B-WIT 100 & B-LFT 100 - Information

Functional Check of Injection Transformers B-WIT 100 & B-LFT 100

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Contact support@omicron-lab.com for technical support.

1 Functional Check

The following checks will help you to decide if your B-WIT 100 and B-LFT 100 works correctly or needs to be replaced / repaired.

Note:

It is assumed that the user manual of the injection transformers (B-WIT 100 / B-LFT 100) and the Bode 100 were read and understood prior the measurements described in this document are executed. If you do not have a manual at hand you can download it on our webpage https://www.omicron-lab.com/.

1.1 DC Resistance of Input Winding

Measurement Setup:

Please connect the input of the injection transformer to an ohmmeter or multimeter and measure the DC resistance of the input.

Hint: The secondary side (output) should be shortened when measuring the B-LFT 100 because the large inductance might make it hard to get a good measurement result.

Figure 1: Measurement setup - DC resistance of input

Expected Measurement result:	B-WIT 100	B-LFT 100
The result should be	< 0.5 Ω	< 55 Ω
Typically:	0.4 Ω	50 Ω

1.2 DC Resistance of Isolated Output Winding

Measurement Setup:

Please connect the output of the injection transformer to an ohmmeter or multimeter and measure the DC resistance of the output.

Hint: The primary side (input) should be shortened when measuring the B-LFT 100.

Figure 2: Measurement setup - DC resistance of output

Expected Measurement result:	B-WIT 100	B-LFT 100
The result should be	< 1 Ω	< 50 Ω
Typically:	0.9 Ω	47 Ω

If the output winding shows high impedance (open circuit), most likely the fuse in the output path is blown. B-WIT 100 contains a 1 A fuse, B-LFT 100 contains a 0.1 A fuse in the isolated winding.

Note:

The fuse in the output winding does not break in normal operation. A DC voltage or current can cause the fuse to blow. The fuse is not replaceable by the user. Please send the device to repair at OMICRON Lab if the output winding shows an open circuit.

1.3 Primary-Secondary Isolation Resistance

Measurement Setup:

Please connect one lead of an ohmmeter or multimeter to the input of the injection transformer and the other lead to the output of the injection transformer.

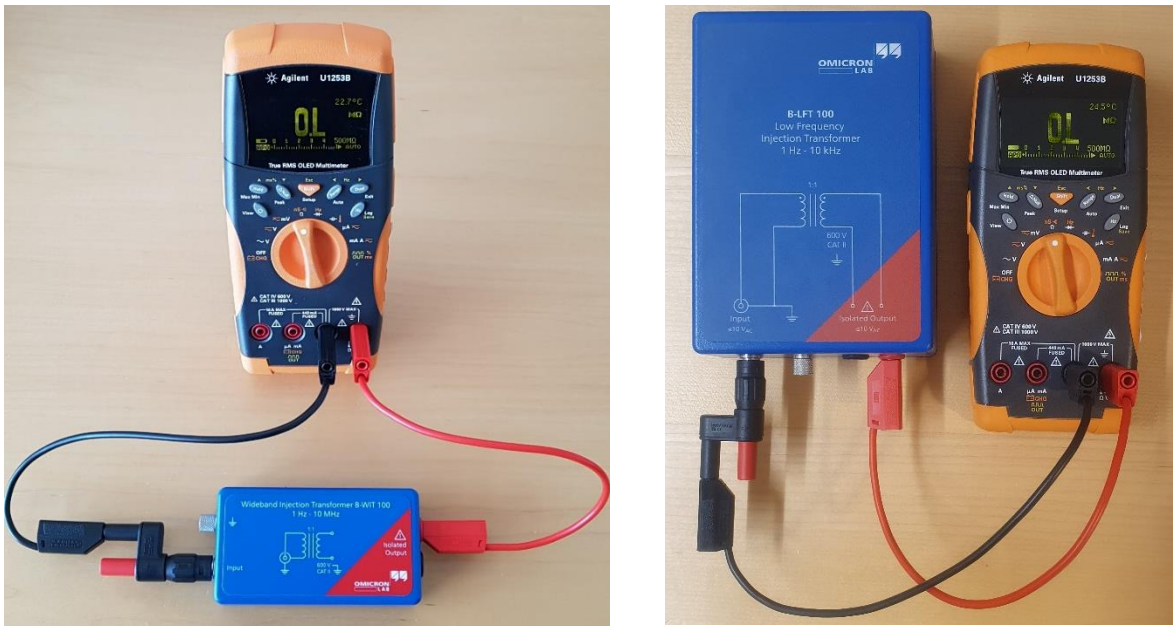

Figure 3: Measurement setup - prim-sec isolation resistance

Expected Measurement result:

The ohmmeter or multimeter then measures the isolation resistance between the primary and secondary winding of the injection transformer and should indicate “OVERLOAD”.

1.4 Check of Frequency-Response

Measurement Setup:

Please connect the output of the Bode 100 to the input of the injection transformer and the channel 2 (CH2) of the Bode 100 to the output of the injection transformer.

Figure 4: Measurement setup - check of frequency range

Equipment Setup:

Start the Bode Analyzer Suite (BAS) and select the measurement mode “Transmission / Reflection”.

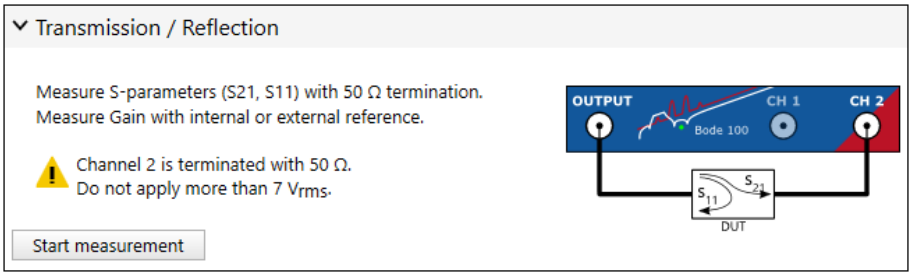

Figure 5: BAS measurement mode

After that, disable Trace 2 and set the frequency settings as follows:

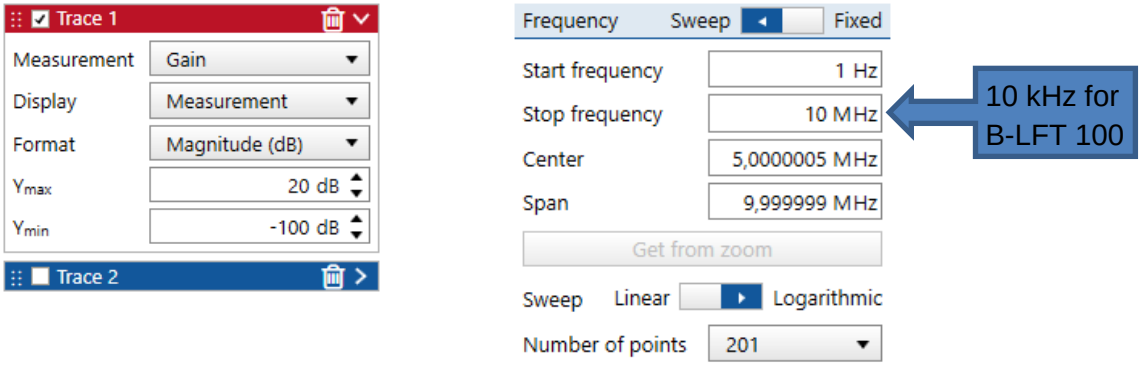

Figure 6: Measurement settings

Then, do a single sweep.

After the sweep is performed, put the cursors on the upper and lower -3 dB cutoff frequency.
Hint for B-LFT 100 measurement: Set cursor 1 to 10 Hz and then use the “Delta C2-C1” function to find the -3 dB cutoff frequency.

B-WIT 100:

	Frequency	Trace 1
Cursor 1	21,05 Hz	-3 dB
Cursor 2	7,96523 MHz	-3 dB
Delta C2-C1	7,965209 MHz	0 dB

B-LFT 100:

	Frequency	Trace 1
Cursor 1	10 Hz	-5,916 dB
Cursor 2	4,22 kHz	-8,916 dB
Delta C2-C1	4,21 kHz	-3 dB

Figure 7: Cursor table

Expected Measurement results:

The measurement result should look similar to the following ones.

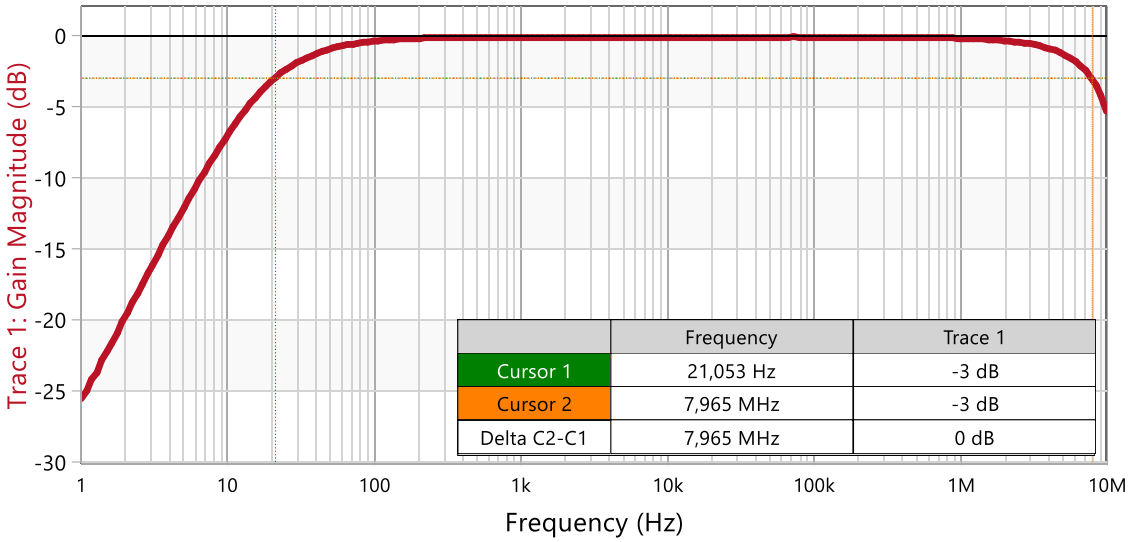

Figure 8: S21 measurement - expected results – B-WIT 100

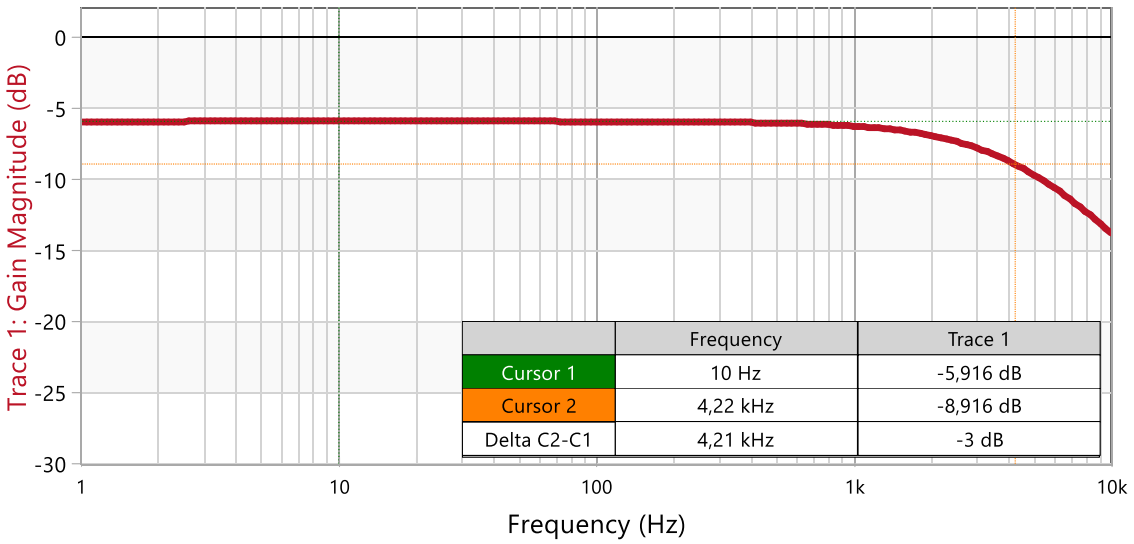

Figure 9: S21 measurement - expected results - B-LFT 100

	B-WIT 100	B-LFT 100
Lower -3 dB cutoff frequency	< 30 Hz (typ. 20 Hz)	< 1 Hz
Upper -3 dB cutoff frequency	> 7 MHz (typ. 8 MHz)	> 3 kHz (typ. 4.5 kHz)

2 Repair / Replacement Handling

If one of the test fails, please send the results as well as the *.bode3 file of the “check of frequency range” to the OMICRON Lab support team: support@omicron-lab.com

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