

MS46121A/B ShockLine VNA

Verification Procedure

This guide provides a return loss performance verification test procedures for Anritsu model MS46121A/B ShockLine 1-port USB VNA. Blank performance verification test records are provided at the end of this document. Make copies of the blank test records and use them to record measured values.

Description

The MS46121A/B 1-port USB VNA is a small USB powered single port vector network analyzer. A user-supplied computer supplies power and control to the VNA through a USB cable. The MS46121A/B series comes in one of two frequency options:

- **MS46121A/B-004:** 40 MHz to 4 GHz
- **MS46121A/B-006:** 150 kHz to 6 GHz

The following equipment is required for completing the performance verification procedure in this guide.

Equipment Required	Description	Suggested Model
Calibration Tee	Frequency: DC to 8 GHz Connector: N(f)	Anritsu Model OSLNF50A-8 or TOSLNF50A-8
Offset Termination	Frequency: DC to 18 GHz Return Loss: 6 dB \pm 1.0 dB Connector: N(f)	Anritsu Model SC5910
Offset Termination	Frequency: DC to 18 GHz Return Loss: 20 dB \pm 1.5 dB Connector: N(f)	Anritsu Model SC6841



Return Loss Measurement Accuracy Verification

1. Press the **Preset** button (located on the tool bar). This will set the frequency as follows:
 - for MS46121A/B-004: Start Frequency = 40 MHz, Stop Frequency = 4 GHz
 - for MS46121A/B-006: Start Frequency = 150 kHz, Stop Frequency = 6 GHz
2. Press the **Calibration** icon (**5, Calibration** on the tool bar).
3. Press the **Manual Cal** soft key.
4. Press **Reflection Only**.
5. Press **Port 1 Reflective Devices**.
6. Connect the **Open** from the calibration tee.
7. Press **Open** on the ShockLine software. Once the calibration is finished, you will see a check mark.
8. Connect the short from the calibration tee.
9. Press **Short** on the ShockLine software. Once the calibration is finished, you will see a check mark.
10. Connect the load from the calibration tee.
11. Press **Load** on the ShockLine software.
12. You will see the following calibration message:

Please Click the "Done" button to complete the calibration.
13. Press **OK**, then press **Done**. The **Cal Status** will be **On**.
14. After the calibration is complete, install the 6 dB offset termination.
15. Press the **Scale** button and set the following:
 - **Resolution** to 1 dB/Div
 - **Reference Value** to 6 dB
 - **Reference Position** to 10
16. For MS46121A/B with Option 6 (MS46121A/B-006) go to step 22.
17. Press **Marker** (top of the ShockLine software).
18. Press **Marker 1** to turn it **On**.
19. Press **Marker Search**, then press **Max**.
20. Press **Marker 2** to turn it **On**.
21. Press **Marker Search**, then press **Min**.
22. Verify that the data display falls between specification on the test record for the model and frequency test range.
23. Install the 20 dB offset termination.
24. Repeat steps 15 through 23 with the **Reference Value** set to 20 dB.
25. Verify that the data display falls between specification on the test record for the model and frequency test range.

Test Records

Model:	Firmware Revision:	Operator:
Serial Number:	Options:	Date:

MS46121A/B-004 VNA Return Loss Accuracy Verification


Return Loss	Frequency	Measured Value	Specification
6 dB	40 MHz to 4 GHz		dB $-5.2 \text{ dB} \geq x \geq -6.8 \text{ dB}$
20 dB	40 MHz to 4 GHz		dB $-18.6 \text{ dB} \geq x \geq -21.4 \text{ dB}$

MS46121A/B-006 VNA Return Loss Accuracy Verification

Return Loss	Frequency	Measured Value	Specification
6 dB	150 kHz to 4 GHz		dB $-5.2 \text{ dB} \geq x \geq -6.8 \text{ dB}$
	$\geq 4 \text{ GHz to } 6 \text{ GHz}$		dB $-5.0 \text{ dB} \geq x \geq -7.0 \text{ dB}$
20 dB	150 kHz to 4 GHz		dB $-18.6 \text{ dB} \geq x \geq -21.4 \text{ dB}$
	$\geq 4 \text{ GHz to } 6 \text{ GHz}$		dB $-18.4 \text{ dB} \geq x \geq -21.6 \text{ dB}$

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Anritsu Company
490 Jarvis Drive
Morgan Hill, CA 95037-2809
USA
<http://www.anritsu.com>