

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

17 February 2023

Version 2.2.362.1909

The list of supported devices is expanded to 51: S5444 and S5180B were added.

Total number of modifications is 54.

16 December 2022

Version 2.2.361.1902

The list of supported devices is expanded to 49: RP10, RP140B and R140B were added.

Total number of modifications is 52.

16 August 2022

Version 2.2.349.1843

The list of supported devices is expanded to 46: S5243 was added.

26 July 2021

Version 2.2.301.4110

Without changes.

04 June 2021

Version 2.2.300.4092

Without changes.

27 April 2021

Version 2.2.296.4096

1. Beginning from this version, VNAPT supports all currently existing SnVNA versions (including SnVNA 21.1.7 and newer).

11 March 2021

Version 2.2.293.4085

1. For S5180: power accuracy was changed from ± 1.5 dB to ± 2 dB.
2. For Planar 304/1: uncorrected parameters test bug was fixed.

10 November 2020

Version 2.2.290.4080

1. For S5180:
 - a. minimum output power was changed from -50 dBm to -45 dBm;
 - b. IF bandwidth for transmission coefficient measurement was changed from 10 Hz to 100 Hz.
 - c. Receiver noise floor limit in frequency range from 12 GHz to 18 GHz was changed from -120 dBm to -122 dBm.

19 August 2020

Version 2.2.287.4076

1. The list of supported devices is expanded to 45: S5045 and M5045 were added.
2. For S5180:
 - a. Receiver noise floor, min output power, trace noise magnitude, uncorrected parameters, transmission accuracy were updated.
 - b. Harmonic distortion and Non-harmonic spurious were excluded.
 - c. Extended Calibration Comparison and Common Verification (version 2) methods were added to start page. Extended Calibration Comparison method includes Accuracy measurement test without uncorrected parameters. Common Verification (version 2) method includes Accuracy test without stabilities and compression.

Table 1 List of supported devices

Vector network analyzers	
R-series	
R54	50 Ω , basic configuration, 85 MHz to 5.4 GHz
R60	50 Ω , basic configuration,

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

	1 MHz to 6 GHz
R140	50 Ω , basic configuration, 85 MHz to 14 GHz
R160	50 Ω , basic configuration, 85 MHz to 16 GHz
R180	50 Ω , basic configuration, 1 MHz to 18 GHz
RP5*	50 Ω , customized solutions, 1 MHz to 0.5 GHz
RP60*	50 Ω , customized solutions, 1 MHz to 6 GHz
RP180*	50 Ω , customized solutions, 1 MHz to 18 GHz, 46.875 MHz to 18 GHz
Compact series	
S5045	2-ports, 50 Ω , basic configuration, 9 kHz to 4.5 GHz
S5048	2-ports, 50 Ω , basic configuration, from 20 kHz to 4.8 GHz
S5065	2-ports, 50 Ω , basic configuration, 9 kHz to 6.5 GHz
S5085	2-ports, 50 Ω , basic configuration, 9 kHz to 8.5 GHz
S5180	2-ports, 50 Ω , basic configuration, 100 kHz to 18 GHz
S7530	2-ports, 75 Ω , basic configuration, 20 kHz to 3.0 GHz
M5045*	2-ports, 50 Ω , basic configuration, 300 kHz to 4.5 GHz
M5065*	2-ports, 50 Ω , basic configuration, 300 kHz to 6.5 GHz
M5090*	2-ports, 50 Ω , basic configuration, 300 kHz to 8.5 GHz
M5180*	2-ports, 50 Ω , basic configuration, 300 kHz to 18 GHz
SC5065*	2-ports, 50 Ω , basic configuration, 300 kHz to 6.5 GHz
SC5090*	2-ports, 50 Ω , basic configuration, 300 kHz to 9.0 GHz
PLANAR TR1300/1	2-ports, 50 Ω , one-directional, 300 kHz to 1.3 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

TR1300S	2-ports, 50 Ω , one-directional, 9 kHz to 1.3 GHz
TR5048	2-ports, 50 Ω , one-directional, 20 kHz to 4.8 GHz
<i>P148*</i>	2-ports, 50 Ω , one-directional, 20 kHz to 4.8 GHz
<i>TR7530*</i>	2-ports, 75 Ω , one-directional, 20 kHz to 3.0 GHz
PXle series	
<i>PXIe-S5090*</i>	50 Ω , PXle configuration, 300 kHz to 9 GHz
<i>U5090*</i>	50 Ω , basic configuration, 300 kHz to 9 GHz
Full size series	
<i>PLANAR 304/1*</i>	2-ports, 50 Ω , basic configuration, 100 kHz to 3.2 GHz
PLANAR 804/1	2-ports, 50 Ω , basic configuration, 100 kHz to 8.0 GHz
PLANAR 808/1	4-ports, 50 Ω , basic configuration, 100 kHz to 8.0 GHz
<i>PLANAR 814/1*</i>	2-ports, 50 Ω , direct receiver access, 100 kHz to 8.0 GHz
Cobalt series	
<i>C1205*</i>	2-ports, 50 Ω , basic configuration, from 100 kHz to 4.8 GHz
<i>C1207*</i>	2-ports, 50 Ω , basic configuration, from 100 kHz to 7.0 GHz
C1209	2-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
<i>C1214*</i>	2-ports, 50 Ω , basic configuration, from 100 kHz to 14.0 GHz
C1220	2-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C1409	4-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1420	4-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
<i>C2209*</i>	2-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

C2409*	4-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2220	2-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C2420	4-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C4209	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4409*	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4220	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
C4420	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz

* VNAPT has not been tested with using real instrument.

21 November 2019

Version 2.2.283.4037

Uncorrected parameters of S5065, S5085 in frequency range to 300 kHz were updated: uncorrected directivity is 8 dB, uncorrected source match and load match are 10 dB.

17 October 2019

Version 2.2.281.4032

Beginning from this version, VNAPT supports the “Wait” and “WTRG” answers to the Trig:Stat? SCPI command. VNAPT works with all currently existing SnVNA versions (including SnVNA 19.3.3 and newer).

For dual-directional VNAs the SOLR calibration supports the merging two completed full one-port calibrations for each test port and the unknown thru addition.

For RVNA the error of “Accuracy Test High and Low Reflection” test was fixed. Waiting time was increased due to the large number of measurement points.

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

27 September 2019

Version 2.2.279.4017

- 1) Beginning from this version, VNAPT controls the software of the instrument under test using TCP/IP protocol via the integrated Socket server. COM/DCOM technology isn't supported.
2. "Instructions" button was added to the VNAPT home page. Clicking the button allows to print all instructions for each instrument without test launching and instrument connected. Also it opens VNAPT user manual.
3. The list of supported devices is expanded to 43: U5090, PXle-S5090, M5065, M5090, M5180, SC5065, SC5090 and TR1300S were added.
4. The following tests have been modified: Power accuracy test, Accuracy measurement test, Transmission coefficient magnitude and phase accuracy test.
5. For S5065 and S5085 the receiver noise floor border was changed from 4.8 GHz to 6.5 GHz.

Table 2 List of supported devices

Vector network analyzers	
R-series	
R54	50 Ω , basic configuration, 85 MHz to 5.4 GHz
R60	50 Ω , basic configuration, 1 MHz to 6 GHz
R140	50 Ω , basic configuration, 85 MHz to 14 GHz
R160	50 Ω , basic configuration, 85 MHz to 16 GHz
R180	50 Ω , basic configuration, 1 MHz to 18 GHz
RP5*	50 Ω , customized solutions, 1 MHz to 0.5 GHz
RP60*	50 Ω , customized solutions, 1 MHz to 6 GHz
RP180*	50 Ω , customized solutions, 1 MHz to 18 GHz, 46.875 MHz to 18 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

Compact series	
S5048	2-ports, 50 Ω , basic configuration, from 20 kHz to 4.8 GHz
S5065*	2-ports, 50 Ω , basic configuration, 9 kHz to 6.5 GHz
S5085*	2-ports, 50 Ω , basic configuration, 9 kHz to 8.5 GHz
S5180*	2-ports, 50 Ω , basic configuration, 100 kHz to 18 GHz
S7530	2-ports, 75 Ω , basic configuration, 20 kHz to 3.0 GHz
M5065*	2-ports, 50 Ω , basic configuration, 300 kHz to 6.5 GHz
M5090*	2-ports, 50 Ω , basic configuration, 300 kHz to 8.5 GHz
M5180*	2-ports, 50 Ω , basic configuration, 300 kHz to 18 GHz
SC5065*	2-ports, 50 Ω , basic configuration, 300 kHz to 6.5 GHz
SC5090*	2-ports, 50 Ω , basic configuration, 300 kHz to 9.0 GHz
PLANAR TR1300/1	2-ports, 50 Ω , one-directional, 300 kHz to 1.3 GHz
TR1300S	2-ports, 50 Ω , one-directional, 9 kHz to 1.3 GHz
TR5048	2-ports, 50 Ω , one-directional, 20 kHz to 4.8 GHz
TR7530*	2-ports, 75 Ω , one-directional, 20 kHz to 3.0 GHz
PXle series	
PXle-S5090*	50 Ω , PXle configuration, 300 kHz to 9 GHz
U5090*	50 Ω , basic configuration, 300 kHz to 9 GHz
Full size series	
PLANAR 304/1*	2-ports, 50 Ω , basic configuration, 100 kHz to 3.2 GHz
PLANAR 804/1	2-ports, 50 Ω , basic configuration, 100 kHz to 8.0 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

PLANAR 808/1	4-ports, 50 Ω , basic configuration, 100 kHz to 8.0 GHz
PLANAR 814/1*	2-ports, 50 Ω , direct receiver access, 100 kHz to 8.0 GHz
Cobalt series	
C1205*	2-ports, 50 Ω , basic configuration, from 100 kHz to 4.8 GHz
C1207	2-ports, 50 Ω , basic configuration, from 100 kHz to 7.0 GHz
C1209	2-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1214*	2-ports, 50 Ω , basic configuration, from 100 kHz to 14.0 GHz
C1220	2-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C1409*	4-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1420	4-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C2209*	2-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2409*	4-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2220	2-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C2420	4-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C4209	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4409*	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4220	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
C4420*	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz

* VNAPT has not been tested with using real instrument.

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

26 September 2018

Version 2.2.262.3848

The list of supported devices is expanded to 35: S5180 was added.

Added a features that allows the user to customize the program interface: work space scale, font size, color scheme select, the ability to create own color style.

Added a feature that allows the user to see a list of previously created reports of this device.

Added a feature that allows the user to tune a spectrum analyzer GPIB ID.

Drop-down lists indicating the number of rows in the table were replaced by the add / delete symbol of the table rows.

Frequency limit of noise floor was changed from 4.8 GHz to 6.5 GHz for S5065 and S5085.

Uncorrected parameters values for S5065, S5085 in frequency range to 300 kHz were changed:

- directivity from 10 dB to 8 dB;
- source match from 12 dB to 10 dB;
- load match from 12 dB to 10 dB.

Table 3 List of supported devices

Vector reflectometers	
R-series	
R54	50 Ω , basic configuration, 85 MHz to 5.4 GHz
R60	50 Ω , basic configuration, 1 MHz to 6 GHz
R140	50 Ω , basic configuration, 85 MHz to 14 GHz
R160	50 Ω , basic configuration, 85 MHz to 16 GHz
R180	50 Ω , basic configuration, 1 MHz to 18 GHz
RP5	50 Ω , customized solutions, 1 MHz to 0.5 GHz
RP60	50 Ω , customized solutions, 1 MHz to 6 GHz
RP180	50 Ω , customized solutions, 1 MHz to 18 GHz, 46.875 MHz to 18 GHz
Vector network analyzers	
Cobalt series	
C1205	2-ports, 50 Ω , basic configuration, from 100 kHz to 4.8 GHz
C1207	2-ports, 50 Ω , basic configuration, from 100 kHz to 7.0 GHz



VNA Performance Test Customer version Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

Vector network analyzers	
C1209	2-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1214	2-ports, 50 Ω , basic configuration, from 100 kHz to 14.0 GHz
C1220	2-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C1409	4-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1420	4-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C2209	2-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2409	4-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2220	2-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C2420	4-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C4209	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4409	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4220	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
C4420	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
Full size series	
PLANAR 304/1	2-ports, 50 Ω , basic configuration, from 100 kHz to 3.2 GHz
PLANAR 804/1	2-ports, 50 Ω , basic configuration, from 100 kHz to 8.0 GHz
PLANAR 808/1	4-ports, 50 Ω , basic configuration, from 100 kHz to 8.0 GHz
PLANAR 814/1	2-ports, 50 Ω , direct receiver access, from 100 kHz to 8.0 GHz
Compact series	
S5048	2-ports, 50 Ω , basic configuration, from 20 kHz to 4.8 GHz
S5065	2-ports, 50 Ω , basic configuration, from 9 kHz to 6.5 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

Vector network analyzers

S5085	2-ports, 50 Ω , basic configuration, from 9 kHz to 8.5 GHz
S5180*	2-ports, 50 Ω , basic configuration, 100 kHz to 18 GHz
S7530	2-ports, 75 Ω , basic configuration, from 20 kHz to 3.0 GHz
PLANAR TR1300/1	2-ports, 50 Ω , one-directional, from 300 kHz to 1.3 GHz
TR5048	2-ports, 50 Ω , one-directional, from 20 kHz to 4.8 GHz
TR7530	2-ports, 75 Ω , one-directional, from 20 kHz to 3.0 GHz

14 February 2017

Version 2.1.258.3611

Transmission accuracy test: when changing the attenuator values, the softkey names are now auto changed.

27 December 2017

Version 2.1.258.3589

This version supports three verification methods for 1-port and 2-port one-directional VNAs: common verification, calibration comparison and extended calibration comparison, as well as two methods for multiport two-directional VNAs: common verification and calibration comparison.

Reference equipment was added.

The “reflectometer” was replaced by an “analyzer”.

For S7530 images the “impedance matching pad” was changed to “adapter”.

Transmission accuracy test: for multiport type N VNAs the attenuator 40 dB was replaced by an attenuator 50 dB by default.

1 August 2017

Version 2.1.204.3090

The base power level was changed from 0 dBm to -5 dBm for R180.

Gaging connectors test: lower limit of type N 50 Ohm was changed from 5.28 mm to 5.26 mm for R180.

For 4-port VNAs the bug of decision-making for reflection coefficient test was fixed.



VNA Performance Test Customer version Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

14 July 2017 **Version 2.1.195.3035**

Procedure and message for frequency range checking when characterization file is loaded was added.

For TR VNAs the verification device table was not saving. The bug was fixed.

For TR VNAs the reflection coefficient phase data were not measuring. The bug was fixed.

27 June 2017 **Version 2.1.190.3012**

The measurement format of receiver noise floor was changed to logarithmic for Full size series.

15 June 2017 **Version 2.1.187.2994**

Fixed the bug in Uncorrected parameters test.

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

14 June 2017
Version 2.1.185.2988

The list of supported devices is expanded from 10 to 34.
Changed the appearance of the Power Accuracy Test.

Table 4 List of supported devices

Vector reflectometers	
R-series	
R54	50 Ω , basic configuration, 85 MHz to 5.4 GHz
R60	50 Ω , basic configuration, 1 MHz to 6 GHz
R140	50 Ω , basic configuration, 85 MHz to 14 GHz
R160	50 Ω , basic configuration, 85 MHz to 16 GHz
R180	50 Ω , basic configuration, 1 MHz to 18 GHz
RP5	50 Ω , customized solutions, 1 MHz to 0.5 GHz
RP60	50 Ω , customized solutions, 1 MHz to 6 GHz
RP180	50 Ω , customized solutions, 1 MHz to 18 GHz, 46.875 MHz to 18 GHz
Vector network analyzers	
Cobalt series	
C1205	2-ports, 50 Ω , basic configuration, from 100 kHz to 4.8 GHz
C1207	2-ports, 50 Ω , basic configuration, from 100 kHz to 7.0 GHz
C1209	2-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1214	2-ports, 50 Ω , basic configuration, from 100 kHz to 14.0 GHz
C1220	2-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C1409	4-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

Vector network analyzers	
C1420	4-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C2209	2-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2409	4-ports, 50 Ω , direct receiver access, from 100 kHz to 9.0 GHz
C2220	2-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C2420	4-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz
C4209	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4409	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 9.0 GHz
C4220	2-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
C4420	4-ports, 50 Ω , frequency extension solution, from 100 kHz to 20.0 GHz
Full size series	
PLANAR 304/1	2-ports, 50 Ω , basic configuration, from 100 kHz to 3.2 GHz
PLANAR 804/1	2-ports, 50 Ω , basic configuration, from 100 kHz to 8.0 GHz
PLANAR 808/1	4-ports, 50 Ω , basic configuration, from 100 kHz to 8.0 GHz
PLANAR 814/1	2-ports, 50 Ω , direct receiver access, from 100 kHz to 8.0 GHz
Compact series	
S5048	2-ports, 50 Ω , basic configuration, from 20 kHz to 4.8 GHz
S5065	2-ports, 50 Ω , basic configuration, from 9 kHz to 6.5 GHz
S5085	2-ports, 50 Ω , basic configuration, from 9 kHz to 8.5 GHz
S7530	2-ports, 75 Ω , basic configuration, from 20 kHz to 3.0 GHz
PLANAR TR1300/1	2-ports, 50 Ω , one-directional, from 300 kHz to 1.3 GHz
TR5048	2-ports, 50 Ω , one-directional, from 20 kHz to 4.8 GHz
TR7530	2-ports, 75 Ω , one-directional,

VNA Performance Test

Customer version

Release Notes

R-series
Cobalt series
Full size series
Compact series
PXle series

from 20 kHz to 3.0 GHz

17 April 2017
Version 2.1.156.2654

This version is designed for performance testing of VNAs and supports two verification methods: common verification and calibration comparison.

Beginning from this version, VNAPT has a compatibility property, it means that all the following releases will support reports created by earlier versions.

Table 5 List of supported devices

Vector reflectometers	
R-series	
R54	50 Ω , basic configuration, 85 MHz to 5.4 GHz
R60	50 Ω , basic configuration, 1 MHz to 6 GHz
R140	50 Ω , basic configuration, 85 MHz to 14 GHz
R160	50 Ω , basic configuration, 85 MHz to 16 GHz
RP5	50 Ω , customized solutions, 1 MHz to 0.5 GHz
RP60	50 Ω , customized solutions, 1 MHz to 6 GHz
RP180	50 Ω , customized solutions, 1 MHz to 18 GHz, 46.875 MHz to 18 GHz
Vector network analyzers	
Cobalt series	
C1209	2-ports, 50 Ω , basic configuration, from 100 kHz to 9.0 GHz
C1220	2-ports, 50 Ω , basic configuration, from 100 kHz to 20.0 GHz
C2220	2-ports, 50 Ω , direct receiver access, from 100 kHz to 20.0 GHz