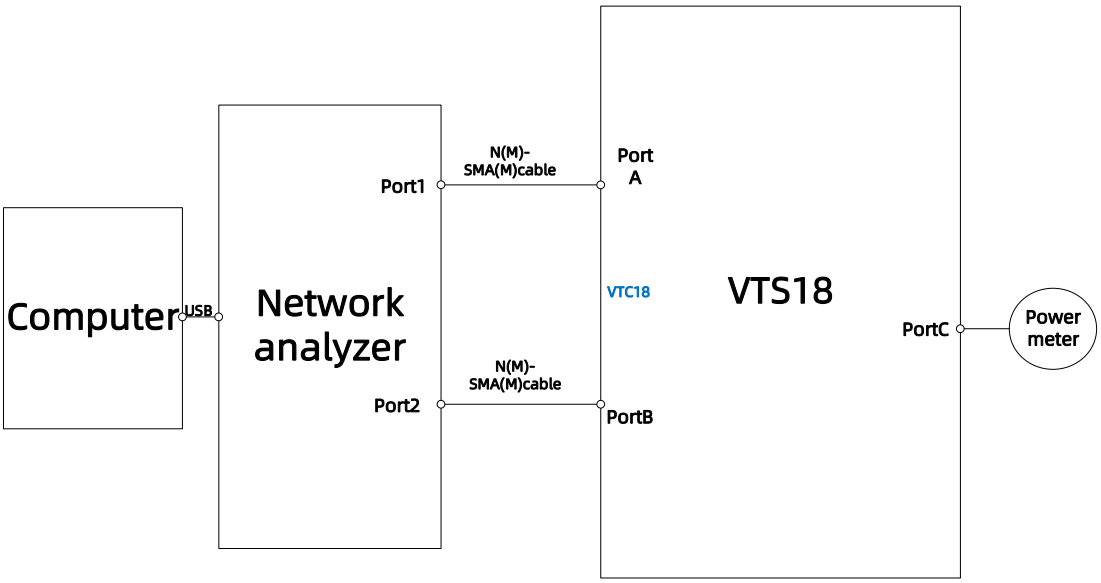


Figure 5-6 Measure [IL_CAL_PB_PME] frame connection

When the connection is completed according to the above, click OK in step 9 of Figure 5-4.

Measure [IL_CAL_PA_PB], measure [IL_CAL_PB_PA] and measure [IL_CAL_PAB_THRU]



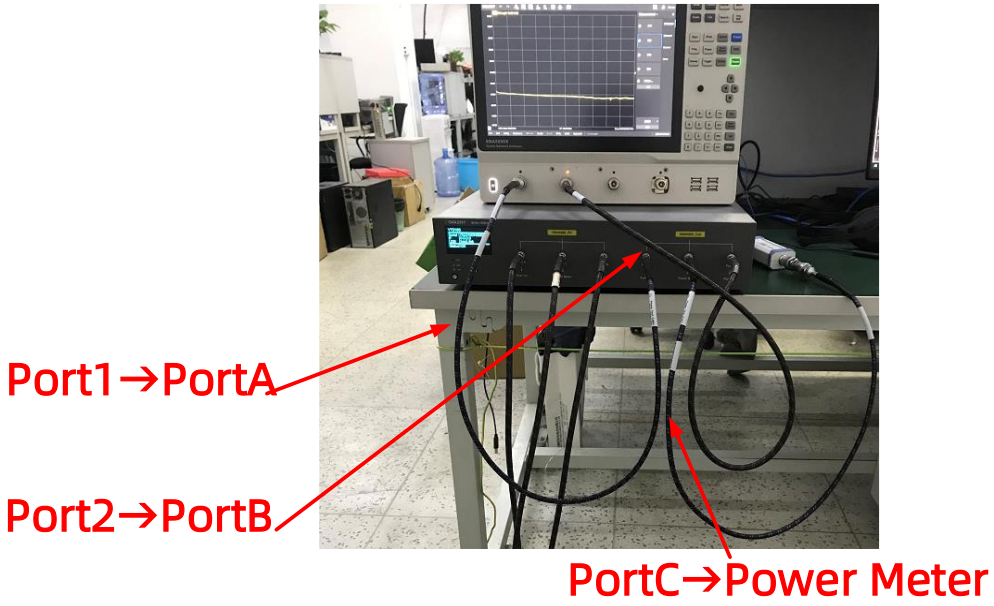


Figure 5-7 Measure [IL_CAL_PA_PB], measure [IL_CAL_PB_PA] and measure [IL_CAL_PAB_THRU] frame connection

When the connection is completed according to the above, click OK in step 9 of Figure 5-4.

The line loss measurement required for the calibration process is completed.

Update of line loss during calibration

The directory where the tested line loss data is stored and the directory where the software calls the line loss data are two different paths. The tested line loss needs to be copied to the location where the software calls. The following is a detailed introduction.

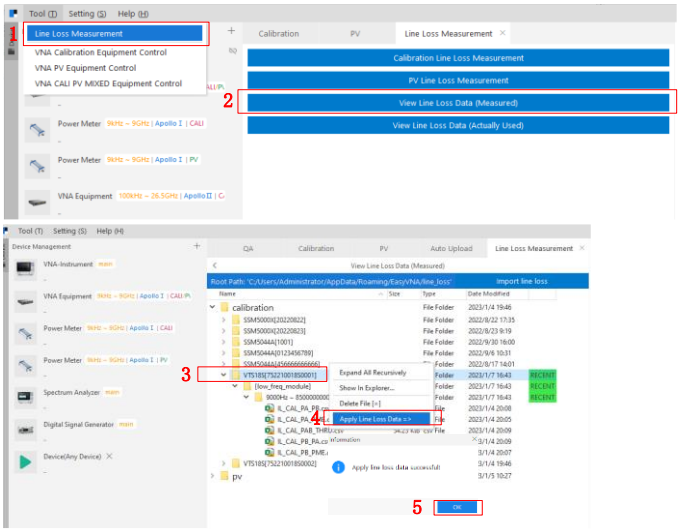


Figure 5-8 Update of line loss during calibration

Adjustments Procedure

When the above connection is completed, open the calibration interface, as shown in Figure 5-9 below. The account number is siglent overseas engineer, and the password is 123.

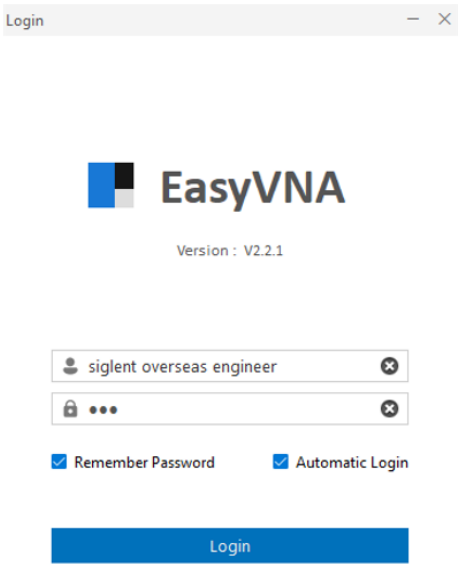


Figure 5-9 Login interface

After logging in, storage location setting and connect the instrument, as shown in Figure 5-10.

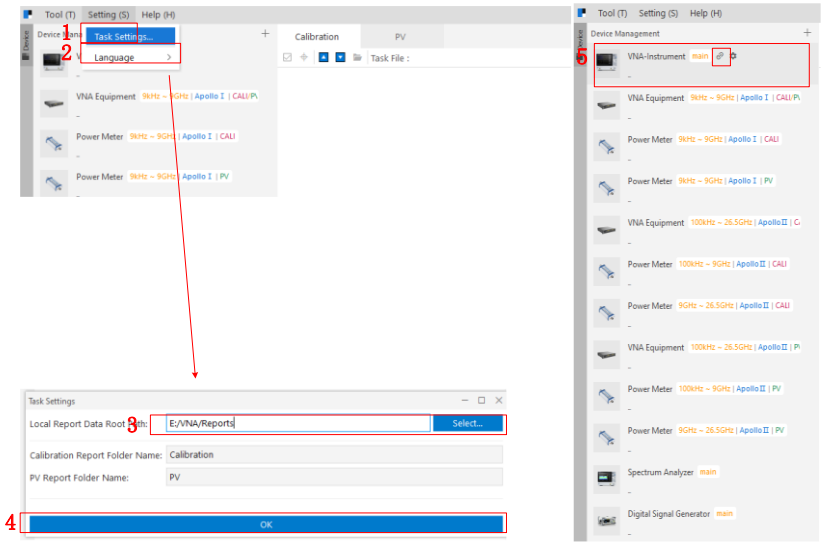


Figure 5-10 Storage location setting and connecting the instrument

After connecting the instrument successfully, select Start under the calibration item column. The specific steps are shown in Figure 5-11 below.

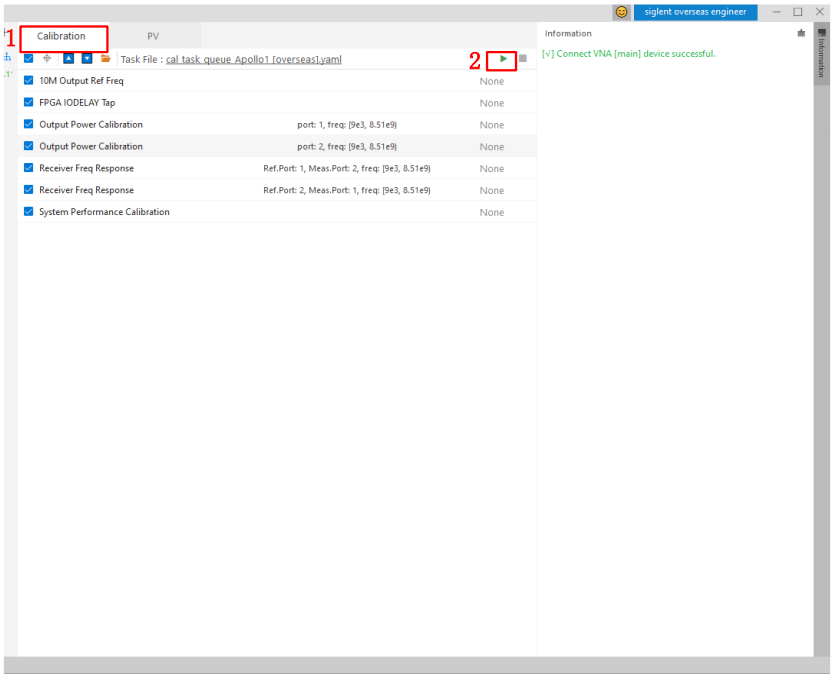


Figure 5-11 Calibration interface

The test results will be prompted by the words Pass and Fail on the right side of the screen.

Test Log

Location of test log：C:\Users\Administrator\AppData\Local\EasyVNA.

The printed information during the test will be stored in the log. If there is a problem, please send the test report and test log to the headquarters for analysis.

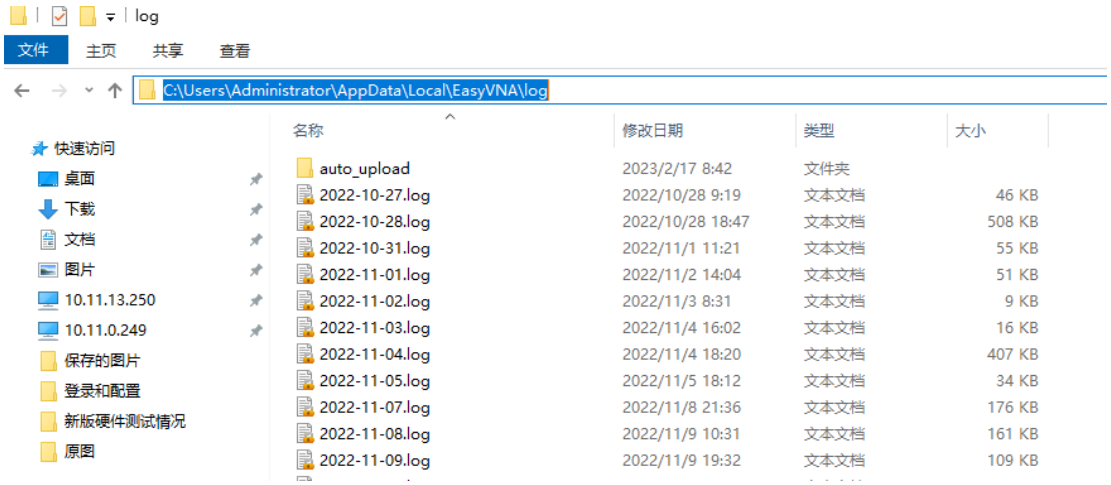


Figure 5-12 Test log

6.Troubleshooting

In the third chapter - "Troubleshooting Procedures", the solutions to some common instrument failures caused by physical damage to the appearance are described. This chapter will describe some other troubleshooting methods in detail. It mainly includes "Power Up Troubleshooting", "Front Panel Troubleshooting" and "Rear Panel Troubleshooting".

Power Up Troubleshooting

Immediately unplug the instrument from the ac power line if the unit shows any of the following symptoms:

- Smoke, arcing, or unusual noise from inside the analyzer
- A circuit breaker or fuse on the main ac power line opens

◆ AC Power Port and Fuse

Check your network analyzer for evidence that it is powering up correctly. Perform the following steps and make sure that the analyzer is displaying

correct behavior as noted in the following steps:

Step1. Disconnect all peripherals and plug in the network analyzer. Before the analyzer is powered on, the power switch should glow orange and no other lights should be on.

Step2. Turn on the network analyzer.

The power switch should glow white

The fans should be audible

The display should flash and then show the hardware boot-up sequence

The Linius operating system should start

The network analyzer measurement interface should open with an S11 measurement displayed

Step3. If the analyzer powers up correctly, continue troubleshooting with "Front Panel Troubleshooting"

Step4. If the analyzer does not power up correctly, follow these troubleshooting steps:

-If the power switch does not glow, go to "Power Supply Check"

-If you cannot hear the fan operating, go to "If the Fans Are Not Operating"

-If the power switch glows white and the fans are operating (audible), but the display remains dark, go to "Troubleshooting LCD Display Problems"

- If the instrument appears to abort the network analyzer measurement interface process, contact SIGLENT. Refer to "Contacting SIGLENT"

Power Supply Check

A catastrophic failure in the power supply can be determined by observing the power switch and the power supply LED indicators:

1、Ensure that the instrument is plugged in with the power switch in the standby position (power not switched on). Verify that the power switch displays an orange light. A power switch that displays an orange light indicates that the power supply standby line is active and functional and the instrument is in standby mode

2、Turn on the instrument power and verify that the power switch now displays a white light. When the power switch displays a white light, it is an indication that the power supply is active and the instrument is on

3、You can determine which power supplies are functioning by viewing the LED indicators on the A1 Mb board and measuring the power supply voltages at measurement Points. Refer to Figure 6-1

4、If any power supply voltage is missing, it is likely that the problem is a defective power supply Assembly, the A1 Mb board that is loading down the A16 power supply. Continue with "If Any Supply Voltage Is Missing" to determine the cause of the problem

5、If the power switch is lit correctly, and all the power supply voltages appear to be present, the power supply has not suffered a catastrophic failure. However, the power supply could still be at fault. Continue at "Measure the Individual Supply Voltages" to verify that the actual supply voltages are correct

Measure the Individual Supply Voltages

Measure the power supply voltages using a digital multi-meter. Use the point labeled ACOM as ground reference for analog supplies and the point marked DCOM as ground reference for digital supplies

Refer to Figure 6-1 for the power supply measurement points on the A1 Mb board. Refer to Table 6-1 for the correct voltages

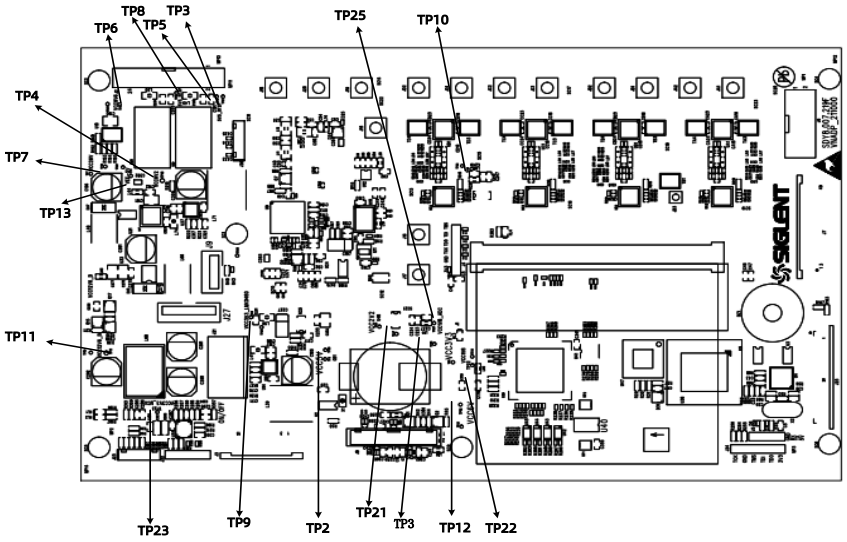


Figure 6-1 A1 Mb Board power supply LED indicators and measurement points

WARNING

The instrument contains potentially hazardous voltages. Refer to the safety

symbols provided on the instrument and in "General Safety Considerations" before operating the unit with the cover removed. Make sure that the safety instructions are strictly followed. Failure to do so can result in personal injury or loss of life

CAUTION

Do not operate the analyzer with the outer cover removed for more than 30 minutes, as this could cause the analyzer to overheat which could result in costly damage

NOTE

If any one individual voltage supply from the A1 Mb panel develops an over-voltage or over-current problem, all supplies are affected. The cause of the over-voltage or over-current condition can be the A1 Mb panel itself, or any assembly to which the A1 Mb panel provides voltage. To isolate the cause, continue to the assembly removal process as described in the section titled "If Any Supply Voltage Is Missing"

Table 6-1 Power supply measurement point

Test Point	Supply Name	Expected Level (Vdc)
TP11	+12.6V	+12.6±0.1
TP23	+3.3v	+3.3±0.1
TP13	+6.2V	+6.2±0.1
TP12	+6V	+6±0.1
TP2	+5V	+5±0.1
TP3	+3.3V	+3.3±0.1
TP21	+2.2V	+2.2±0.1
TP22	+1.8v	+1.8±0.1
TP10	+5V	+5±0.1
TP25	+1.8v	+1.8±0.1
TP9	+3.3V	+3.3±0.1
TP5	+5.5V	+5.5±0.1
TP6	+9.6V	+9.6±0.1

TP8	+5.5V	+5.5±0.1
TP7	+26V	+26±0.1
TP4	-5v	-5±0.1

If All Supply Voltages are Present

If all of the supplies have measured within tolerances, and the instrument still is not functioning properly, refer to "Front Panel Troubleshooting"

If Any Supply Voltage Is Missing

WARNING

Disconnect the line-power cord before removing any assembly. Procedures described in this document may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury or loss of life

You must sequentially remove all of the assemblies, taking care to disconnect the line power cord before each removal, and then measure the supply voltages

after each removal

If the missing supply voltages return to a "power on" condition after removal of an assembly, suspect that assembly as being defective.

Remove the network analyzer assemblies in the order specified in the following steps (refer to Chapter 8 for removal instructions)

1. Unplug the LO panel (refer to "Removing and Replacing A15 LO Panel")

2. Unplug the key panel (refer to "Removing the Keypad Assembly A4")

3. Unplug the front panel (refer to "Removing and Replacing the Front Panel Assembly")

4. Unplug the IOB panel (refer to "Removing and Replacing the IOB plane A6")

5. Unplug the display assembly (refer to “Removing and Replacing the A2-A5 and Other Front Panel Subassemblies”)

6. Unplug the OCXO assembly (refer to “Removing and Replacing the A6-A12 and Other Rear Panel Subassemblies”)

7. Unplug the medium frequency cable (refer to “Removing and Replacing A12 LO Panel”)

8. Unplug the 160M clock group (refer to “Removing and Replacing A12 LO Panel”)

The minimum required assemblies to power up the analyzer are:

-power supply

-Mb panel assembly

To further isolate the failure in the two remaining assemblies, measure the

resistance (with the power turned off) from the power supply test points to either ACOM or DCOM

NOTE:

Make sure that the only assemblies plugged in are the two minimum required assemblies listed above

If the Fans Are Not Operating

CAUTION

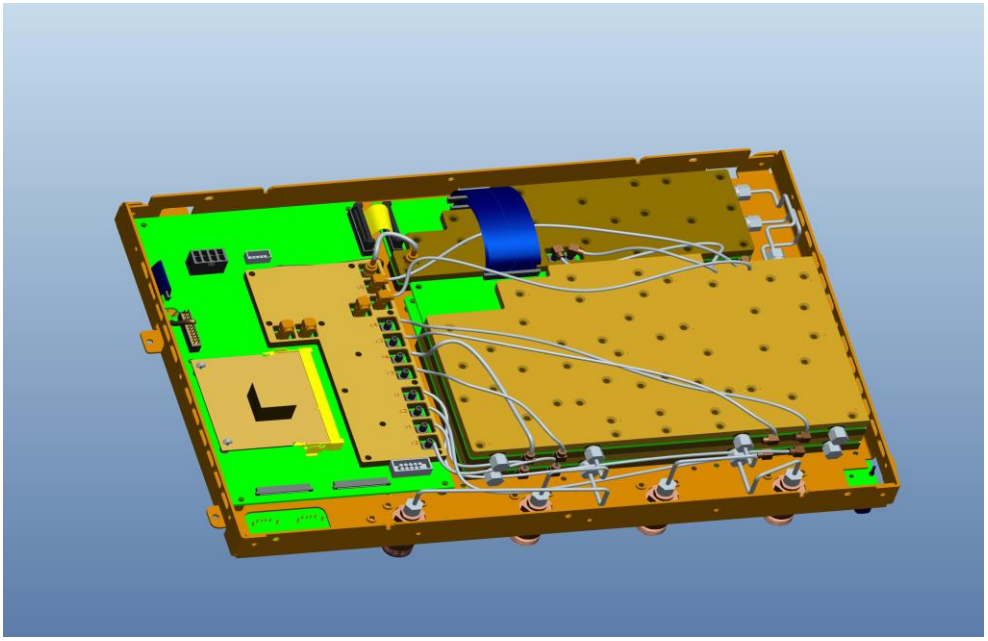
The power supply may be in thermal shutdown if the instrument has been operating without the fans running. Allow the instrument to cool down before troubleshooting

If fan is not operating, suspect a power supply problem, a defective A1 Mb panel or defective fan. Refer to "Power Supply Check" to check the individual supplies.

If the supplies are within specifications. Finally, suspect the A1 Mb panel or defective fan. Perform the following procedure:

1、Remove the fan bracket，from the analyzer to expose the fan power cable connections on the Mb panel. Refer to Figure 6-2 for location of these connections. Refer to “Removing and Replacing the Fan A7”

2、Plug in the power cord and measure the fan voltages at all three connectors on the A1 Mb panel



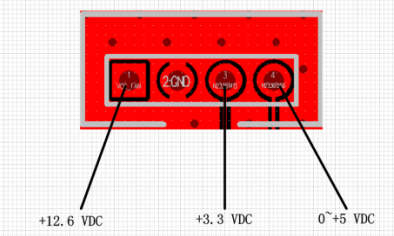


Figure 6-2 Fan power cable connections

3、If the correct voltage is present at each connection and the fan connectors are in good mechanical condition, suspect a defective fan. Refer to "Removing and Replacing the Fan A7"

4、If the correct voltage is not present, suspect a defective A1 Mb panel. Refer to "Removing and Replacing A1 Mb Panel"

Troubleshooting LCD Display Problems

This procedure is intended to isolate the faulty assembly when the display is dark. If the display is lit, but the color mix is faulty, refer to "Display assembly Test"

1、If the display is dim, the display assembly is defective。Refer to "Removing

the Display Assembly”

2、If the display is dark (not visible), connect an external VGA monitor to the rear panel Monitor output connector. If the video information is not present on the external VGA monitor, the most probable cause is the Mb board。Refer to “Removing and Replacing A1 Mb Panel”

3. If the external VGA monitor displays the correct information， verify that the Mb panel works normally and can be displayed. If the front panel interface ribbon cable is properly connected, suspect that one or more of the following is defective:

-inverter board (mounted on the display assembly)

- display assembly

-A1 Mb panel

Front Panel Troubleshooting

The front panel assembly consists of the A4 key panel, the A3 USB board, and the A2 display assembly.

Refer to the following sections to verify the operation of the noted assemblies:

- “Front Panel Keypad and RPG Test”

- “The USB board”

- “The display assembly”

If all assemblies are working correctly, continue troubleshooting with “Rear Panel Troubleshooting”

Front Panel Keypad and RPG Test

Test the front panel keypad by running the front panel test. To run the front panel test, perform the following:

Press UTILITY System key，then Self Test，then Key Test.... A Front Panel Key Test Box will be displayed, as shown in Figure 6-3

Then Press each of the Keys listed in the table 6-2. If the color of the Key Test Box is changed, the Key functions is properly

-If all the key colors are correct, then the front panel keypad is working. If some of the keys are not working, suspect a faulty keypad. To replace the keypad, refer to “Removing the Keypad Assembly A4” on page 956

- If none of the keys are working correctly, suspect a faulty A1 Mb board. To replace the A1 Mb board, refer to “Removing and Replacing A1 Mb Panel”

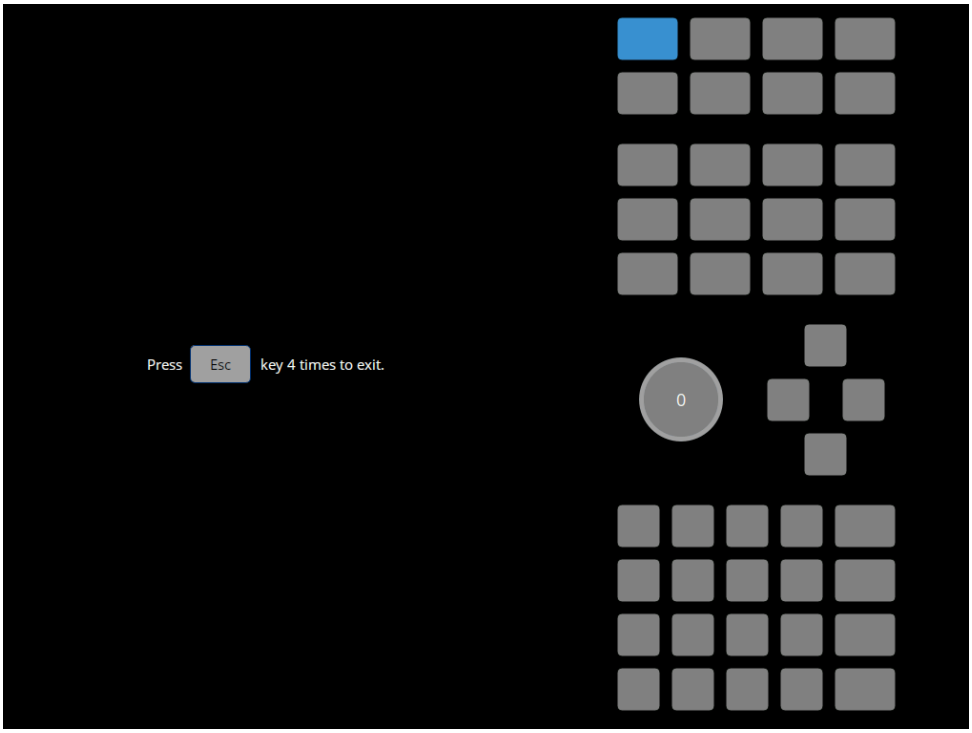


Figure 6-3 Front panel key test box

Table 6-2 Front panel Keyboard key names

Utility	RESPONSE Keys	Stimulus	Navigation Keys	Numeric
Touch	Meas	Freq	←	1
System	Format	Sweep	→	2

Help	Marker	Trigger	↑	3
Preset	Math	Stop	↓	4
Display	Scale	Start		5
Save Recall	Cal	Power		6
	Avg BW			7
	Search			8
				9
				0

Checking the RPG (Front Panel Knob)

1. Press UTILITY System key, then Self Test, then Key Test.... A Front Panel Key Test Box will be displayed, as shown in Figure 6-4

2. Rotate the knob once clockwise and once counterclockwise. The rotation track of the knob can be displayed in the Key Test Box

3. If the trace doesn't exist, suspect a faulty keypad, To replace the keypad, refer

to “Removing the Keypad Assembly A4”

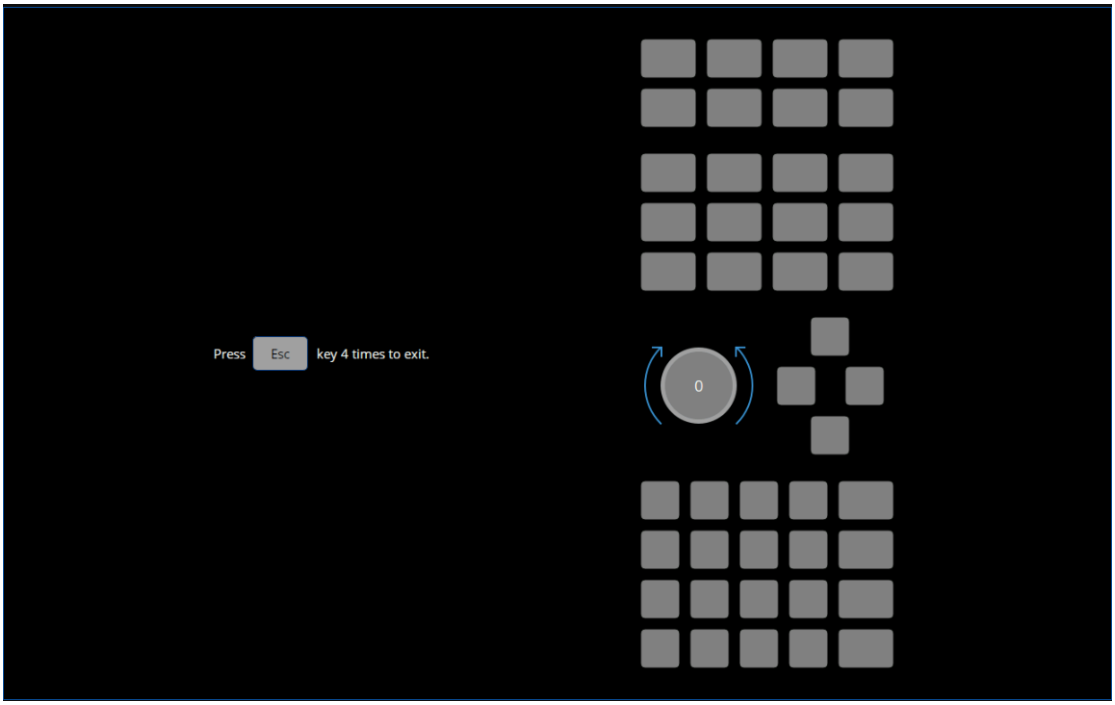


Figure 6-4 Front panel key test box

Display assembly Test

Checking the Display Screen

The display should be bright with all annotations and text readable. The display test allows you to check for non-functioning pixels and other problems.

Note:

If the display is dim or dark, refer to "Troubleshooting LCD Display Problems"

What Is a Damaged Pixel?

A pixel is a picture element that combines to create the image on the display. A pixel is about the size of a small pin point.

A damaged pixel is pixel that has a constant blue, green, red, or black appearance that will not change.

How to Run the Display Test

To run the display test, perform the following:

Press UTILITY System key, then Self Test, then Screen Test.... A Front Panel Key Test Box will be displayed, as shown in Figure 6-5

A multi-color screen is displayed. Be prepared to look for the symptoms described in "How to Identify a Faulty Display."

How to Identify a Faulty Display

A display is considered faulty if:

- More than 0.002% of the total pixels have a constant blue, green, red, or

black appearance that will not change

- Three or more consecutive pixels have a constant blue, green, red, or black appearance that will not change

If the A2 display assembly is determined to be faulty, replace it. Refer to "Removing the Display Assembly"

Figure 6-5 Front panel screen test box

Checking the touch Screen

1. Click the Touch key on the key board, and the LED light of the Touch key turns green, indicating that the Touch screen function is enabled

2. Press UTILITY System key， then Self Test， then touch Test.... A Front Panel Key Test Box will be displayed, as shown in Figure 6-6

3. Touch the screen marker with your hand and the marker moves

4. If the mark cannot be moved , suspect a faulty A2 display assembly , To replace the A2 display assembly, Refer to “Removing the Display Assembly”

Figure6-6 Front panel touch test box

Checking the USB Board

To verify proper operation of the USB board:

- Connect a known good USB device, such as a USB mouse, to a front panel USB port

- Wait 15 seconds for the analyzer to verify the device connection, and then check the operation of the USB device

- If the device performs correctly, then unplug the USB device and use the same method to determine the remaining three USB ports. The USB board is functioning properly

- If the device does not perform correctly, the USB board is faulty

- suspect a faulty A3 USB board, To replace the A3 USB board, refer to "Removing and Replacing A3 USB Panel"

- IF FAIL, suspect a faulty A1 Mb panel, To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

Rear Panel Troubleshooting

Each rear panel connector is associated with a hardware group in the analyzer.

You can use the data at these rear panel connectors to help troubleshoot these hardware groups in addition to testing the connectors.

The connectors discussed in this section are:

- LAN
- USB Device
- Optional Bias-Tees x4
- Video output: HDMI
- 10MHz Ref Signal Input
- 10MHz Ref Signal Output
- Trigger In
- Trigger Out
- OCXO

About QC Automatic detection

Automatic scripts are used to detect port faults on the rear panel. The following figure shows the operation interface of automatic scripts, as shown in the figure 6-7

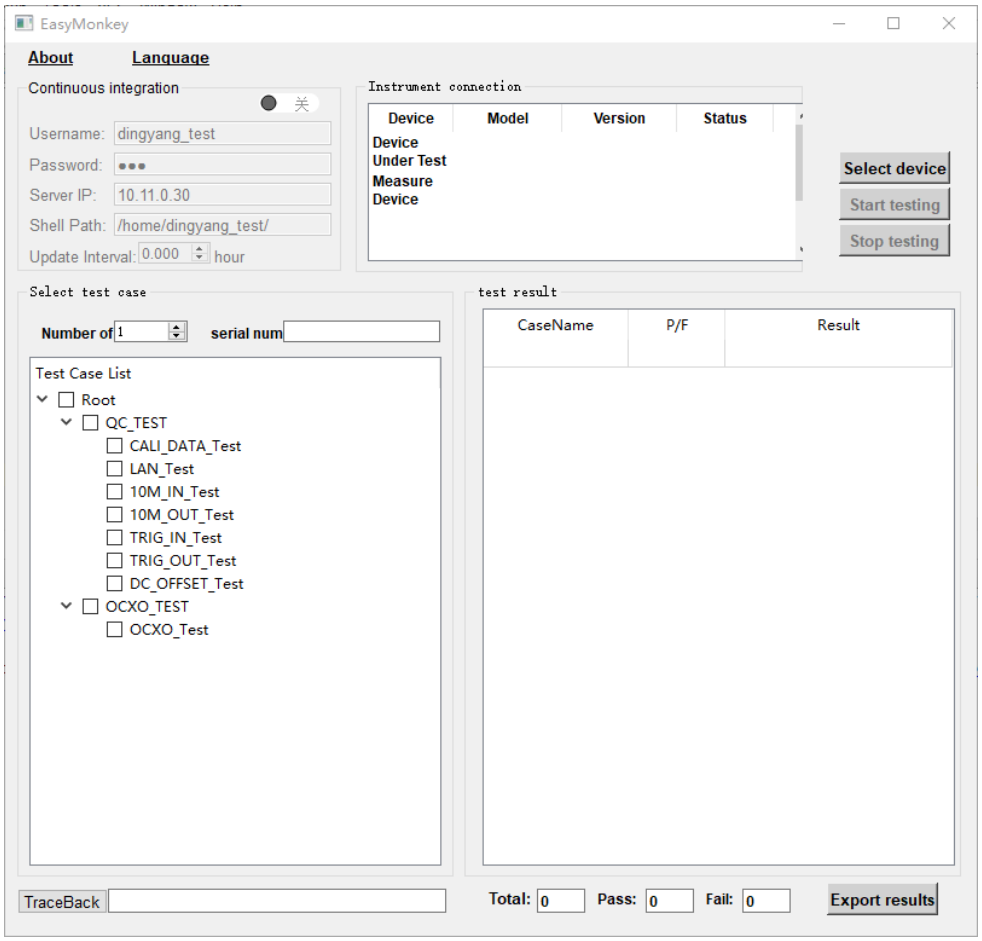


Figure 6-7 QC Automatic detection test box

Checking the USB Device Ports Troubleshooting

1. Connect a known good USB device cable to pc and VNA

2. Open the Easymonkey

3. Select instrument button on Automatic script

4. VNA is recognized

5. VNA information is displayed on the device bar

6. If you can identify that the port is normal

7. suspect a faulty A6 IOB panel, To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

8. IF FAIL, suspect a faulty A1 Mb panel, To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

LAN Troubleshooting

Connect a known good LAN cable to VNA, Open the instrument to obtain the IP address

Procedure:

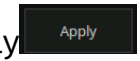
1. Open the analyzer

2. The analyzer is Preset

3. Ensure that network analyzer and LAN cable are connected

4. Click on the button System -LAN status...A LAN status Test Box will be displayed, as shown in Figure 6-8

5. Check the DHCP 

6. Click on the button Apply 

7. Generate a new IP Address

8. IF FAIL, suspect a faulty A6 IOB panel, To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

9. IF FAIL, suspect a faulty A1 Mb panel, To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

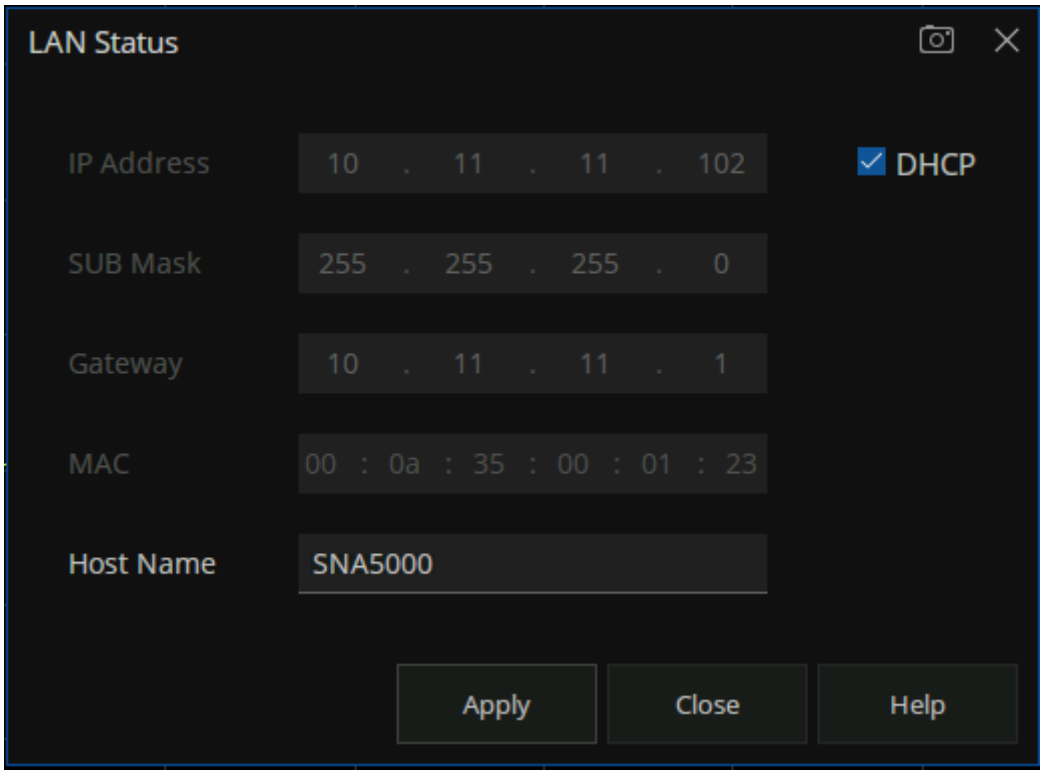


Figure 6-8 LAN status test box

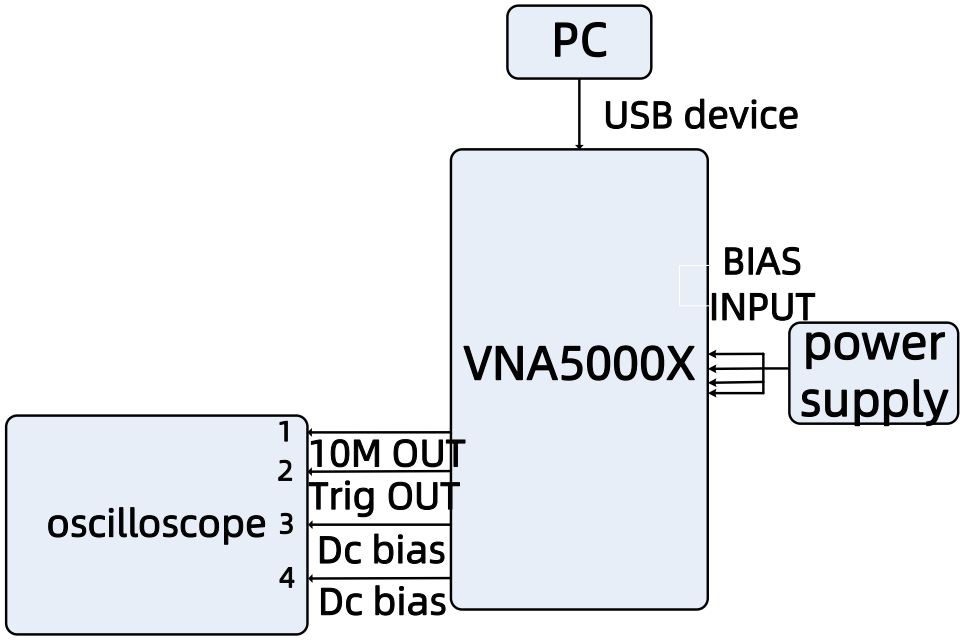


Figure 6-9 Equipment setup 1

Equipment Used:

- SPD3000X

- SDS5000X

-Any necessary adapters

- Cables

Optional Bias-Tees x4 Troubleshooting

1. Connect the power SPD3000X output to the DC bias port on the rear panel by

cable, as shown in Figure 6-9

2. Set the power output to 5V

3. The analyzer is Preset

4. Connect oscilloscope SDS5000X port to network analyzer port, oscilloscope reading DC voltage 5V normal

5. The above procedure will be automatically configured

6. IF FAIL, suspect a faulty A6 IOB panel, To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

7. IF FAIL, suspect a faulty A14 TX panel, To replace the A14 TX panel, refer to "Removing and Replacing A13 TX Panel 1 OR A14 TX Panel 2"

10MHz Ref Signal Output Troubleshooting

1. Connect oscilloscope SDS5000X port to 10M port of network analyzer, as shown in Figure 6-9

2. The amplitude threshold of oscilloscope reading AC sinusoidal signal is set as [0.125V, 0.4V]

3. The above procedure will be automatically configured

4. IF FAIL, suspect a faulty A6 IOB panel，To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

5. IF FAIL, suspect a faulty A1 Mb panel，To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

Trigger OUT Troubleshooting

1. Connect oscilloscope SDS5000X port to Trigger OUT port of network analyzer, as shown in Figure 6-9

2. The analyzer is Preset

3. Click on the button Trigger- Trigger Source- Set to internal

4. Click on the button Trigger- Trigger setup- Ext trig output -Set to on

5. Oscilloscope test signal amplitude is 3.37Vpp (±20%), positive pulse 1us (±10Hz)

6. The above procedure will be automatically configured

7. IF FAIL, suspect a faulty A6 IOB panel，To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

8. IF FAIL, suspect a faulty A1 Mb panel，To replace the A1 Mb panel, refer to

"Removing and Replacing A1 Mb Panel"

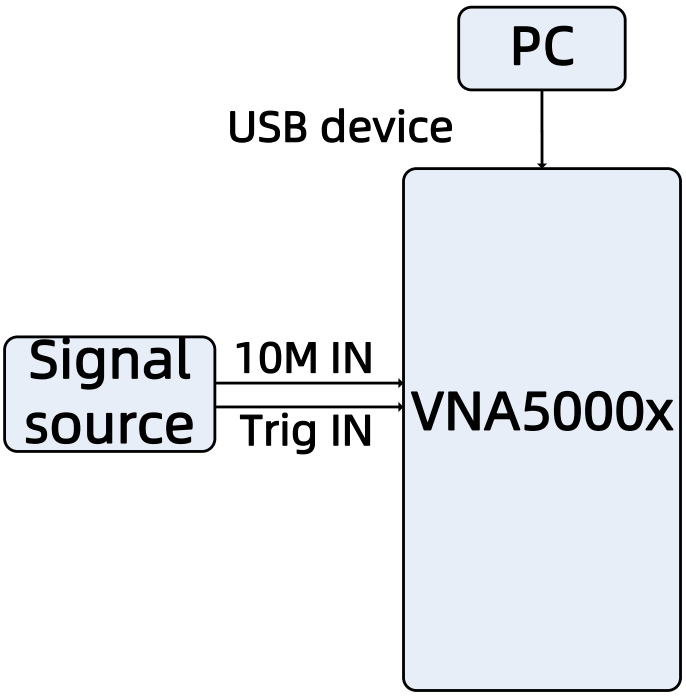


Figure 6-10 Equipment setup 2

Equipment Used:

- Arbitrary waveform generator SDG1000X

-Any necessary adapters

- Cables

10MHz Ref Signal Input Troubleshooting

1. Connect the output port of Arbitrary waveform generator SDG1000X to the

10M In port on the rear panel, as shown in Figure 6-10

2. Set arbitrary waveform generator output 10M sinusoidal signal

3. The amplitude is -5dbm to 10dBm

4. The analyzer is Preset

5. The FPGA detects an external input of 10MHz

6. The above procedure will be automatically configured

7. IF FAIL, suspect a faulty A6 IOB panel，To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

8. IF FAIL, suspect a faulty A1 Mb panel，To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

Trigger In Troubleshooting

1. Connect the output port of Arbitrary waveform generator SDG1000X to the TRIG In port on the rear panel, as shown in Figure 6-10

2. Set arbitrary waveform generator output 10us 3Vpp, 1.5voffset square wave

3. Set any waveform generator load to high resistance and turn on the signal source

4. The analyzer is Preset

5. Click on the button Trigger- Trigger Source- Set to external

6. Click on the button Trigger- Trigger setup- Ext trig output -Set to off

7. Arbitrary waveform generator automatically cut a trigger.

8. Set analyzer Maker in 1GHz, 2 times to read different values on pass

9. The above procedure will be automatically configured

10. IF FAIL, suspect a faulty A6 IOB panel，To replace the A6 IOB panel, refer to "Removing and Replacing the IOB plane A6"

11. IF FAIL, suspect a faulty A1 Mb panel，To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

OCXO Troubleshooting

1. Power off the analyzer and install a normal OCXO circuit board, as shown in Figure 6-10

2. Power on the analyzer

3. Read back the register to determine whether to identify the OCXO circuit module

4. Read back the register to determine whether to switch to the OCXO circuit

5. Read back the register to check whether 10M is locked

6. Run the SCPI command to check whether the OCXO module is properly read and written

7. The above procedure will be automatically configured

8. IF FAIL, suspect a faulty A11 OCXO Adapter panel, To replace the A11 OCXO Adapter panel, refer to "Removing and Replacing the OCXO Adapter panel A11"

9. IF FAIL, suspect a faulty A1 Mb panel, To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

HDMI Troubleshooting

1. Connect the display to the HDMI port on the rear panel, as shown in Figure 6-11

2. Open the display and analyzer

3. If the video information is not present on the external display, the most probable cause is the HDMI port

4. Suspect a faulty A6 IOB panel, to replace the A6 IOB panel, refer to

"Removing and Replacing the IOB plane A6"

5. IF FAIL, suspect a faulty A1 Mb panel, To replace the A1 Mb panel, refer to "Removing and Replacing A1 Mb Panel"

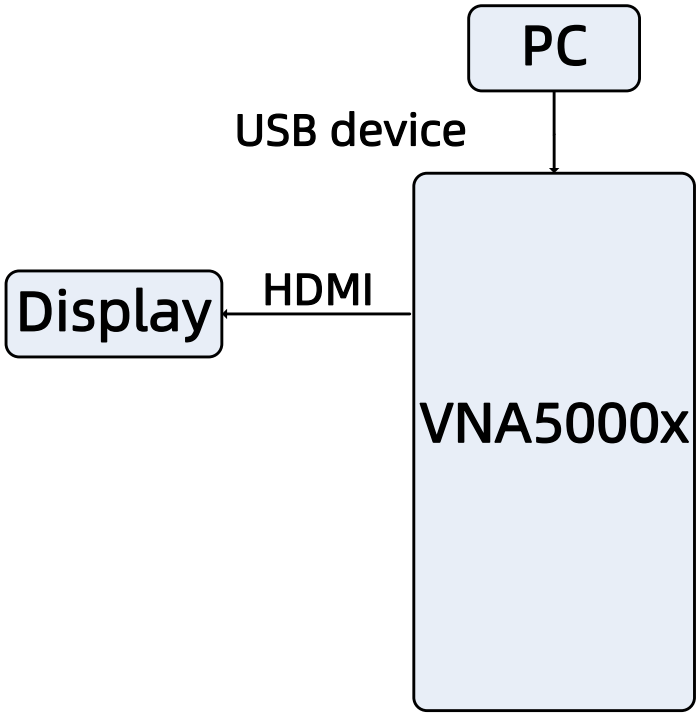
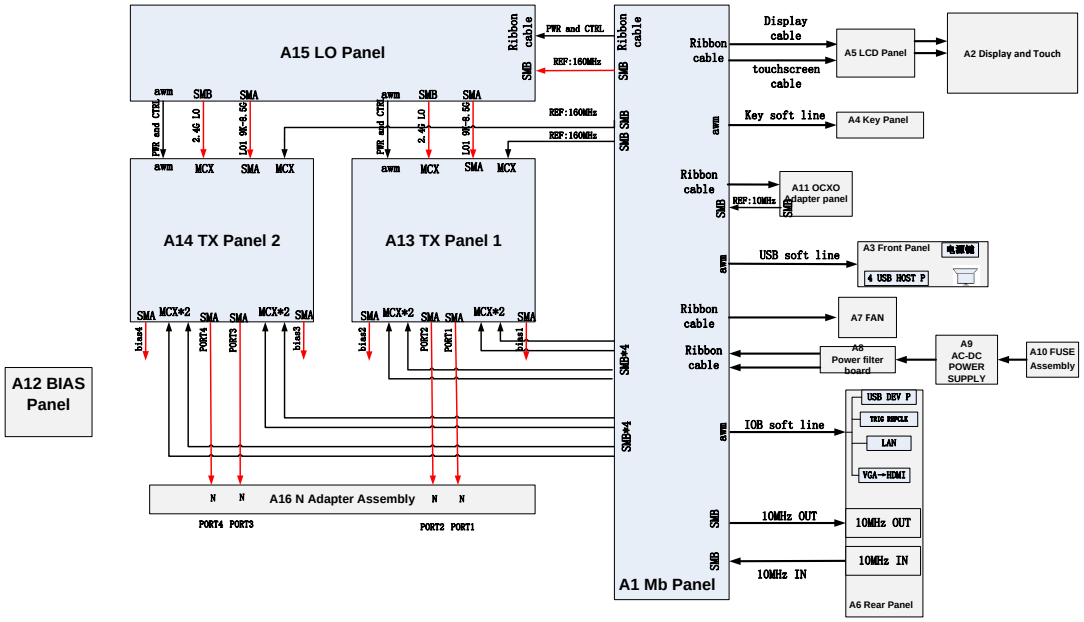


Figure 6-11 Equipment setup 3

Instrument Block Diagram



7.Replaceable parts

Information in This Chapter

This chapter:

-identifies the replaceable parts for the SIGLENT VNA series network analyzer.

- includes several tables and illustrations to assist you in identifying the correct part for your analyzer

-contains ordering information for new assemblies and rebuilt-exchange assemblies.

Assembly Replacement Sequence

After identifying the problem requiring an assembly to be replaced, follow these steps:

Step1. Order a replacement assembly. Refer to Chapter 7, "Replaceable Parts".

Step2. Replace the faulty assembly and determine what adjustments are necessary. Refer to Chapter 8, " Replacement Procedures".

Step3. Perform the necessary adjustments. Refer to Chapter 5, "Adjustments".

Step4. Perform the necessary performance tests. Refer to Chapter 4, "Performance Tests".

Replaceable Parts Listings

This section contains the replacement part numbers and their descriptions for your SIGLENT VNA series vector network analyzer. You can find the locations of replaceable parts in this section:

Table 7-1 Part number listing by reference designator

Reference Designator	Description
A1	Mb Panel
A2	Display and Touch
A3	Front Panel
A4	Key Panel
A5	LCDI Panel
A6	IOB Panel
A7	FAN
A8	Power filter board
A9	AC-DC POWER SUPPLY
A10	FUSE Assembly

A11	OCXO Adapter panel
A12	BIAS Panel
A13	TX Panel 1
A14	TX Panel 2
A15	LO Panel
A16	N Adapter Assembly

Front Panel Assembly, Front Side

The front panel assembly contains the items shown in the following table.

Table 7-2 Front panel assembly, front side

Reference Designator	Type	Part Number	Qty	Description
W1	overlay	2.77.30.20.1635L	1	Keypad overlay
W2	overlay	2.77.30.20.1817	1	Front panel overlay
W 3	knob	1.99.00.00.013R	1	Front (RPG) knob
A2	Display assembly	2.28.04.01.024 2.28.05.01.014	1	A2 Display assembly

W4	Screen bracket	2.74.50.50.036 2.74.50.50.037	1	Screen bracket

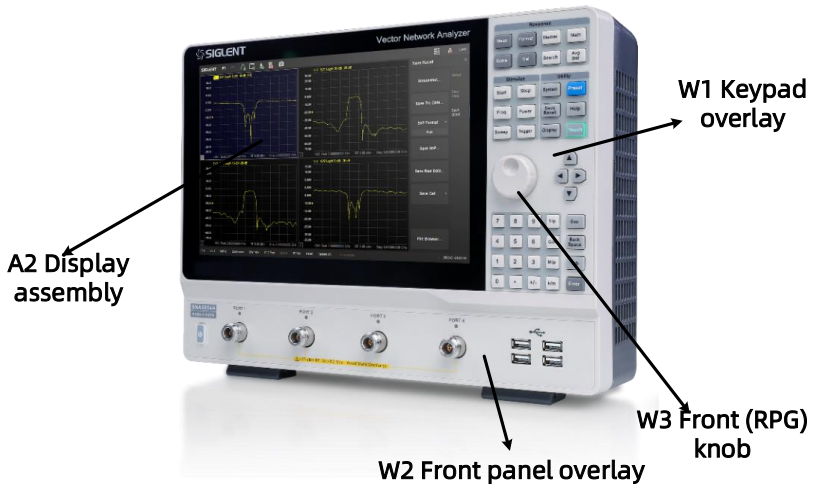


Figure 7-1 Front panel assembly, front side

Front Panel Assembly, Back Side

Table 7-3 Front panel assembly, back side

Reference Designator	Type	Part Number	Qty	Description
A4	PCBA	1.30.00.00.044R	1	Keypad PCBA
W5	FFC Soft line	2.52.62.35.015	1	FFC Soft line, A4 Keypad to A1 Mb panel
A5	PCBA	1.40.02.00.058RE	1	A5 LCDI panel
W6	Ribbon cable	2.52.62.35.022	1	24pin Ribbon cable, A5 LCDI panel to A1 Mb panel
W7	Screen line	2.52.42.15.008	1	Screen line, A5 LCDI panel to A2 Display assembly
W8	magnet ring	2.36.02.06.001	1	circular 1
W9	magnet ring	2.36.02.06.005	1	circular 2
W10	Ribbon cable	2.52.62.16.014	1	Touch cable, A5 LCDI panel to A1 Mb panel
W11	Grounding	2.74.45.10.032	8	Grounding shrapnel

	shrapnel			

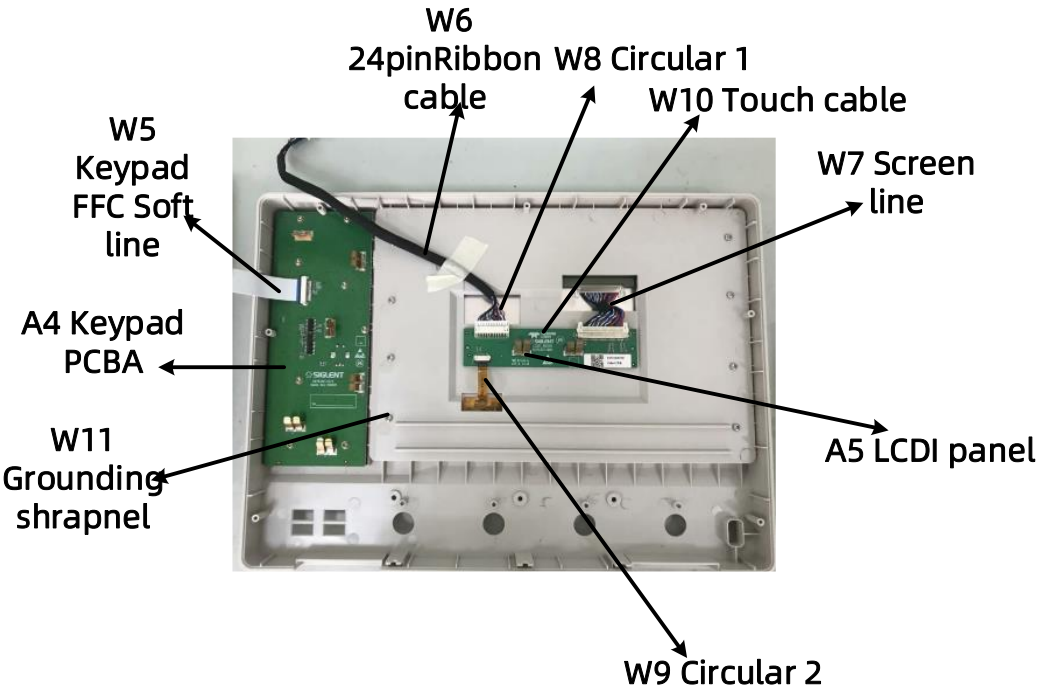


Figure 7-2 Front panel assembly, back side

Top Assemblies, Front Side, 2 port

Table 7-4 Top assemblies, front side, 2 port

Reference Designator	Type	Part Number	Qty	Description
A3	PCBA	1.40.02.00.038RE	1	A3 USB panel
A16	N connector	2.42.01.05.005	2	N connector
A16	N head flange gasket	2.74.30.10.017	2	N head flange gasket
W12	FFC Soft line	2.52.62.35.028	1	FFC Soft line, A3 USB panel to

				A1 Mb panel
W13	power button	2.76.01.10.098	1	power button

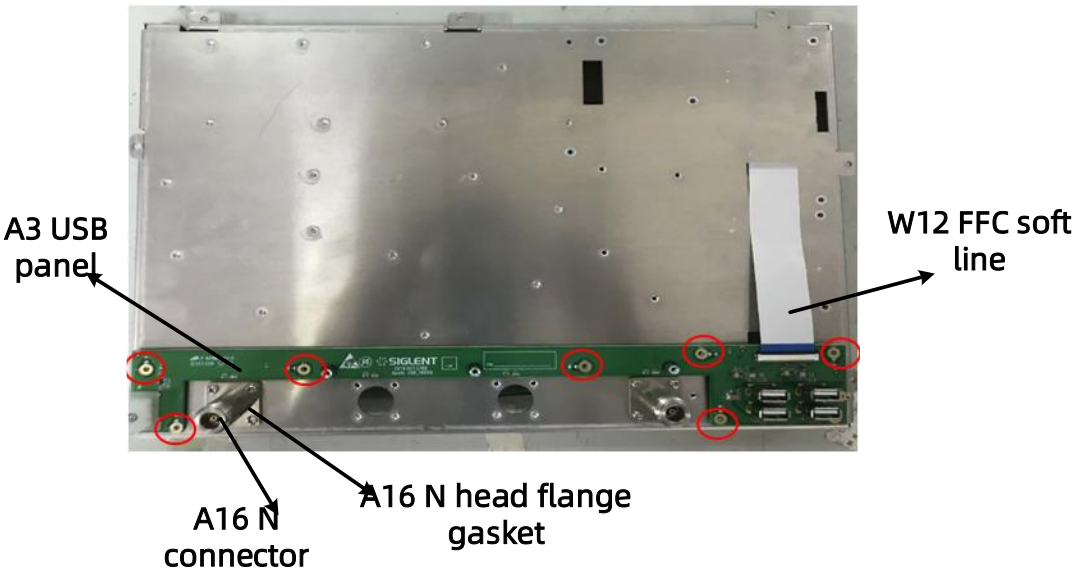


Figure 7-3 Top assemblies, front side, 2 port

Top Assemblies, Front Side, 4 port

Table 7-5 Top assemblies, front side, 4 port

Reference	Type	Part Number	Qty	Description

Designator				
A3	PCBA	1.40.02.00.038RE	1	A3 USB panel
A16	N connector	2.42.01.05.005	4	N connector
A16	N head flange gasket	2.74.30.10.017	4	N head flange gasket
W12	FFC Soft line	2.52.62.35.028	1	FFC Soft line, A3 USB panel to A1 Mb panel
W13	power button	2.76.01.10.098	1	power button

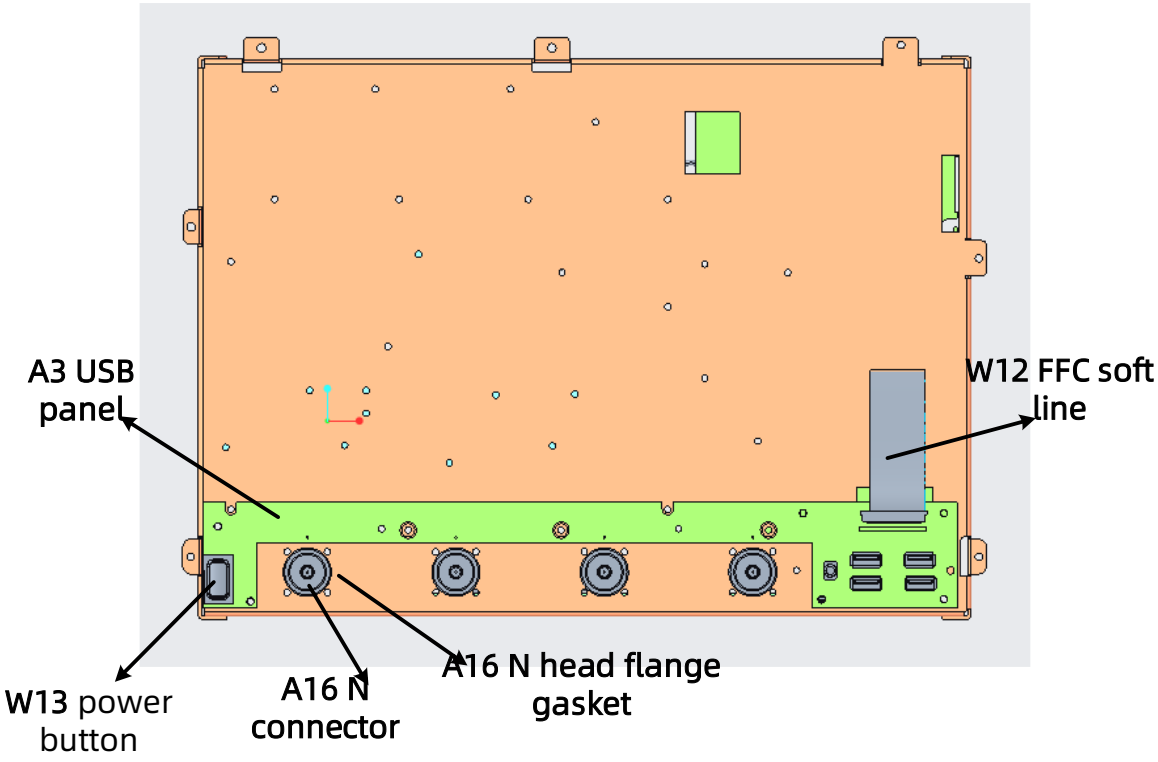


Figure 7-4 Top assemblies, front side, 4 port

Top Assemblies, Back Side， 2 port

Table 7-6 Top assemblies, back side, 2 port

Reference Designator	Type	Part Number	Qty	Description
A1	PCBA	1.10.00.00.196RE	1	A1 Mb panel
A13	PCBA	1.10.00.00.215RE	1	A13 TX panel 1
A15	PCBA	1.10.00.00.191RE	1	A15 LO panel
W14	load	2.15.02.06.001	1	50 load

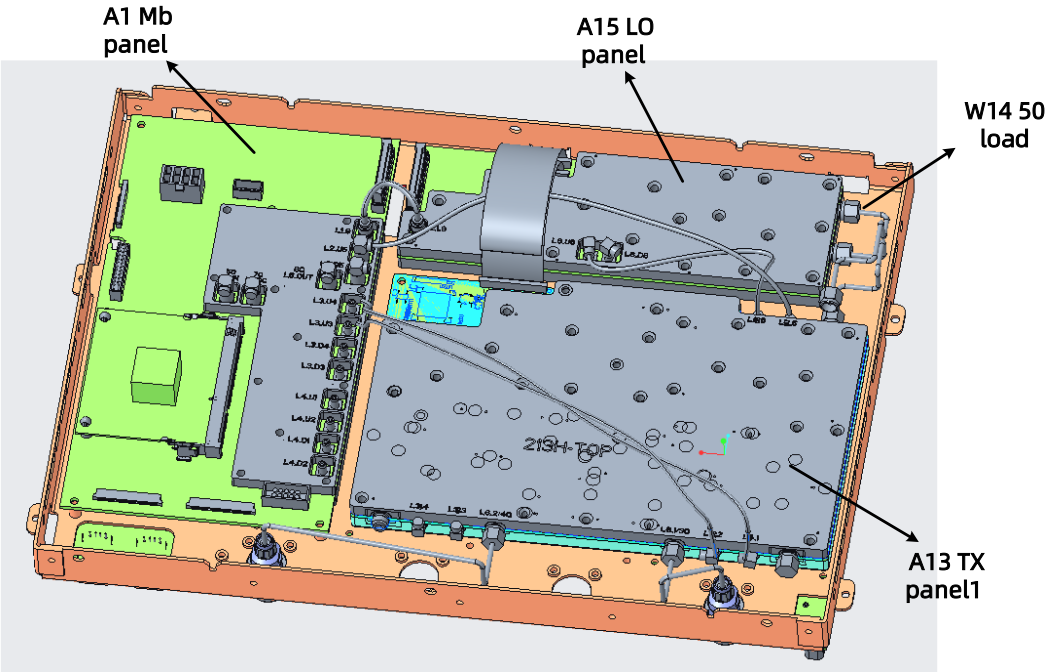


Figure 7-5 Top assemblies, back side, 2 port

Top cables, Back Side，2 port

Table 7-7 Top cables, back side, 2 port

Reference Designator	Type	Part Number	Qty	Description
W15	FFC Soft line	2.52.62.35.029	1	FFC Soft line，A15 LO panel to A13 TX panel 1
W16	SMA-SMA	2.52.63.01.073L	1	steel cable，A15 LO panel to A13 TX panel 1
W17	Ribbon cable	2.52.62.35.022	1	Ribbon cable ，A1 Mb panel to A15 LO

				panel
W18	High-speed cable SMB-SMB	2.52.63.01.019	1	High-speed cable，A1 Mb panel to A15 LO panel 160M clock
W19	High-speed cable SMB-MCX	2.52.63.01.097	1	High-speed cable，A1 Mb panel to A13 TX panel 1 160M clock
W20	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A15 LO panel to A13 TX panel 1 2.4G clock
W21	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A6 IOB panel 10M out
W21	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A6 IOB panel 10M IN
W21	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A11 OCXO adapter panel
W22	High-speed cable MCX-SMB	2.52.63.01.094	1	High-speed cable，A13 TX panel 1 to A1 Mb panel
W23	High-speed cable MCX-SMB	2.52.63.01.095	1	High-speed cable，A13 TX panel 1 to A1 Mb panel
W24	steel cable SMA-	2.52.63.01.081	1	steel cable，A13 TX panel 1 to A16 N

	SMA			adapter assembly
W25	steel cable SMA-SMA	2.52.63.01.082	1	steel cable，A13 TX panel 1 to A16 N adapter assembly
W26	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A13 TX panel 1 to A12 bias panel
W26	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A13 TX panel 1 to A12 bias panel

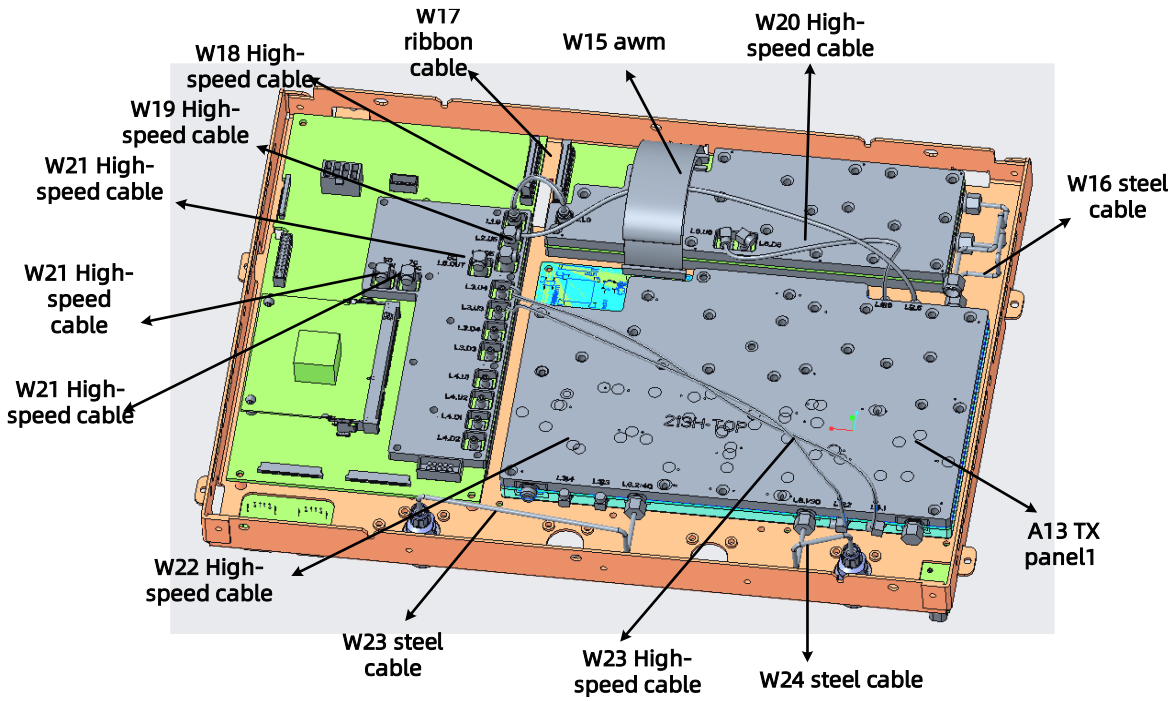


Figure 7-6 Top cables, back side, 2 port

Top Assemblies, Back Side，4 port

Table 7-8 Top assemblies, back side, 4 port

Reference Designator	Type	Part Number	Qty	Description
A1	PCBA	1.10.00.00.196RE	1	A1 Mb panel
A13	PCBA	1.10.00.00.215RE	1	A13 TX panel 1
A14	PCBA	1.10.00.00.215RE		A14 TX panel 2
A15	PCBA	1.10.00.00.191RE	1	A15 LO panel

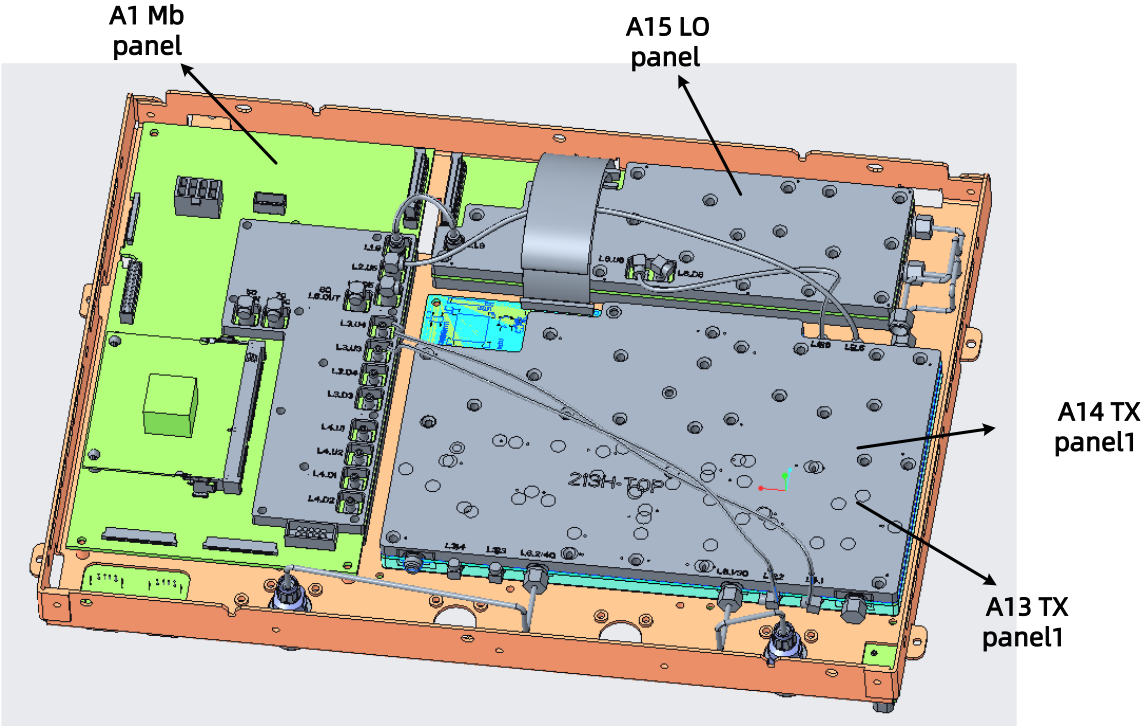


Figure 7-7 Top assemblies, back side, 4 port

Top cables, Back Side，4 port

Table 7-9 Top cables, back side, 4 port

Reference Designator	Type	Part Number	Qty	Description
1	FFC Soft line	2.52.62.35.029	1	FFC Soft line，A15 LO panel to A13 TX panel 1
2	FFC Soft line	2.52.62.35.029	1	FFC Soft line，A15 LO panel to A14 TX panel 2
3	steel cable SMA-SMA	2.52.63.01.073L	1	steel cable，A15 LO panel to A13 TX panel 1
4	steel cable SMA-SMA	2.52.63.01.074L	1	steel cable，A15 LO panel to A14 TX panel 2
5	Ribbon cable	2.52.62.35.022	1	Ribbon cable ，A1 Mb panel to A15 LO panel
6	High-speed cable SMB-SMB	2.52.63.01.019	1	High-speed cable，A1 Mb panel to A15 LO panel 160M clock
7	High-speed cable SMB-MCX	2.52.63.01.097	1	High-speed cable，A1 Mb panel to A13 TX panel 1 160M clock

8	High-speed cable SMB-MCX	2.52.63.01.097	1	High-speed cable，A1 Mb panel to A14 TX panel 2 160M clock
9	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A15 LO panel to A13 TX panel 1 2.4G clock
10	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A15 LO panel to A14 TX panel 2 2.4G clock
11	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A6 IOB panel 10M out
12	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A6 IOB panel 10M IN
13	High-speed cable SMB-SMB	2.52.63.01.093	1	High-speed cable，A1 Mb panel to A11 OCXO adapter panel
14	High-speed cable MCX-SMB	2.52.63.01.094	1	High-speed cable，A14 TX panel 2 to A1 Mb panel
15	High-speed cable MCX-SMB	2.52.63.01.095	1	High-speed cable，A14 TX panel 2 to A1 Mb panel
16	High-speed cable MCX-SMB	2.52.63.01.094	1	High-speed cable，A13 TX panel 1 to A1 Mb panel
17	High-speed cable	2.52.63.01.095	1	High-speed cable，A13 TX panel 1 to

	MCX-SMB			A1 Mb panel
18	steel cable SMA-SMA	2.52.63.01.081	1	steel cable，A14 TX panel 2 to A16 N adapter assembly
19	steel cable SMA-SMA	2.52.63.01.083	1	steel cable，A14 TX panel 2 to A16 N adapter assembly
20	steel cable SMA-SMA	2.52.63.01.084	1	steel cable，A13 TX panel 1 to A16 N adapter assembly
21	steel cable SMA-SMA	2.52.63.01.085	1	steel cable，A13 TX panel 1 to A16 N adapter assembly
22	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A14 TX panel 2 to A12 bias panel
23	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A14 TX panel 2 to A12 bias panel
24	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A13 TX panel 1 to A12 bias panel
25	High-speed cable SMB-MCX	2.52.63.01.096	1	High-speed cable，A13 TX panel 1 to A12 bias panel

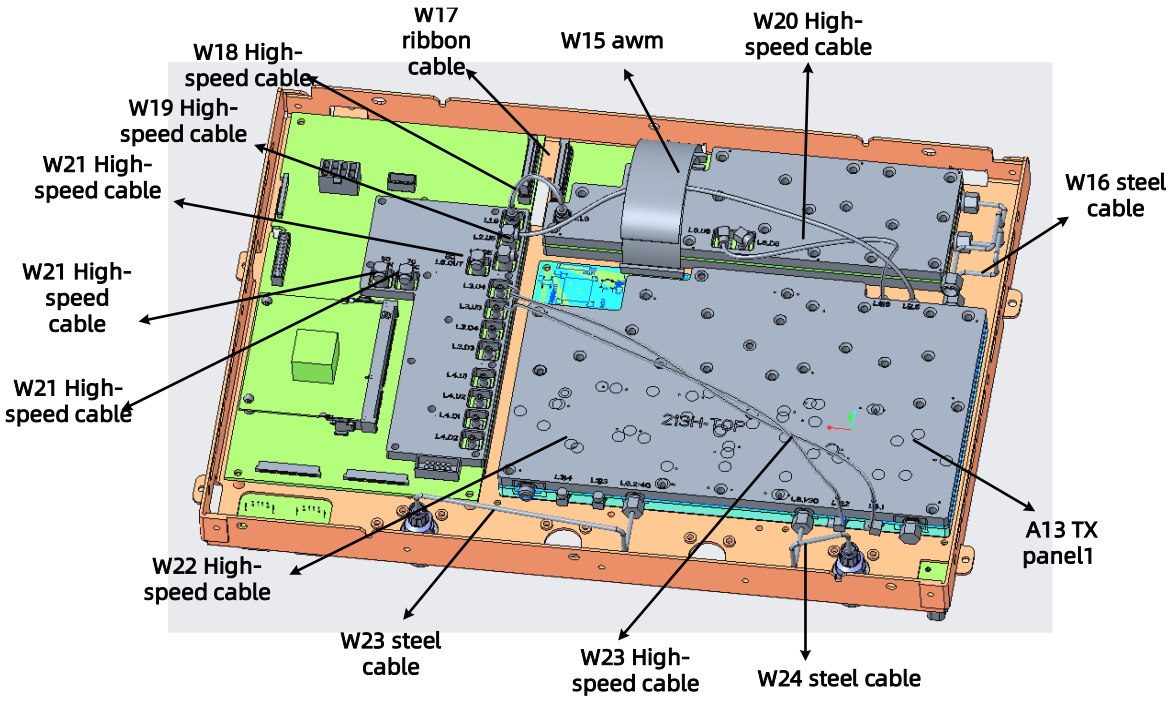


Figure 7-8 Top cables, back side, 4 port

Rear Assemblies

Table 7-10 Rear Assemblies

Reference Designator	Type	Part Number	Qty	Description
W27	Ribbon cable	2.52.62.16.015	1	Ribbon cable ,A9 AC-DC power supply to A8 power filter board
W28	Ribbon cable	2.52.62.16.018	1	Ribbon cable ,A8 power filter board to A1 Mb panel

A8	PCBA	1.40.02.00.039RE	1	A8 power filter board
A9	PCBA	2.32.03.01.011	1	A9 AC-DC power supply
A10	power outlet	2.42.09.02.032	1	A10 power outlet
W29	fuse	2.44.05.02.011	1	fuse
A7	fan	2.27.02.01.009	1	A7 fan
W30	Wire protection ring	2.75.12.10.010 2.75.12.10.011	2	Wire protection ring
W31	FFC Soft line	2.52.62.35.028	1	FFC Soft line ， A6 IOB panel to A1 Mb panel
A11	PCBA	1.50.00.00.024R	1	A11 OCXO Adapter panel
A6	PCBA	1.40.02.00.034RE	1	A6 IOB panel
A12	PCBA	1.50.00.00.032RE 1.50.00.00.031RE	1	A12 DC bias panel

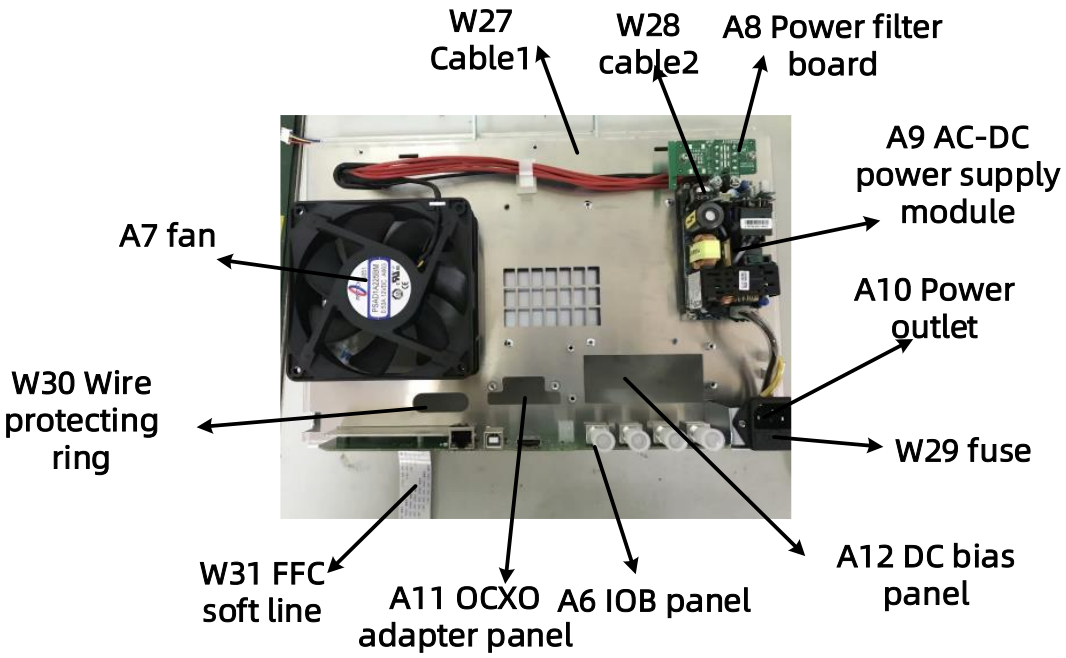


Figure 7-9 Rear assemblies

8.Replacement procedure

This chapter contains procedures for removing and replacing the major assemblies of your SIGLENT Technologies VNA series microwave network analyzer

Personal Safety Warnings

WARNING

These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the analyzer from all voltage sources while it is being opened.

Procedures described in this document may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Electrostatic Discharge (ESD) Protection

Many of the assemblies in this instrument are very susceptible to damage from electrostatic discharge (ESD). Perform the following procedures only at a static-safe workstation and wear a grounded wrist strap.

To reduce the chance of electrostatic discharge, follow all of the recommendations outlined in "Electrostatic Discharge Protection", for all of the procedures in this chapter.

Assembly Replacement Sequence

The following steps show the sequence that you should follow to replace an assembly in the network analyzer.

Step1. Identify the faulty group. Begin with Chapter 6, "Troubleshooting."

Step2. Order a replacement assembly. Refer to Chapter 7, "Replaceable Parts."

Step3. Replace the faulty assembly and determine what adjustments are necessary.

Step4. Perform the necessary adjustments. Refer to Chapter 5, "Adjustments."

Step5. Perform the necessary performance tests. Refer to Chapter 4, "Performance Tests"

Replacement Procedures

Table 8-1 List of procedures

Reference Designator	Description	Location
N/A	Covers, outer and inner	Page 122
N/A	Front Panel Assembly	Page 123
A3	USB board	Page 133
A2	Display assembly	Page 125
A4	Keypad Assembly	Page 126
A1	Mb panel	Page 135
N/A	The Rear Panel	Page 126
A8 A9 A10	Power supply assembly	Page 129
A7	Fan	Page 131
A11	OCXO Adapter plane	Page 131
A12	bias plane	Page 131
A6	IOB plane	Page 132
A15	LO Panel	Page 136
A13	TX Panel 1	Page 137

A14	TX Panel 2	
A16	N adapter Assembly	Page 134

Removing the Covers

Tools Required

- T-10 TORX driver

- T-20 TORX driver

-ESD grounding wrist strap

Removing the Outer Cover

Refer to Figure 8-1 for this procedure.

1. Disconnect the power cord

2. With a T-20 TORX driver, remove the Hardware handle (item ①) by loosening the screws (item ②)

3. With a T-10 TORX driver, remove the foot mats (item ④)

4. With a T-10 TORX driver, loose the screws (item ③) on the outer cover

5. Slide the outer cover toward the rear of the analyzer and remove it

Removing the Inner Cover

Refer to Figure 8-1 for this procedure.

1. With a T-10 TORX driver, remove the screws(item ⑤) on the Inner cover

2. Lift off the cover

Replacement Procedure

Reverse the order of the removal procedure above.

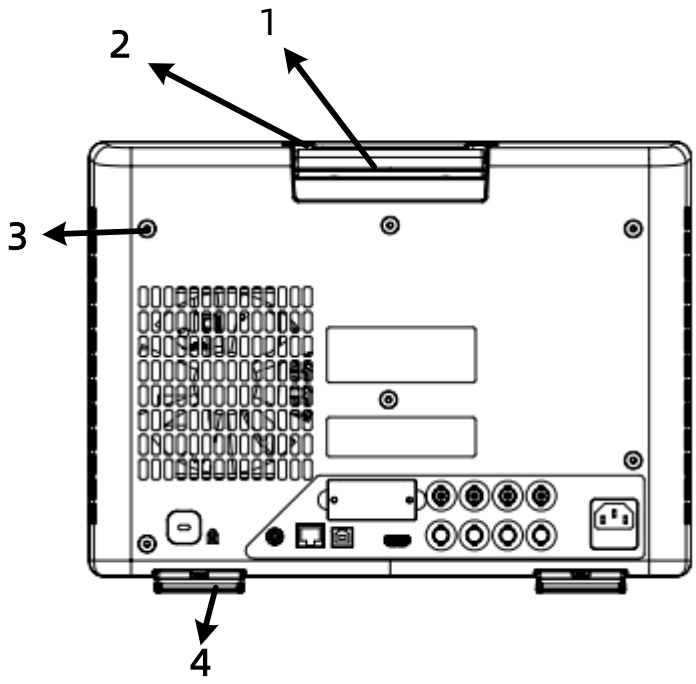


Figure 8-1 Outer and inner cover removal

Removing and Replacing the Front Panel Assembly

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Removal Procedure:

Refer to Figure 8-2 for this procedure.

1. Disconnect the power cord.

2. Remove the outer cover. Refer to “Removing the Covers”

3. Remove screws (item ①) from the lower front panel

4. With a T-10 TORX driver, remove the screws (item ②) from the sides of the frame.

5. Slide the front panel over the front-panel connectors

6. Disconnect the display cable (item ④), touchscreen cable (item ⑤) and key soft line (item ⑥)from the A1 Mb board

Replacement Procedure

Reverse the order of the removal procedure above.

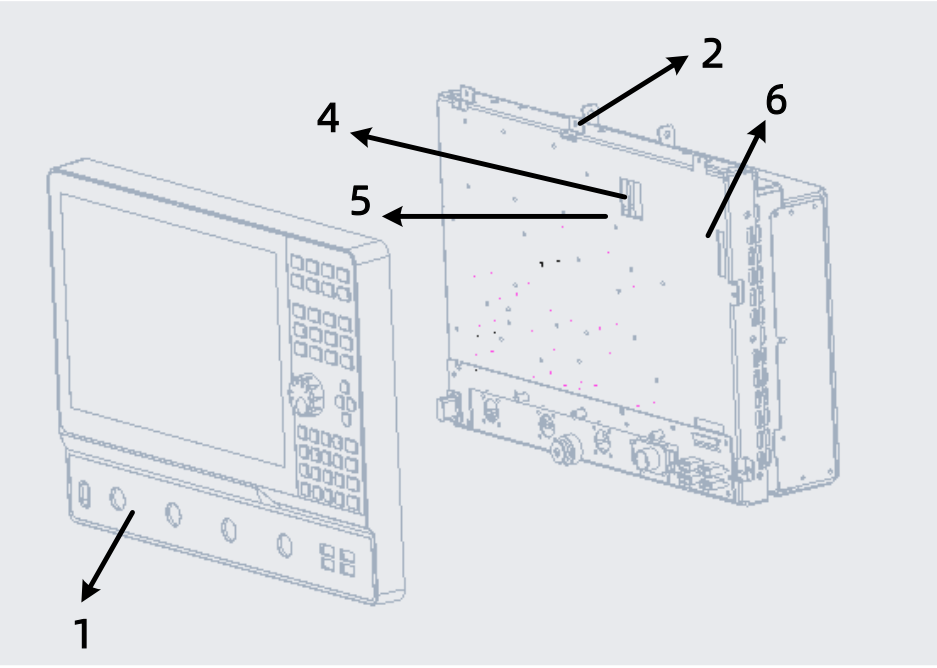


Figure 8-2 Front panel assembly removal

Removing and Replacing the A2-A5 and Other Front Panel Subassemblies

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

Removing the Display Assembly

Removal Procedure:

Refer to Figure 8-3 for this procedure.

1. With a T-10 TORX driver, loose the screws(item ①) on the Front Panel

2. Disconnect the cable (item ②③) from the Front Panel board

3. Press the screen to loosen the glue. Heat the glue properly and remove the display panel

4. With a T-10 TORX driver, remove the screws (item ④) from the Left and right screen bracket.

Replacement Procedure

Reverse the order of the removal procedure above.

Removing the Keypad Assembly A4

Removal Procedure:

Refer to Figure 8-3 for this procedure.

1. With a T-10 TORX driver, loose the screws(item ⑤) on the Front Panel

2. Slide the Keypad Assembly over the front panel

3. Disconnect the key soft line from the key board

Replacement Procedure

Reverse the order of the removal procedure above.

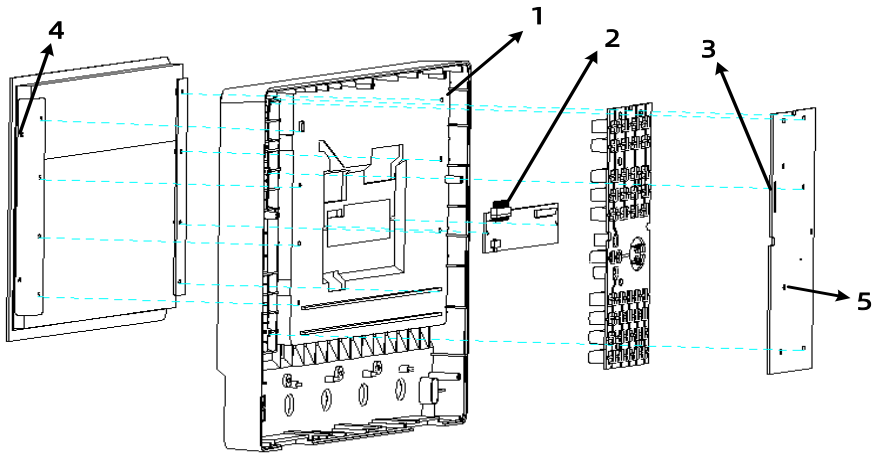


Figure 8-3 Front panel assemblies removal

Removing and Replacing the Rear Panel Assembly

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Removal Procedure:

Refer to Figure 8-4 for this procedure.

1. Disconnect the power cord

2. Remove the outer cover，Refer to “Removing the Covers”

3. Remove the Inner Cover，Refer to “Removing the Covers”

4. With a T-10 TORX driver, remove the screws (item ①) from the sides of the frame.

5. Slide the Rear Panel toward the rear of the analyzer and remove it

6. Disconnect the cable from the A1 Mb board，power cord (item ②)，10M Input line (item ③)，10M output line (item ④) ,Offset line (item ⑤)，OCXO adapter cable (item ⑥)，IOB panel soft line (item ⑦)，fan power cord (item ⑧)

Replacement Procedure

Reverse the order of the removal procedure above.

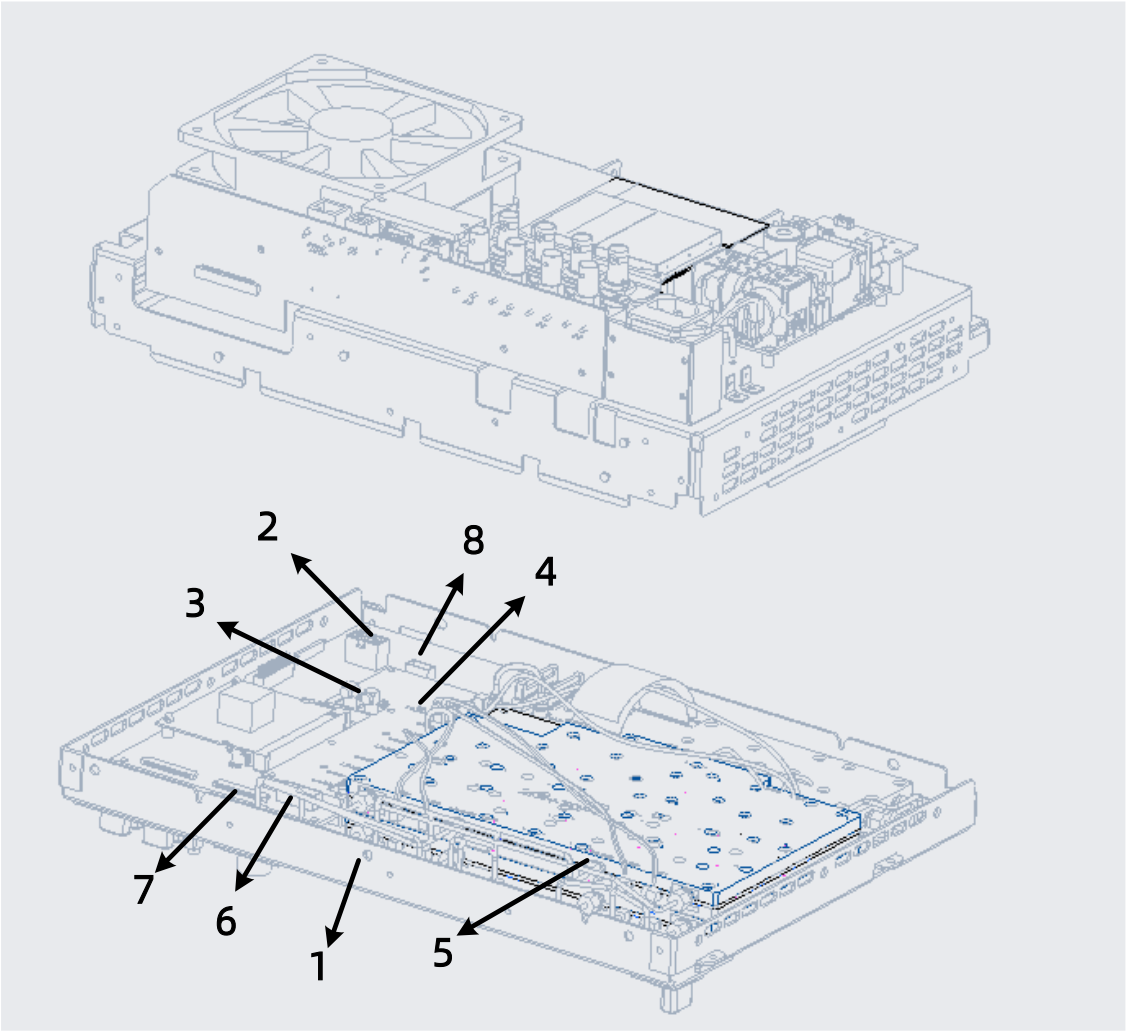


Figure 8-4 Rear panel assemblies removal

Removing and Replacing the A6-A12 and Other Rear Panel Subassemblies

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removing and Replacing the A10 power outlet Assembly

Removal Procedure:

1. Refer to Figure 8-5 for this procedure.

2. Disconnect the power cord between the power outlet and the AC-DC power SUPPLY

3. With a T-10 TORX driver, remove the two screws (item ①) from the power outlet

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the fuse

Removal Procedure:

1. Refer to Figure 8-5 for this procedure.

2. Remove the fuse cover from the power outlet

3. Remove fuse

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the A9 AC-DC POWER SUPPLY

Removal Procedure:

1. Refer to Figure 8-5 for this procedure.

2. Disconnect the power cord between the power outlet and the AC-DC power SUPPLY

3. With a T-10 TORX driver, remove the two screws (item ②) Between the Power filter board and the AC-DC power SUPPLY

4. Disconnect the cable(item ③)

5. With a T-10 TORX driver, remove the four screws (item ④) from the AC-DC power SUPPLY

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the A8 Power filter board

Removal Procedure:

1. Refer to Figure8-5 for this procedure.

2. With a T-10 TORX driver, remove the two screws (item ②) Between the Power filter board and the AC-DC power SUPPLY

3. Disconnect the cable(item ③)

4. With a T-10 TORX driver, remove the two screws (item ⑤) from the Power filter board

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the Fan A7

Removal Procedure:

1. Refer to Figure8-5 for this procedure.

2. With a T-10 TORX driver, remove the four screws (item ⑥) from the fan

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the OCXO Adapter panel A11

Removal Procedure:

1. Refer to Figure8-5 for this procedure.

2. With a T-10 TORX driver, remove the two screws (item ⑦) from the OCXO Adapter panel

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the bias panel A12

Removal Procedure:

1. Refer to Figure 8-5 for this procedure.

2. With a T-10 TORX driver, remove the four screws (item ⑧) from the bias panel

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing the IOB panel A6

Removal Procedure:

1. Refer to Figure 8-5 for this procedure.

2. With a T-10 TORX driver, remove the four screws (item ⑨) from the IOB panel

Replacement Procedure

Reverse the order of the removal procedure above.

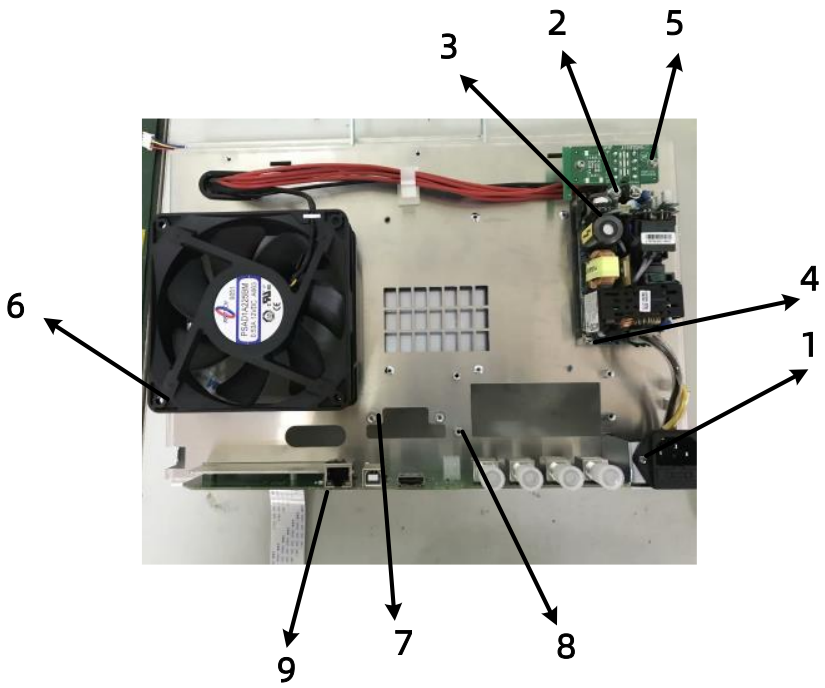


Figure 8-5 Rear panel assemblies removal

Removing and Replacing A3 USB Panel

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

3. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removal Procedure:

1. Refer to Figure 8-6 for this procedure.

2. With a T-10 TORX driver, remove the screws (item ①) from the USB panel

3. Slide the USB Panel

4. Disconnect the cable (item ②) from the A1 USB board's soft line

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing A16 N adapter Assembly

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

3. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removal Procedure:

1. Refer to Figure 8-6 for this procedure.

2. With a T-10 TORX driver, remove the four screws (item ③) from the N adapter Assembly

3. Disconnect the steel wire (item ⑫) from the TX board Refer to Figure 8-7

Replacement Procedure

Reverse the order of the removal procedure above.

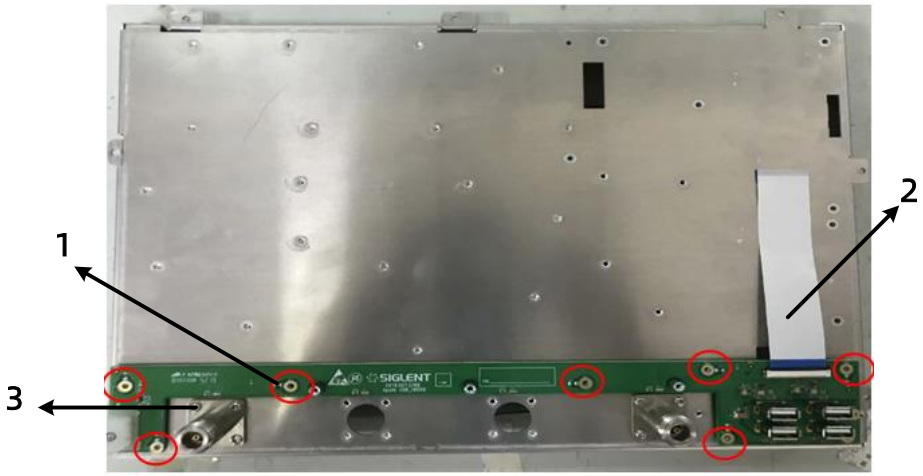


Figure 8-6 USB panel removal

Removing and Replacing A1 Mb Panel

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

3. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removal Procedure:

1. Refer to Figure 8-7 for this procedure.

2. With a T-10 TORX driver, remove the screws (item ①) on the Mb Panel.

3. Disconnect the cables from the A1 Mb board. 160M clock cables (item ②), Intermediate frequency lines (item ③), 24pin Ribbon cable (item ④), Screen line (item ⑤), USB Soft line (item ⑥)

4. Slide the Mb Panel

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing A15 LO Panel

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

3. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removal Procedure:

1. Refer to Figure 8-7 for this procedure.

2. With a T-10 TORX driver, remove the screws (item ⑦) on the LO Panel.

3. Disconnect the cables from the A15 LO board. 2.4G clock cables (item ⑩), Soft line (item ⑧), steel wire (item ⑨)

4. Slide the LO Panel

Replacement Procedure

Reverse the order of the removal procedure above.

Removing and Replacing A13 TX Panel 1 OR A14 TX Panel 2

Tools Required:

- T-10 TORX driver

-ESD grounding wrist strap

Pre-removal Procedure:

1. Disconnect the power cord

2. Remove the front panel assembly. Refer to "Removing and Replacing the Front Panel Assembly"

3. Remove the rear panel assembly. Refer to "Removing and Replacing the Rear Panel Assembly"

Removal Procedure:

1. Refer to Figure 8-7 for this procedure.

2. With a T-10 TORX driver, remove the screws (item ⑪) on the TX Panel.

3. Disconnect the cables from the A13/A14 TX board, steel wire (item ⑫)

4. Slide the TX Panel

Replacement Procedure

Reverse the order of the removal procedure above.

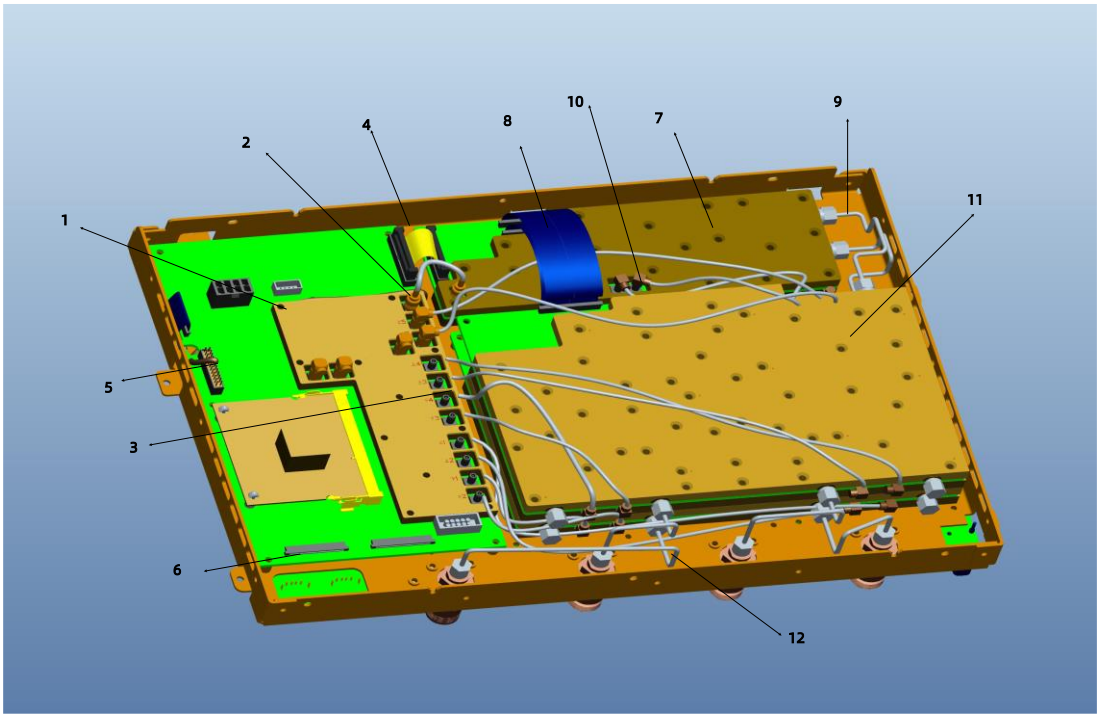


Figure 8-7 Mb panel, LO panel, TX panel removal

9.CPLD Version Programming of LO Board

To add the option function of mixing test on the sold instrument, it is necessary to burn the new CPLD version on the LO board. It needs to be completed in three steps: connecting the programmer, installing the programming software, and programming the CPLD.

Connecting the Programmer

Remove the plastic shell at the back of the instrument, unscrew the screw, open the metal shell at the top, and expose a gap of about 2cm, which is convenient to insert the Altera USB Blaster programmer cable.

Then use the 6PIN cable to connect the programmer and the LO board. The row pins on the LO board are shown in Figure 9-1. The row pins marked in red connect the red cables, and then connect them in sequence.

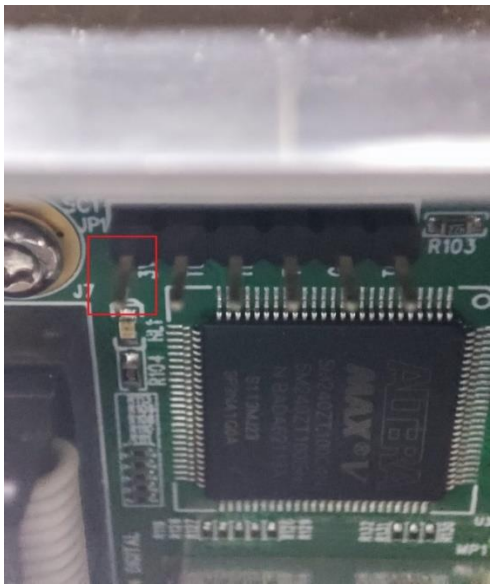


Figure 9-1 LO board needle arrangement

Connect the programmer cable in sequence, as shown in Figure 9-2. The other end of the programmer is connected to the computer through USB interface.

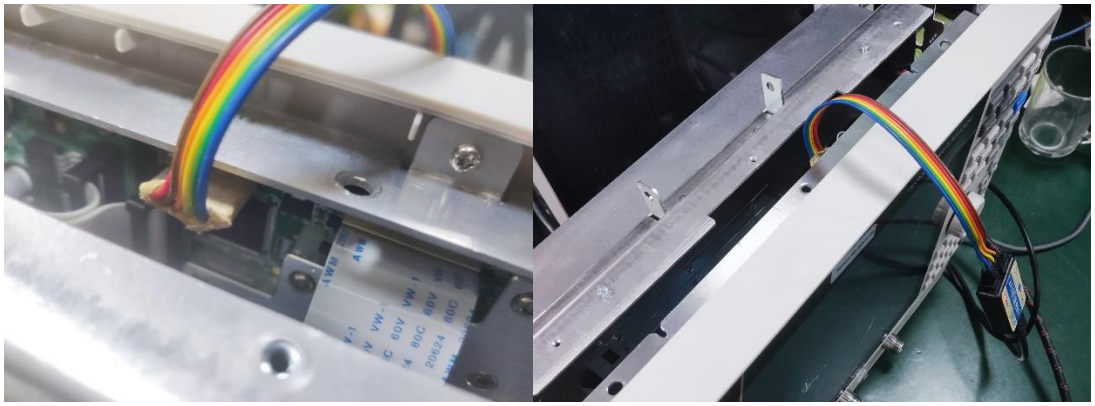


Figure 9-2 Programmer connection

It should be noted that when opening the metal rear shell, the action slows down, and the power connection wire in the red mark in Figure 9-3 should not be pulled off.

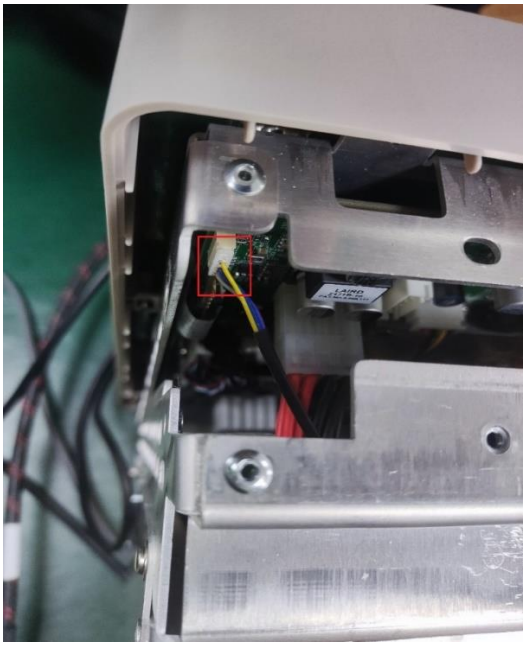


Figure 9-3 Power cable

Installing the Programming Software

Install Altera Quartus II programming software (Quartus II programmer). Double-click the installation source (12.1_177_programmer_windows) to install Quartus II programmer.

Follow the instructions to install, and finally click ‘Finish’ to complete the installation. As shown in Figure 9-4.

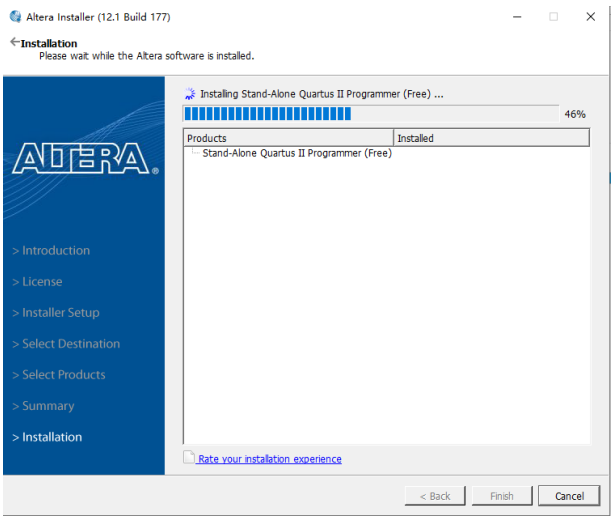


Figure 9-4 Installation instructions

After installation, find the Quartus II 12.1 programmer in the computer application and send it to the desktop shortcut.Or find “*\alteral\12.1\qprogrammer\bin\quartus_pgmw.exe”. As shown in Figure 9-5.

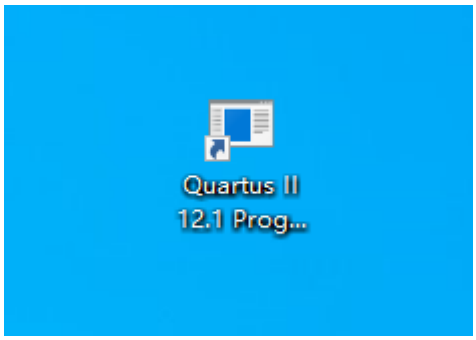


Figure 9-5 Desktop shortcut

Programming the CPLD

Open Quartus II programmer.

Then burn CPLD according to operation steps 1 and 2 in Figure 9-6.

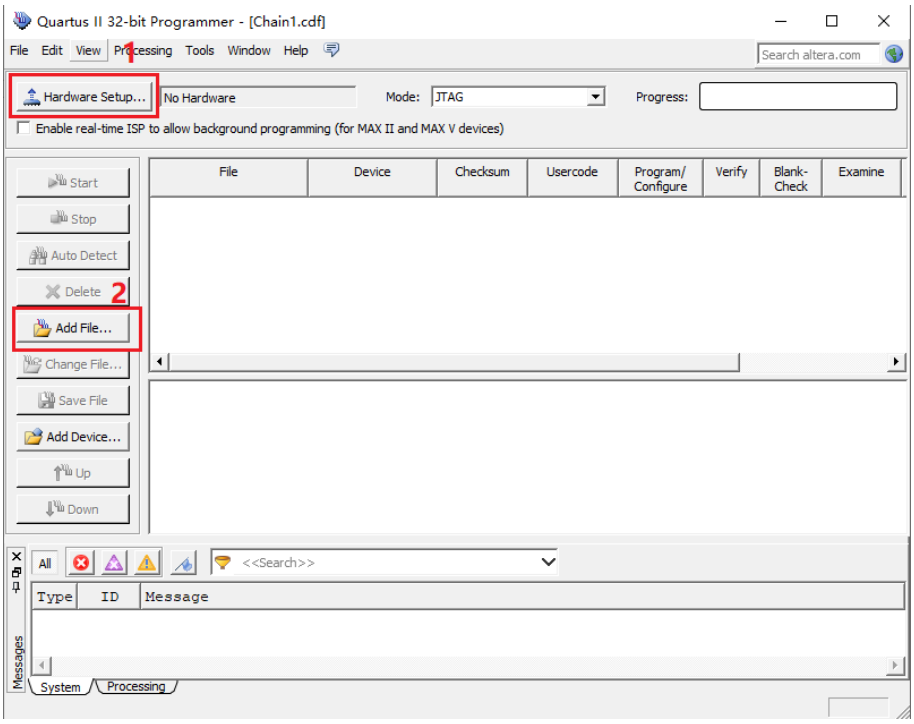


Figure 9-6 Operation interface

Before step 1, first find the device manager in the computer, then find the USB-Blaster, right click the device "USB-Blaster", select the update driver, then select the directory of the driver (refer to the installation directory), and click Next to complete the installation of the driver. Refer to Figure 9-7 for specific steps。

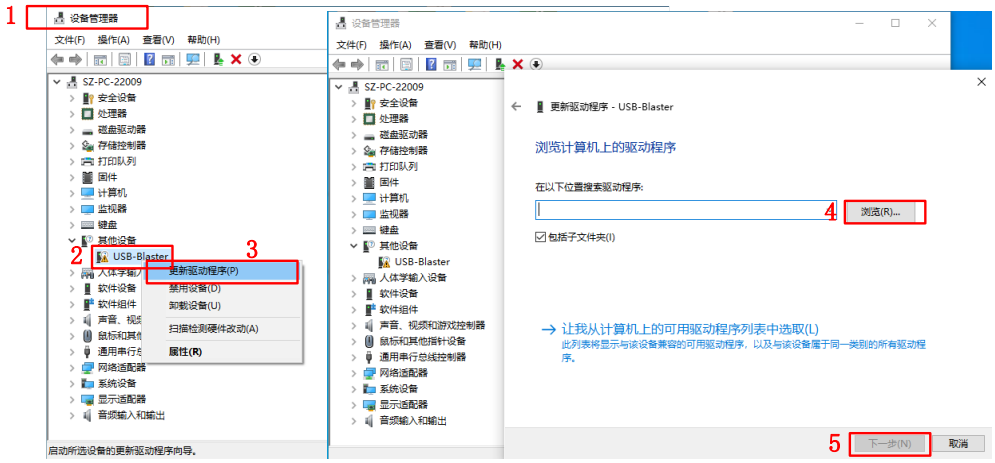


Figure 9-7 Install driver

Then start step 1, first click "Hardware Setup", then double-click to select "USB-Blaster", and finally click "Close". Refer to Figure 9-8 for specific steps。

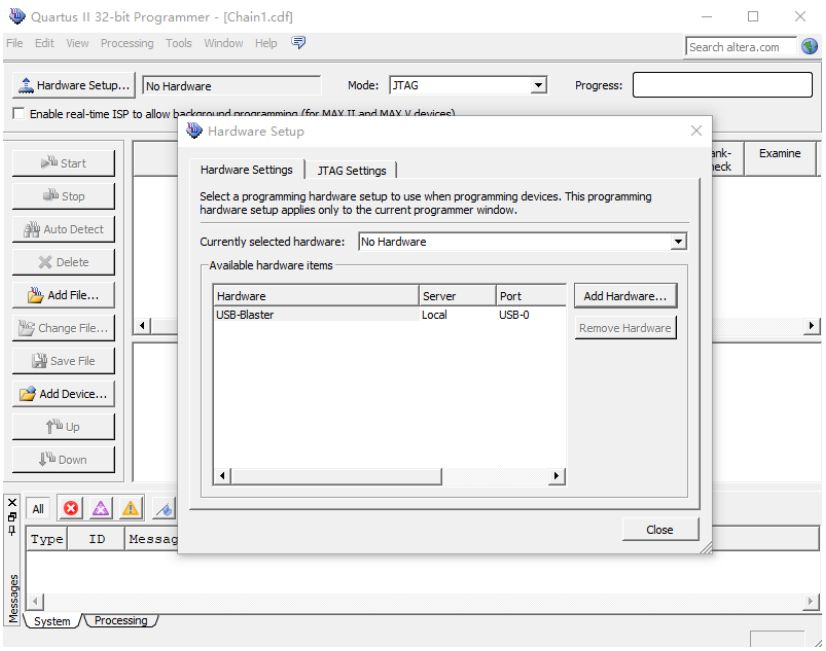


Figure 9-8 Step 1

Then start step 2, first click "Add File", select the file to be burned by CPLD, check "Program", "Black Check" and "Security Bit", and finally click Start to complete the CPLD programming. Refer to Figure 9-9 for specific steps。

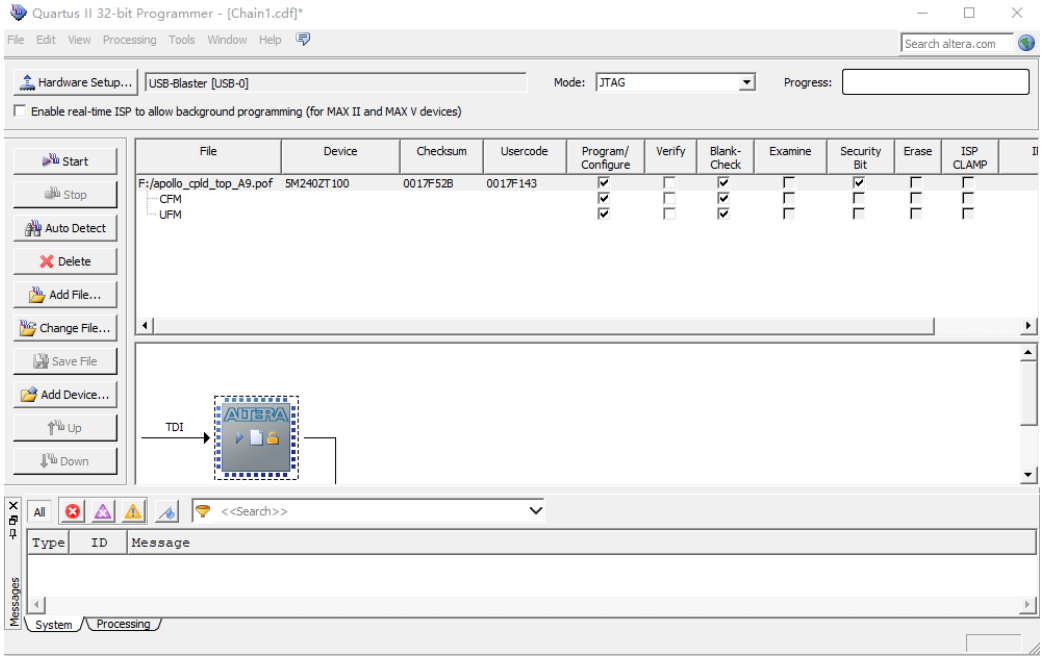


Figure 9-9 Step 2

10. More Product Information

For more information about this product, you can download the following manual from the official website (http://www.siglent.com).

- "SNA5000A Vector Network Analyzer User Manual": Provides a detailed description of the functions of this product.
- "SNA5000A Vector Network Analyzer Programming Manual": Provides detailed descriptions of SCPI commands and programming of this product.
- "SNA5000A Vector Network Analyzer Data Manual": Provides the main features and technical indicators of this product.
- "SNA5000A Vector Network Analyzer Quick Guide": Provides quick start and main operations of this product.

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, RF/MW signal generators, spectrum analyzers, vector network analyzers, digital multimeters, DC power supplies, electronic loads and other general purpose test instrumentation. Since its first oscilloscope was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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