

# **MICROCHK** User Guide

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EP1906159 B1, EP2419770B1, SG175725, SG 179018, EP2545406 B1, JP2013522600 A, CN102834764 B, EP 2 769 257 B1, JP6040253B2, EP2941621B1, CN105051484, JP6386477B2, EP2761253B1, US7796267 B2, JP5204450 B2, US 8497619, EP 2 419 370 B1, JP5721697 B2, SG 175240, US8736843 B2, JP 6082594, US 8531675 B2, JP5860809 B2, US 8873125 B2, US 8508745 B2, US 9046690 B2, US 9429474 B2, JP2015-535886, US 8922787 B2, US 8411340 B2, SG 175724, JP5709839 B2, US 8792105 B2, US 9158109 B2, US 9658053, CN105103030B, US9557556 B2, US 10120134, US 9574880, US9476713, US 9970819 B2, US 9793478, US 9658107 B2 and US 10060791 B2

### Pending

The technology discussed in this document is protected by one or more of the following patent applications:

EP20100755038, EP20130783730, US2015010026 A1, EP20130747718, EP20140704976, JP2016516220A, EP20140725821, US20160246010, EP3259227A1, CN 2016800111622, JP2017-542406, EP3259228A1, CN 201680011152, JP2017-542384, EP3274674A2, EP3320313A2, JP2018533812A, EP 167196732, JP 2018530588, CN 108474690 A, US 20180143245 and US 62793231

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### **MICROCHK User Guide**

## References

- Si-Ware Systems. Document Control Procedure. SWS-12010001
  Si-Ware Systems. Si-Ware Systems Master Internal Document Template. SWS-12010001

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## **1** Introduction

MICROCHK is a customized LabVIEW-based software for interfacing with NeoSpectra Micro devices (SWS62231). MICROCHK is also capable of measuring certain specifications of Micro devices to ensure that DUTs (Devices Under Test) are functioning properly.

MICOCHK measures the following specifications for every tested unit: SNR (Signal-tonoise ratio, wavelength repeatability, wavelength accuracy, photometric stability and photometric accuracy. The testing time on average PC is usually less 110 sec per unit.

This user guide consists of 4 sections starting by an introductory section highlighting software main functionality and user guide document structure. The next section will highlight the testing setup hardware installation. Section 3 will introduce the software installation steps. Finally in last section "Getting started", the testing procedure will be presented with more details on software user interface functionality.

## 2 Hardware Installation



The testing setup should be connected as shown in Figure 1: Testing Setup

Figure 1: Testing Setup

The testing setup different components, their part numbers and their functionalities are shown in Table 1

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### Table 1: Testing setup components

Component	PN	Functionality	Included in shipped testing setup
Testing PCB	SWS72514-B	Provide mechanical interface, power and communication to DUT	Ø
Power Supply	MW LRS-50- 3.3	Provide 3.3V to power DUT <sup>(1)</sup>	
SPI Box	NI-8451	Provide SPI and digital control signals to DUT <sup>(2)</sup>	
Polystyrene Sheet	NA	A diffuse-reflection reference material with specific-wavelength absorption lines to be used in reference material test	Ŋ
PC	NA	Tester platform for software operation <sup>(3)</sup>	
Spectralon	NA	Background reference with a white response over the IR range to be used in SNR test and as a background in reference material test	Ø

 $^{(1)}$  Power supply output voltage can be adjusted by turning the screw knob as shown in Figure 2. It is recommended to set the output voltage at the power supply terminals (-V and +V) to 3.35V



### Figure 2: Power supply adjusting

<sup>(2)</sup> SPI box is shipped with USB cable and communication cable where needed signals are labeled on the wires.

<sup>(3)</sup> PC minimum requirements are as follows:

- Processor: Core 2 Duo, 2 GHz or higher
- RAM: 2 GB or higher
- Prerequisite: .NET Framework 2 or higher
- Microsoft Windows 10 (x64)

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2.

## **3** Software Installation

Kindly follow the step-by-step installation steps:

1. Open the installation folder directory.

Run "Setup" as administrator.	Date modified	Туре	Size
h bin	9/9/2019 11:15 AM	File folder	
📊 license	9/9/2019 11:15 AM	File folder	
supportfiles	9/9/2019 11:17 AM	File folder	
nidist.id	9/9/2019 11:17 AM	ID File	1 KB
🚚 setup	6/21/2011 9:25 PM	Application	1,345 KB
🔊 setup	9/9/2019 11:17 AM	Configuration sett	23 KB

Figure 3: Installation folder directory

3. The installation process will start as shown in Figure 4



### Figure 4: Installation wizard





4. In the next window, select the MICROHK and National Instruments products installation directories and press "Next".

III MICROCHK	_		×
Destination Directory Select the primary installation directory.			
All software will be installed in the following locations. To install software into a different locations, click the Browse button and select another directory.			
Directory for MICROCHK C:\Program Files (x86)\MICROCHK\	Brow	se	
Directory for National Instruments products C:\Program Files (x86)\National Instruments\	Brow	se	
<< <u>B</u> ack Next >	>	<u>C</u> anc	el

Figure 5: Installation directory selection

5. Press "Next" to start installation.

🐙 MICROCHK					×
Start Installation Review the following summary	v before continuing	<b>]</b> .			
Adding or Changing • MICROCHK Files • NI-VISA 5.1 Run Time Support					
Click the Next button to begin installation.	Click the Back bu	tton to change the	installation settings		
	Save File	<< <u>B</u> ack	Next >>	<u>C</u> anc	el

Figure 6: Start Installation

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6. The installation will run for about 5 min.

U MICROCHK		-		×
				_
Querall Progress: 25% Complete				
				_
Validating install				
	<< Back	Next>>	Cance	el

Figure 7: Installation running

7. Once the installer finishes, press "Finish" to end installation wizard. Software is now successfully installed and ready to be used.

		-		×
Installation Complete				
The installer has finished updating your system.				
	<< Back	Next>>	Finisł	1

Figure 8: Installation complete

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### 4 Getting Started

To start testing devices, please follow the next steps

- 1. Ensure that the testing setup is connected as shown in 2.
- Make sure the DUT is placed in the testing board in the correct orientation per board label instruction. To place the DUT in socket, press on all test socket edges simultaneously, then place the unit inside the socket. Release the socket four edges once the DUT is stable inside the socket.
- 3. Start running MICROCHK from installation directory as shown in Figure 9

1	data	9/9/2019 11:09 AM	File folder	
	Local_Settings	9/9/2019 11:09 AM	File folder	
ł	Register_Maps	9/9/2019 11:09 AM	File folder	
-	Results	9/18/2019 10:42 AM	File folder	
	Users	9/9/2019 11:09 AM	File folder	
1	Logger_output	9/18/2019 10:28 AM	Text Document	1 KB
]	MICROCHK.aliases	9/9/2019 11:08 AM	ALIASES File	1 KB
<	MICROCHK	9/9/2019 11:08 AM	Application	1,516 KB
3	MICROCHK	9/9/2019 11:08 AM	Configuration sett	1 KB

Figure 9: MICROCHK directory



4. The software user interface shall open as shown in Figure 10

Figure 10: MICROCHK user interface





- 5. Press "Start" to begin testing.
- 6. The software will display the read DUT ID and installed FW (Firmware) version and a message will pop-up "Please put the Background material [Diffuse Reflection Ceramic Tile or Spectralon]".

MICROCHK → 관 ●	-	- 0	×
neospectra	MICROCHK	V1.0	
Sensor ID      4068902179        FW Version      1901236606	SNR Test Acce put the Diffuse Reflection Ceramic Tile		
Start Collect Results	Response Test Started @ 22/09/19 13:13:19 Part 4069902179 SNR Test Start		

Figure 11: SNR test prompt message

7. Kindly place the Background tile with white response as shown in Figure 12, then press "Done".



### Figure 12: Testing Setup with white reference material

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8. The 1<sup>st</sup> test (SNR test) will start running. You should notice DUT light source turning on and the test status will indicate if the test passed or failed as shown in Figure 13. If test failed, the software will stop and will not run the next test.

MICROCHK	- 🗆 X	MICROCHK	- 🗆 X
neospectra	MICROCHK via	neospectra	MICROCHK VI.0
Sensor ID 1249000258 FW Version 1901236606	SNR Test Running Reference Material Test Idle	Sensor ID 1249000258 FW Version 1901236606	SNR Test Done Pass Reference Material Test Running
Start Collect Results	Response        Test Stated © 18/09/19 10.27.26        Part 124900233        SNR Test Stat        SNR Test Stat        Test Stated © 19/09/19 10.29.34        Test Stated © 38        SNR Test Stat	Start Collect Results	Response Test Stanted © 18/09/19 10:38:46 Part 12:4000025 SNR Test Start SNR Test Start Reference Material Test Start

Figure 13: SNR Test

9. If SNR test in previous step passed, MICROCHK will proceed automatically to 2<sup>nd</sup> test "Reference material test". A message will pop-up "Please put the Polystyrene Sheet" as shown in Figure 14.



Figure 14: Reference material test prompt message

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10. Kindly place the reference material "Polystyrene Sheet" as shown in Figure 15, then press "Done".

### Figure 15: Testing setup with reference material

11. The reference material test will start running. The test status will indicate if the test passes or fails as shown in Figure 16.

MICROCHK	– 🗆 X	- III - III	×
•@ neospectra	MICROCHK VIO	MICROCHK vie	
Sensor ID FW Version 1249000258 1901236606	SNR Test Done Pass Reference Material Test Running	Sensor ID 1249000258 TW Version 1401230000 Reference Material FCst Done Pass	>
Start Collect Results	Response Test Santed © 18/09/19 10:38:46 Part 12:4000258 SNR Test Sant SNR Test End Reference Material Test Start	Start Response Test Started @ 18/09/19 10.42:18 Part 12800238 SNR Test Start SNR Test Start SNR Test End Reference Material Test Start Reference Material Test End	

Figure 16: Reference material test

12. Once both tests pass, the unit shall be good for use.

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- 13. Remove the current DUT by pressing on all test socket edges simultaneously to release the DUT, the pick it up out of test socket.
- 14. Place a new DUT and start testing steps from step 1 again.

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15. To collect the results of tested units press "Collect Results" button. This will summarize the results of all tested units in a tab delimited text file called "All Results"



Figure 17: Collect results

16. This file is located inside the "Results" folder located in MICROCHK directory as shown in Figure 18.

Ν	ame	Date modified	Туре	Size
	data	9/9/2019 11:09 AM	File folder	
	Local_Settings	9/9/2019 11:09 AM	File folder	
	Register_Maps	9/9/2019 11:09 AM	File folder	
<	Results	9/22/2019 11:50 AN	1 File folder	
	Users	9/9/2019 11:09 AM	File folder	
	Logger_output	9/18/2019 10:28 AN	1 Text Document	1 KB
	] MICROCHK.aliases	9/9/2019 11:08 AM	ALIASES File	1 KB
-	MICROCHK	9/9/2019 11:08 AM	Application	1,516 KB
5	MICROCHK	9/9/2019 11:08 AM	Configuration sett	1 KB
I	Name	Date modified	Type S	ize
	1249000258_190918_103847	9/18/2019 10:41 AM	File folder	
	1249000258_190918_104220	9/18/2019 10:44 AM	File folder	
	4068902232_190829_144135	8/29/2019 2:41 PM	File folder	
•	All Results	9/22/2019 11:50 AM	Text Document	0 KB

Figure 18: collected results location

