

Signature 1000R+ Cable Analyzer Performance Verification Manual

Version 4.5

Major Revision

4 November, 1999

(Errata corrected 19 December, 2000)

CIRRIS
An ISO 9001 Certified Company

Signature 1000R+ Cable Analyzer Performance Verification Manual
Version 4.5

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1991 Parkway Boulevard
Salt Lake City, Utah 84119-2026
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I Need Your Help!

As Senior Editor, it's my responsibility to constantly improve the manuals and other documentation we include with our equipment. We try hard, but we know we'll never please everyone. If you were in my chair, how would you change the documentation to make it better? Here's your chance to take gripes, suggestions and (we hope) praise directly to the guy who can change things. Please fax or mail this form to me, or contact me by e-mail.

Thanks!

Van Nielson
Senior Editor, Technical Documentation

1000R+ Performance Verification Manual

Attach more pages if needed

Fax Telephone: 801-973-4609

e-mail: vann@cirris.com

Van Nielson
c/o Cirris Systems Corporation
1991 Parkway Boulevard
Salt Lake City, Utah 84119-2026
U.S.A.

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General Information

Firmware

The firmware version your Cirris 1000R+ is equipped with is displayed as the analyzer powers up. Several items will flash by fairly quickly, so be ready to read the version number.

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VERSION 1.27p2

- **If your analyzer has firmware versions 1.00 to 1.12**, use the comparison tables in Data Sheet #1 on page 19. Make copies of the data sheets. Don't write on the originals.
- **If your analyzer has firmware version 1.13 or later**, use the comparison tables in Data Sheet #2 on page 21. Make copies of the data sheets. Don't write on the originals.

If you need to upgrade the firmware in your Cirris 1000R+, telephone Cirris at 801-973-4600 or 800-441-9910.

Things to remember

- You should check the calibration of your 1000R+ at least once per year. Also check the calibration whenever you suspect the analyzer may not be working properly. You **cannot** adjust the calibration yourself. If the analyzer does not pass the calibration tests, telephone Cirris at 801-973-4600 or 800-441-9910.
- Keep the adapter receptacles and the area surrounding the analyzer free from dust, metal particles, and other debris. Keep all liquids away from your 1000R+. Liquid spills can pose a health hazard, can severely damage the analyzer, and will immediately void its warranty.

Your packing list

In addition to your analyzer (with its wall transformer power supply) and this manual, you will need a Zero Ohm Adapter, and a 1000R+ Resistance Adapter to do these tests.

Set Up the Analyzer, Perform the Calibration

Set up the hardware

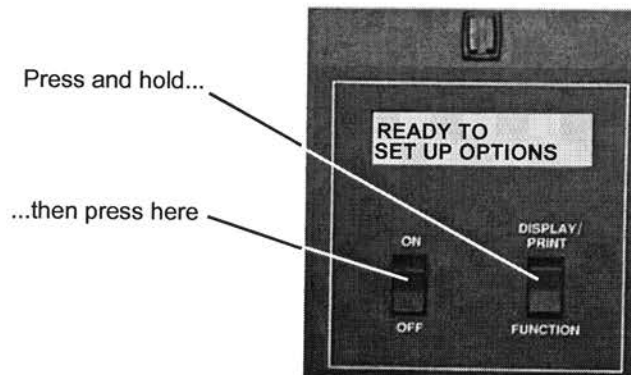
To prepare the analyzer's hardware for calibration, do these things:

- Install any expansion boxes you want to use. The 1000R+ can accept as many as three of these. For instructions on how to install them, see your *Signature 1000R+ Cable Analyzer User's Guide*.
- Make sure the analyzer is turned off, then connect the power cord to the analyzer, and plug the wall transformer into a live, well-grounded wall outlet.

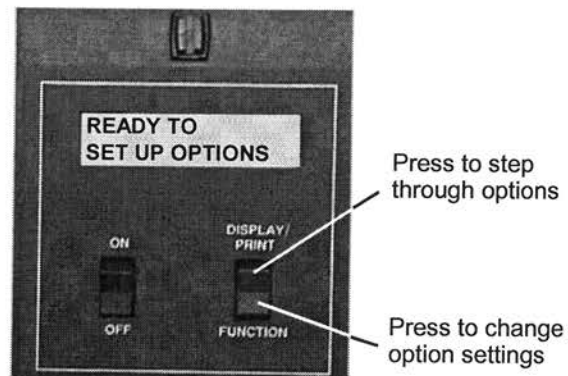
Set the options for testing signal routing

Be sure to use the correct option settings (shown beginning on the next page) for the firmware version your 1000R+ contains (see page 7 for instructions on how to find out what firmware version your analyzer has). To set the test options for testing signal routing, do these things:

1. Press in and hold the Display/Print switch as you turn on the analyzer by pressing the On switch. Hold Display/Print until **Ready To Set Up Options** appears.



2. Once **Ready To Set Up Options** appears in the display, release Display/Print.



3. Select the **Create Test From** option by pressing **Display/Print**.
 - If the setting is **SAMPLE CABLE**, go on to the next option by pressing **Display/Print**
 - To change the option setting, press **Function** until **SAMPLE CABLE** appears, then go on to the next option by pressing **Display/Print**.
4. Continue stepping through the options by pressing **Display/Print**, changing the settings as necessary by pressing **Function**, until all the options are set as shown in one of these tables. When you are done, **Ready to Learn** will appear on the display.

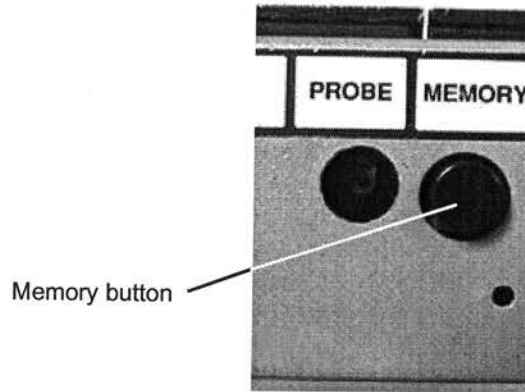
First Option Settings for Calibration Firmware Version 1.00 to 1.12	
Option	Setting
Create Test From	SAMPLE CABLE
Connection Resistance	<.1 Ω
Insulation Resistance	>5M Ω
Error Tones are	HIGH
Sorted Wire List is	OFF
Count All Cables is	OFF
Auto Print is	OFF

First Option Settings for Calibration Firmware Version 1.13 or later	
Option	Setting
Create Test From	SAMPLE CABLE
Connection Resistance	<.1 Ω
Insulation Resistance	>5M Ω
Error Tones are	HIGH
Sorted Wire List is	OFF
Count All Cables is	OFF
Auto Print is	OFF

5. Turn the analyzer off.

What to do if you go past the value you want

If you want to go backward through either the options or settings, press in and hold the Memory button on the back of the analyzer, while pressing Display/Print or Function. **Note:** All options or settings will roll over to the beginning when you are going forward or backward.



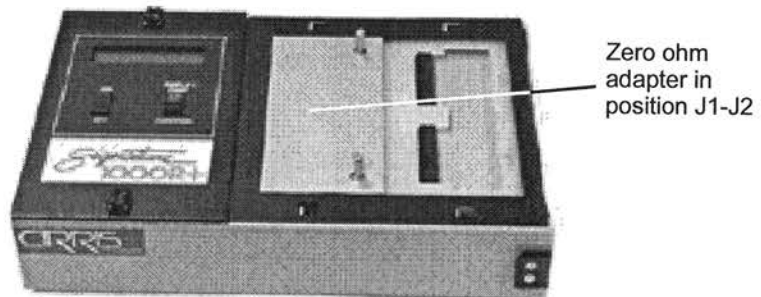
Get your data sheet ready

To make keeping track of your test results easy, we have provided a set of data sheets beginning on page 17. **PHOTOCOPY** these! That way, you will have clean sets of data sheets available whenever you need them. As you go through the calibration tests on your 1000R+, write your test results onto the photocopies.

Test the Signal Routing System

To test the signal routing system in your Cirris 1000R+, do these things:

1. Install the Zero Ohm Adapter in position J1-J2 as shown here.

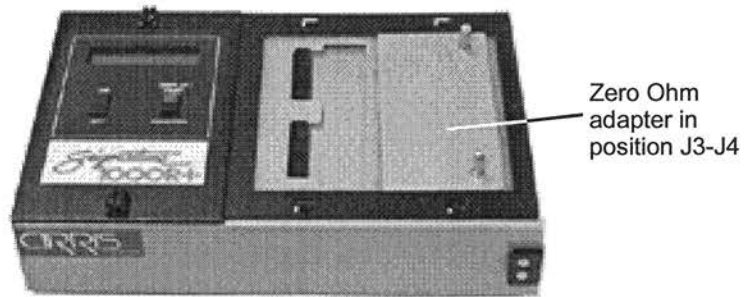


2. Turn on the analyzer. The analyzer will prompt **Learning Cable** for several seconds, then the prompt should change to **SIG:XXXXXX-XXXX Please Verify**. The correct signature will be shown on the data sheets. **Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the displayed signature into the "Signature Seen" blank in Table 1 on the data sheet, then compare it to the "Correct Signature" shown. If they match, check off "Pass." If they do not match, check off "Fail".



3. Turn off the analyzer.

4. Install the Zero Ohm Adapter in position J3-J4 as shown here.



5. Turn on the analyzer. The analyzer will prompt **Learning Cable** for several seconds, then the prompt should change to **SIG:XXXXXX-XXXX Please Verify. Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the displayed signature into the “Signature Seen” blank in Table 2 on the data sheet, then compare it to the “Correct Signature” shown. If they match, check off “Pass.” If they do not match, check off “Fail.”
6. Turn off the analyzer..

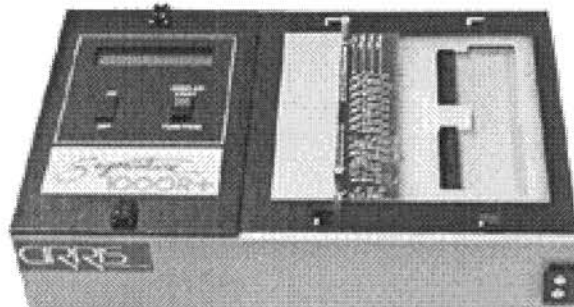


7. If you are using expansion boxes, repeat the verification process until all of the expansion boxes have been tested. **Be sure to use the correct data sheet for the firmware version your analyzer has.** Carefully record the test results as you go. For example, if you are using three expansion boxes, you'll fill out tables 3 through 8.

Test the Resistance Measurement System

To test the Resistance Measurement system in your Cirrus 1000R+, do these things:

1. Check the test option settings. They should **not** have changed. See page 9 for details on how to do this.
2. Install the 1000R+ Resistance Adapter in position J1-J2 as shown here.



3. Turn on the analyzer. The analyzer will prompt **Learning Cable** for several

seconds. The prompt will then change to **Learned Cable Resistance Error**.

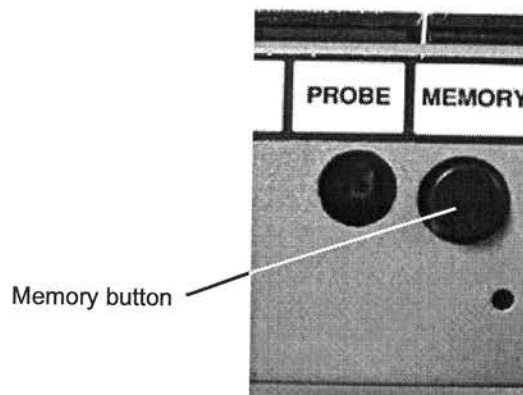


4. Press Display/Print. The analyzer will prompt with a “J” value and the first of four resistance values. **Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the displayed resistance value into the Resistance Seen blank on row 1 of table 9 in the data sheet. Compare the resistance value prompted by the analyzer with the Correct Resistance shown in the table on the data sheet.
 - If the displayed resistance falls either on the Correct Resistance or between the MAXimum and MINimum resistance limits shown in the table, check off “Pass.”
 - If the displayed resistance value falls outside the resistance limits shown in the table, check off “Fail”.
5. Continue pressing Display/Print to check three more resistance values. Fill out the remaining “Resis. Seen” blanks in Table 9 on the data sheet as you go. Compare the resistances you see with the correct resistances shown, and check off “Pass” or “Fail” as usual. Only four resistance values should display. When you press Display/Print a fifth time, the prompt should return to **Learned Cable Resistance Error**.

Test the Resistance Threshold System

To test the Resistance Threshold system in your 1000R+, do these things:

1. Install the 1000R+ Resistance Adapter in position J1-J2 if it is not already there.
2. Turn on the analyzer, and wait for the Learned Cable Resistance Error prompt to appear. Press and release the Memory button.



3. The analyzer will prompt **SIG:XXXXXX-XXXX Please Verify**. **Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the displayed signature into the Signature Seen blank in Table 10 on the data sheet. Compare the signature prompted by the analyzer with the Correct Signature. If they match, check off “Pass.” If they do not match, check off “Fail.”

4. Press the **Memory** button again. **Note:** Ignore the beeps the analyzer makes.
5. The analyzer should prompt **SIG: 6462A7-6T02** for firmware versions 1.00 to 1.12, or **SIG: 6462A7-6S020** for firmware versions 1.13 or later.

SIG: 6462A7-6T02
INSULATION SHORT

SIG: 6462A7-6S020
INSULATION SHORT

6. Press **Display/Print**. The analyzer will display the first of ten “NCJ” values, followed by **Insulation Short**.
7. **Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the first “NCJ” value shown into row 1 of Table 11 on the data sheet. Compare it with the “Correct NCJ Value” shown, and check off “Pass” or “Fail” as usual.
8. Press **Display/Print** to step through nine more “NCJ” values. Write each value into the appropriate blank in table 10 on the data sheet you are using. Compare each value as before, and check off “Pass” or “Fail” as usual. Only ten values should display. Pressing **Display/Print** again should cause the **SIG: XXXXXX-XXXX** prompt to reappear.
9. Turn off the analyzer.

**Reset the options,
continue calibration**

For instructions on how to set the options, see page 9. Use the correct set of option settings for the firmware your analyzer has.

1. Set the options as shown in these tables:

Second Option Settings for Calibration Firmware Version 1.00 to 1.12	
Option	Setting
Create Test From	SAMPLE CABLE
Connection Resistance	<.1Ω
Insulation Resistance	>500KΩ
Error Tones are	HIGH
Sorted Wire List is	OFF
Count All Cables is	OFF
Auto Print is	OFF

Second Option Settings for Calibration Firmware Version 1.13 or later	
Option	Setting
Create Test From	SAMPLE CABLE
Connection Resistance	<.1Ω
Insulation Resistance	>500KΩ
Error Tones are	HIGH
Sorted Wire List is	OFF
Count All Cables is	OFF
Auto Print is	OFF

- Turn the analyzer off.
- Turn on the analyzer. The analyzer will prompt **Learning Cable** for several seconds. The prompt should then change to **Learned Cable Resistance Error**.
- Press the **Memory** button.
- The analyzer will prompt **SIG:XXXXXX-XXXX Please Verify. Be sure to use the correct data sheet for the firmware version your analyzer has.** Write the displayed signature into the Signature Seen blank in Table 12 on the data sheet. Compare the signature prompted by the analyzer with the Correct Signature shown in the table on the data sheet. If they match, check off "Pass." If they do not match, check off "Fail."
- Press the **Memory** button. The analyzer should prompt **SIG: 6462A7-6N02 Insulation Short** for firmware versions 1.00 to 1.12, or **SIG: 6462A7-6M020 Insulation Short** for software versions 1.13 or later.
- Press **Display/Print**. The analyzer should display the first of six "NCJ Insulation Short" values. Write this value into the first row of Table 13 on the data sheet. Compare it with the correct value on the same row, then check off "Pass" or "Fail" as usual.
- Press **Display/Print** to step through the remaining five "NCJ Insulation Short" values. Write each value into the correct row in Table 13 on the data sheet. Compare each value with the correct value on the same row, then check off "Pass" or "Fail" as usual. Only six values should display. Pressing **Display/Print** again should cause the **SIG: 6462A7-6M020 Insulation Short** prompt to reappear.

Conclusion

You have now completed the performance verification tests on your Cirris 1000R+ Cable Analyzer. If your analyzer passed all of these tests, it is in proper working order.

If your analyzer did not pass all of these tests, please call our customer support team at 801-973-4600 or 800-441-9910.

Please have the data sheet that you filled out during the testing process handy. Be prepared to give your customer service representative as complete a description as you can of the failure(s) or other problems you encountered in verifying the analyzer's performance.

Data Sheet Masters

PHOTOCOPY THESE!

These data sheets give you an easy way to record your calibration testing results as you work through the procedure. Photocopy these double-sided master sheets, then write your results onto the copies instead of onto these originals. That way, you'll have a supply of data sheets ready whenever you need them.

Use the correct version number!

Which data sheet you use depends upon which firmware version your Cirris 1000R+ has. If you need instructions on how to find out which version number your analyzer has, see page 7.

- For firmware versions 1.0 to 1.12, use Data Sheet #1
- For firmware versions 1.13 and later, use Data Sheet #2

File copies?

A good way to keep track of the calibrations you do on your Cirris 1000R+ is to simply file the completed data sheets away for permanent reference. We recommend this as a good way to start a "calibration trail" on your analyzer.

1000R+ Performance Verification Data Sheet #1

For firmware versions 1.00 to 1.12

Operator: _____
 Analyzer Ser. Num: _____
 Test Date: ____/____/____

Test the Signal Routing System

Signature Seen	Correct Signature	Pass	Fail
	7F5527-6T02		

Table 1

Zero Ohm Adapter at position J1-J2

Signature Seen	Correct Signature	Pass	Fail
	94C424-6T02		

Table 2

Zero Ohm Adapter at position J3-J4

Signature Seen	Correct Signature	Pass	Fail
	5CC1A1-6T02		

Table 3

Zero Ohm Adapter at position J5-J6

Signature Seen	Correct Signature	Pass	Fail
	D3A34A-6T02		

Table 4

Zero Ohm Adapter at position J7-J8

Signature Seen	Correct Signature	Pass	Fail
	51A15E-6T02		

Table 5

Zero Ohm Adapter at position J9-J10

Signature Seen	Correct Signature	Pass	Fail
	C50EFB-6T02		

Table 6

Zero Ohm Adapter at position J11-J12

Signature Seen	Correct Signature	Pass	Fail
	E93078-6T02		

Table 7

Zero Ohm Adapter at position J13-J14

Signature Seen	Correct Signature	Pass	Fail
	719A99-6T02		

Table 8

Zero Ohm Adapter at position J15-J16

Test the Resistance Measurement System

Row	"J" Posit.	Resis. Seen	Correct Resis.	MIN Limit	MAX Limit	Pass	Fail
1	J1B002 J1B004		10Ω	9.5Ω	10.5Ω		
2	J1B003 J1B005		100Ω	95Ω	105Ω		
3	J1B006 J1B008		1000Ω	950Ω	1050Ω		
4	J1B007 J1B010		9.09KΩ	8.64KΩ	9.55KΩ		

Table 9

Test the Resistance Threshold System

Signature Seen	Correct Signature	Pass	Fail
	6462A7-6T02		

Table 10

Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail	Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail
1		NC J1B009			6		J1A016		
2		NC J1B011			7		J1A020		
3		NC J1B012			8		J1A021		
4		NC J1B014			9		J1A022		
5		NC J1B016			10		J1A023		

Table 11

Signature Seen	Correct Signature	Pass	Fail
	6462A7-6N02		

Table 12

Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail	Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail
1		NC J1B009			4		J1B014		
2		NC J1B011			5		J1B016		
3		NC J1B012			6		J1A016		

Table 13

1000R+ Performance Verification Data Sheet #2

For firmware versions 1.13 or later

Operator: _____
Analyzer Ser. Num: _____
Test Date: ____/____/____

Test the Signal Routing System

Signature Seen	Correct Signature	Pass	Fail
	7F5527-6S020		

Table 1

Zero Ohm Adapter at position J1-J2

Signature Seen	Correct Signature	Pass	Fail
	94C424-6S020		

Table 2

Zero Ohm Adapter at position J3-J4

Signature Seen	Correct Signature	Pass	Fail
	5CC1A1-6S020		

Table 3

Zero Ohm Adapter at position J5-J6

Signature Seen	Correct Signature	Pass	Fail
	D3A34A-6S020		

Table 4

Zero Ohm Adapter at position J7-J8

Signature Seen	Correct Signature	Pass	Fail
	51A15E-6S020		

Table 5

Zero Ohm Adapter at position J9-J10

Signature Seen	Correct Signature	Pass	Fail
	C50EFB-6S020		

Table 6

Zero Ohm Adapter at position J11-J12

Signature Seen	Correct Signature	Pass	Fail
	E93078-6S020		

Table 7

Zero Ohm Adapter at position J13-J14

Signature Seen	Correct Signature	Pass	Fail
	719A99-6S020		

Table 8

Zero Ohm Adapter at position J15-J16

Test the Resistance Measurement System

Row	"J" Posit.	Resis. Seen	Correct Resis.	MIN Limit	MAX Limit	Pass	Fail
1	J1B002 J1B004		10Ω	9.5Ω	10.5Ω		
2	J1B003 J1B005		100Ω	95Ω	105Ω		
3	J1B006 J1B008		1000Ω	950Ω	1050Ω		
4	J1B007 J1B010		9.09KΩ	8.64KΩ	9.55KΩ		

Table 9

Test the Resistance Threshold System

Signature Seen	Correct Signature	Pass	Fail
	6462A7-6S020		

Table 10

Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail	Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail
1		NC J1B009			6		NC J1A016		
2		NC J1B011			7		NC J1A020		
3		NC J1B012			8		NC J1A021		
4		NC J1B014			9		NC J1A022		
5		NC J1B016			10		NC J1A023		

Table 11

Signature Seen	Correct Signature	Pass	Fail
	6462A7-6M020		

Table 12

Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail	Row	"NCJ" Seen	Correct "NCJ"	Pass	Fail
1		NC J1B009			4		NC J1B014		
2		NC J1B011			5		NC J1B016		
3		NC J1B012			6		NC J1A016		

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