

S331P Cable and Antenna Analyzer

Verification Procedure

This guide provides frequency accuracy and return loss performance verification test procedures for the Anritsu S331P, Cable and Antenna Analyzer. Blank performance verification test records are provided at the end of this document. It's recommended to make copies of the blank test records and use them to record measured values.

Additional product information can be found on the Anritsu website by visiting the product page at: <https://www.anritsu.com/en-us/test-measurement/products/s331p>

Be sure to read the *Handheld Instruments Product Information, Compliance, and Safety Guide* (10100-00067) for important safety, legal, and regulatory notices.

Description

The S331P is a small USB powered cable and antenna analyzer. A user-supplied computer provides power and control to the S331P through a USB cable. The S331P comes in one of two frequency options:

- **S331P-0704:** 150 kHz to 4 GHz
- **S331P-0706:** 150 kHz to 6 GHz

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

Equipment Required	Description	Suggested Model
Frequency Counter	Frequency: 3 GHz	Anritsu Model MF2412C
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 Connector: N(f)	Anritsu Model SC5910
Offset Termination	Frequency: DC to 18 GHz Return Loss: 20 dB Connector: N(f)	Anritsu Model SC6841



Frequency Accuracy Verification

1. Preset the S331P by clicking the **Preset** (9) button.
2. Press the **Freq/Dist** button and choose a start frequency of 3 GHz and stop frequency of 3 GHz.
3. Connect the S331P to the frequency counter.
4. Record the frequency reading in [“Table 1: S331P Frequency Accuracy Verification”](#).

Return Loss Measurement Accuracy Verification

1. Preset the S331P by clicking the **Preset** (9) button. This will set the frequency as follows:
 - for S331P-0704: Start Frequency = 500 kHz, Stop Frequency = 4 GHz
 - for S331P-0706: Start Frequency = 500 kHz, Stop Frequency = 6 GHz
2. Press the **Calibration** button.
3. Press the **Start Calibration** button.
4. Follow the on-screen instructions to perform the Open/Short/Load calibration.
5. After the OSL calibration has completed, ensure the **CALIBRATION ON** message is shown.
6. Install the 6 dB offset termination.
7. For S331P-0704 models, record the minimum and maximum values in [“Table 2: S331P-0704 Return Loss Accuracy Verification”](#).

For S331P-0706 models, record the minimum and maximum values for each frequency range in [“Table 3: S331P-0706 Return Loss Accuracy Verification”](#).

8. Install the 20 dB offset termination.
9. For S331P-0704 models, record the minimum and maximum values in [“Table 2: S331P-0704 Return Loss Accuracy Verification”](#).

For S331P-0706 models, record the minimum and maximum values for each frequency range in [“Table 3: S331P-0706 Return Loss Accuracy Verification”](#).

10. Verify that the recorded data is between specification listed on the test record for the model and frequency test range.

Test Records

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

Table 1: S331P Frequency Accuracy Verification

Frequency	Measured Value	Specification
3 GHz (3000 MHz)	MHz	3 GHz \pm 7.5 kHz (\pm 2.5 ppm)

Table 2: S331P-0704 Return Loss Accuracy Verification


Return Loss	Frequency	Minimum Value	Maximum Value	Specification
6 dB	500 kHz to 4 GHz	dB	dB	$-4.9 \text{ dB} \geq x \geq -7.1 \text{ dB}$
20 dB	500 kHz to 4 GHz	dB	dB	$-17.8 \text{ dB} \geq x \geq -22.2 \text{ dB}$

Table 3: S331P-0706 Return Loss Accuracy Verification

Return Loss	Frequency	Minimum Value	Maximum Value	Specification
6 dB	500 kHz to 4 GHz	dB	dB	$-4.9 \text{ dB} \geq x \geq -7.1 \text{ dB}$
6 dB	$\geq 4 \text{ GHz to } 6 \text{ GHz}$	dB	dB	$-4.5 \text{ dB} \geq x \geq -7.5 \text{ dB}$
20 dB	500 kHz to 4 GHz	dB	dB	$-17.8 \text{ dB} \geq x \geq -22.2 \text{ dB}$
20 dB	$\geq 4 \text{ GHz to } 6 \text{ GHz}$	dB	dB	$-17.4 \text{ dB} \geq x \geq -22.6 \text{ dB}$

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