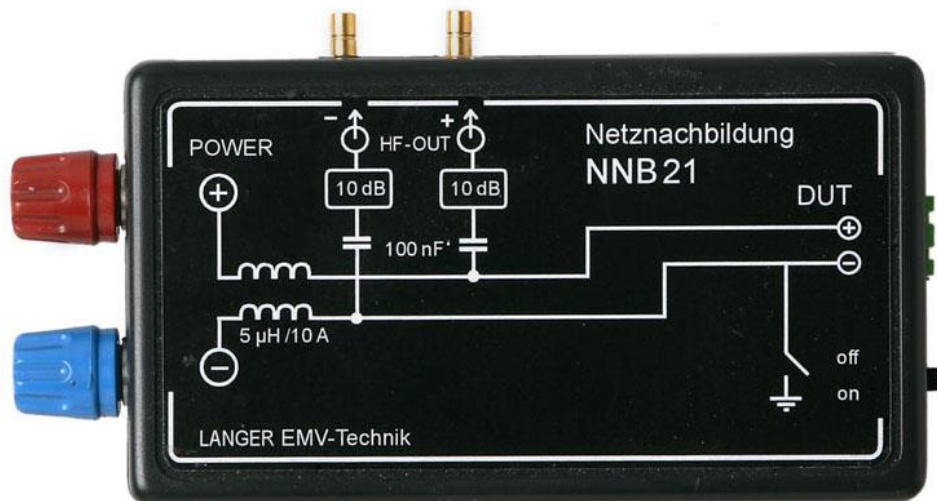


User Manual

NNB 21 set

Line-impedance Stabilization Network



Measurement of conducted disturbance emissions

Content	Page
1 Declaration of Conformity	3
2 General Information	4
2.1 Storing the User Manual	4
2.2 Reading and Understanding the Manual	4
2.3 Local Safety and Accident Prevention Regulations	4
2.4 Images	4
2.5 Limitations of Liability	4
2.6 Errors and Omissions	4
2.7 Copyright	4
3 Scope of Delivery	5
4 Technical Parameters	5
5 Safety Instructions	6
5.1 General Safety Instructions	6
5.2 Intended Use	6
5.3 Reasonably foreseeable Misuse	6
6 Application	7
7 Typical Frequency response	8

1 Declaration of Conformity

Manufacturer:

Langer EMV-Technik GmbH
Noethnitzer Hang 31
01728 Bannewitz
Germany

Langer EMV-Technik GmbH hereby affirms, that the product specified below

NNB 21 set

with NNB 21 Line-impedance Stabilization Network

agrees with the regulations of EC guidelines:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- Restriction of certain Hazardous Substances 2011/65/EU

Applied standards and technical specifications:

- DIN EN 61000-6-3:2011-09 EMC - Emission
- DIN EN 61000-6-1:2007-10 EMC - Immunity
- DIN EN 50581:2013-02 (Restrictions of hazardous substances)

Person authorized to compile the technical file:

Gunter Langer

Bannewitz, 2023-06-01



(Signature)

G. Langer, Executive Director

2 General Information

2.1 Storing the User Manual

This user manual provides the basis for the safe and efficient use of the NNB 21 set. It must be kept handy and easily accessible for the user.

2.2 Reading and Understanding the Manual

Read and understand the manual and observe the instructions carefully before using the product. Please consult Langer EMV-Technik GmbH if you have any questions or comments.

The user manual must be kept readily available in the immediate vicinity of the product.

2.3 Local Safety and Accident Prevention Regulations

The applicable local general safety and accident prevention regulations must be adhered to.

2.4 Images

Images in this manual facilitate a better understanding, but can deviate from the actual execution.

2.5 Limitations of Liability

The Langer EMV-Technik GmbH is not liable for personal injury or damage to material, if

- the instructions in this user manual were not followed.
- the product was used by personnel who are not qualified in the field of EMC.
- the product was not used as intended.
- the product was arbitrarily modified or technically altered.
- spare parts or accessories were used, that were not authorized by Langer EMV-Technik GmbH.

The actual scope of delivery can deviate from the texts and images in this manual in the case of individual adjustments to the order or recent technical changes.

2.6 Errors and Omissions

The information in this user manual has been checked very carefully and found to be correct to the best of our knowledge; however, Langer EMV-Technik GmbH can assume no responsibility for spelling, typographical or proofreading errors.

2.7 Copyright

The content of this user manual is protected by copyright and may only be used in connection with the NNB 21 set. This user manual may not be used for other purposes without the prior consent of Langer EMV-Technik GmbH.

3 Scope of Delivery

Item	Designation	Type	Qty.
01	Line impedance stabilisation network	NNB 21	1
02	Measurement cable	SMB-BNC 1 m	1
03	Terminal block, 2-polie	AK 2 pole	4
04	User manual	NNB 21 m	1
05	System Case	NNB 21 case	1

Important: The scope of delivery may differ depending on the respective order.

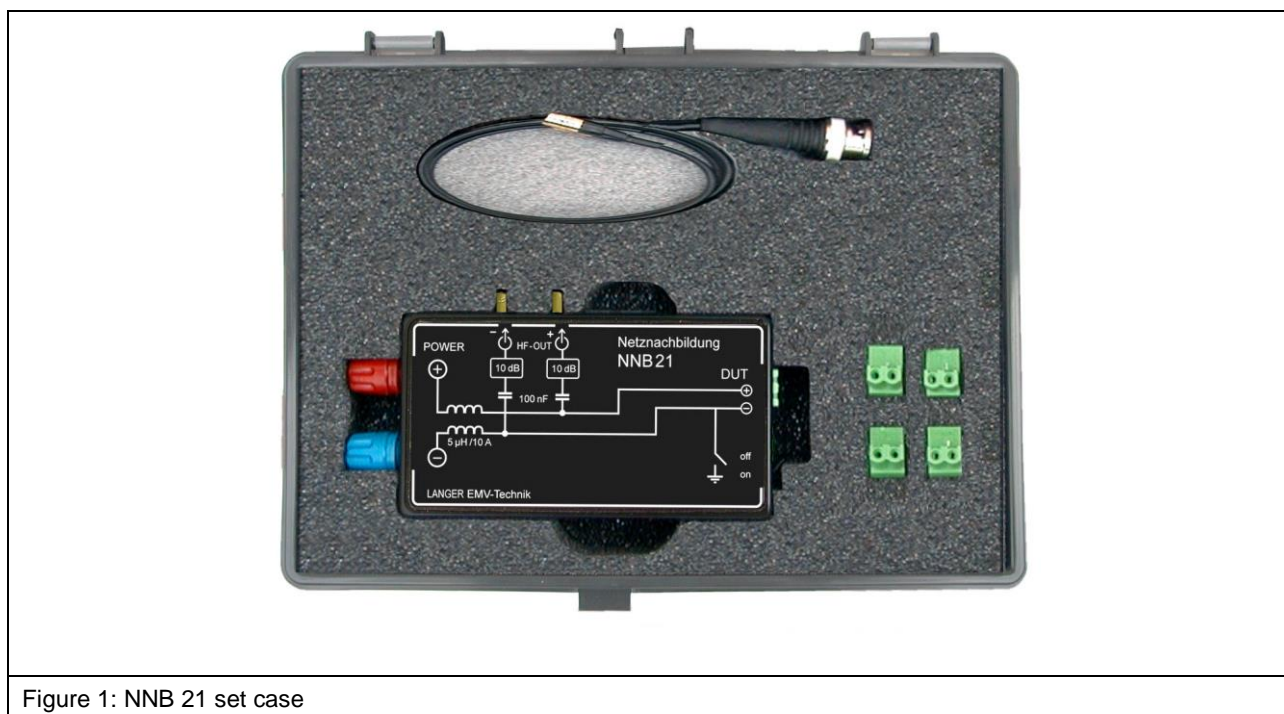


Figure 1: NNB 21 set case

4 Technical Parameters

RF-Path	
Measuring channels	2, one path can be deactivated
Frequency range	100 kHz – 1 GHz
Internal damping	10 dB

Board networks path	
Max. continuous current	10 A
Max. operating voltage	50 V
DC resistance	< 20 mΩ

5 Safety Instructions

5.1 General Safety Instructions

When using a Langer EMV Technik GmbH product, please observe the following safety instructions to protect yourself against electric shock or the risk of injury.

The use of the device must be carried out by personnel who are experts in the field of EMC and who are suitable for this work under the influence of interference voltages and burst fields (electrical and magnetic).

- The operating and safety instructions of all devices used must be observed.
- Damaged or defective devices must not be used.
- Before operating a measuring station with a product of Langer EMV-Technik GmbH, carry out a visual inspection. Damaged connecting cables must be replaced before operation.
- The product of Langer EMV-Technik GmbH may only be used for applications for which it is intended. Any other use is not permitted.

5.2 Intended Use

The NNB 21 artificial network is designed for measuring conducted interference emissions from electronic assemblies. Measurements can be carried out in the frequency range from 100 kHz to 100 MHz based on the CISPR 25/ISO 7637 standard. The range has been extended to 1 GHz for measurement during development. The NNB 21 is built according to its specified use, therefore it must only be used for this purpose.

5.3 Reasonably foreseeable Misuse

Reasonably foreseeable misuses of the NNB 21 set are:

- Use of the product outside of the given specifications.
- Modification or changing of the product without consent of Langer EMV-Technik GmbH.
- Operating the product with a technical fault.

6 Application

The measurement set-up should be configured as follows:

- Place the DUT and line-impedance stabilization network on a ground plane,
- Insert the NNB 21 into the supply line between the DUT and power source,
- Use cables that are as short as possible and lay them as straight as possible between the DUT and the NNB 21
 - for frequencies up to 100 MHz less than 30 cm,
 - for measurements with an upper limit frequency of 1 GHz less than 5 cm,
- If both connections of the NNB 21 are used to supply the DUT and the GND switch is open, the NNB 21 measures the total current (common mode) of both lines.
- For a separate measurement of the HF current in the positive line (\oplus \ KI 30), the negative DUT connection must be connected to ground via the ground switch (switch closed). For this operating mode, the NNB 21 must be placed directly on the ground plate and the DUT ground must be connected to the ground plate.

Alternatively, the DUT can also be supplied via a single line of the NNB 21. The second line must be laid separately.

- To measure the negative line (\ominus \ KI 31), switch off the GND switch.

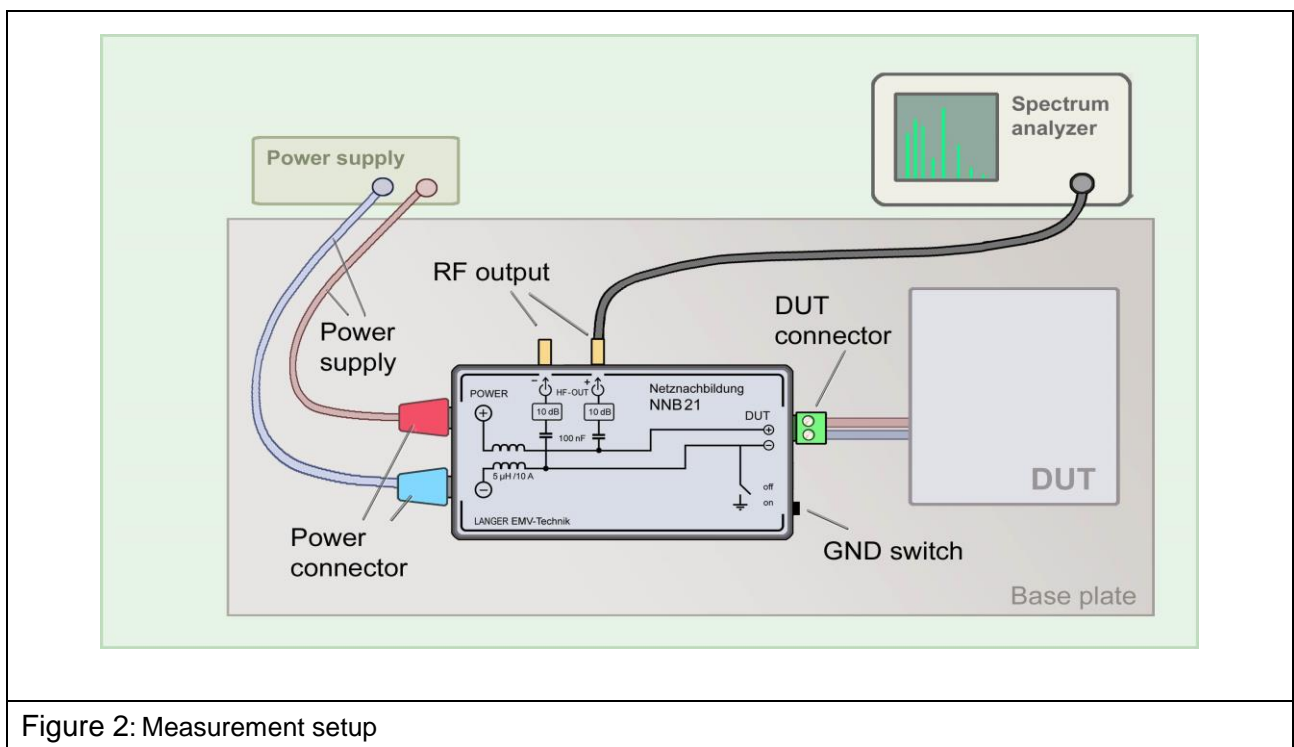
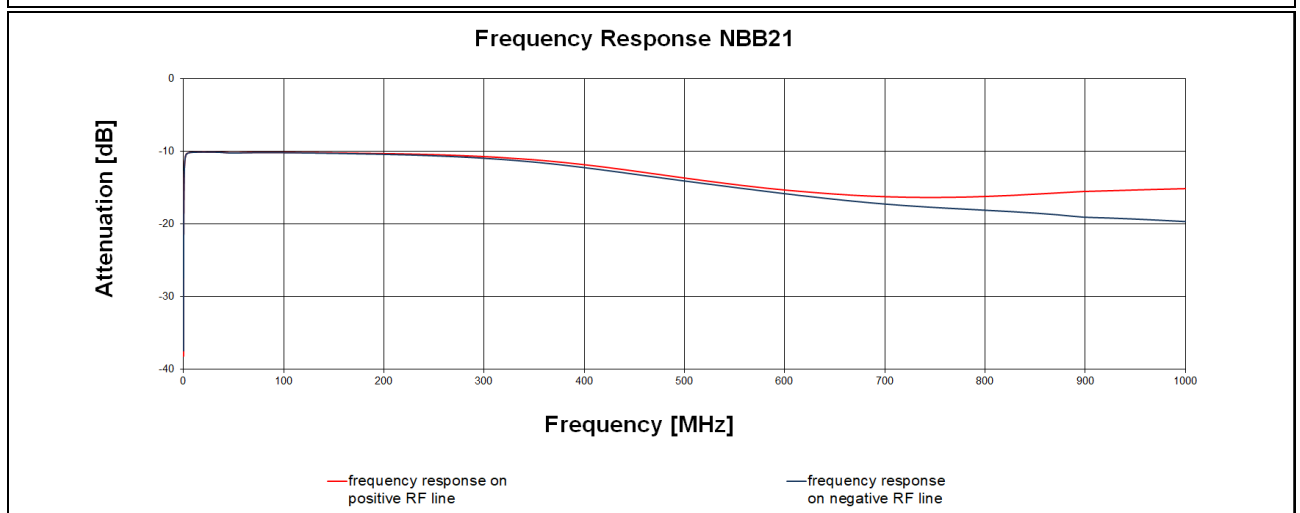
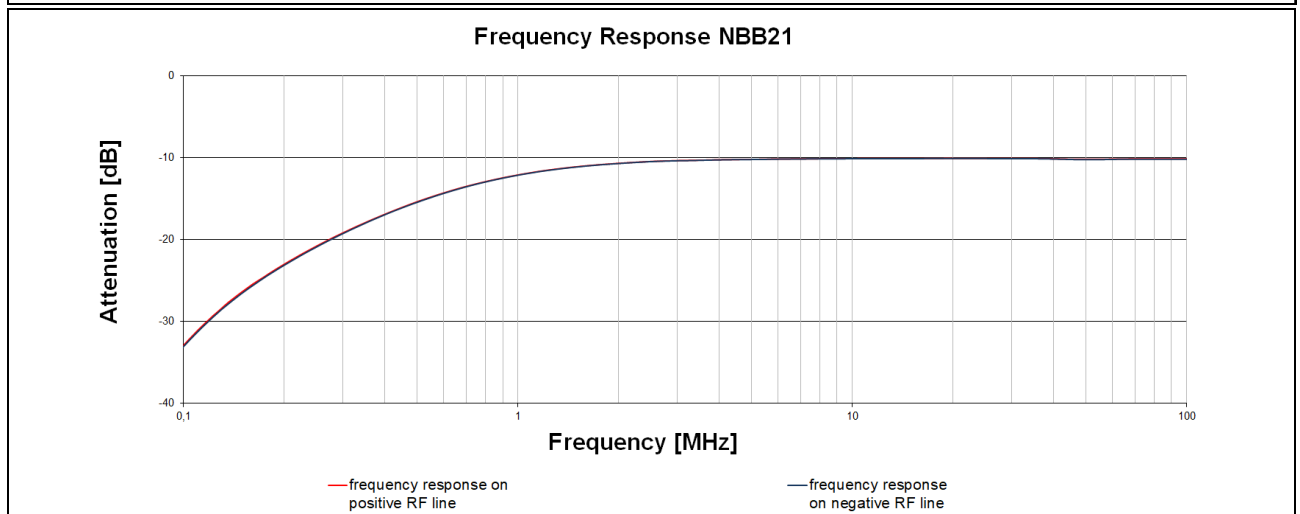
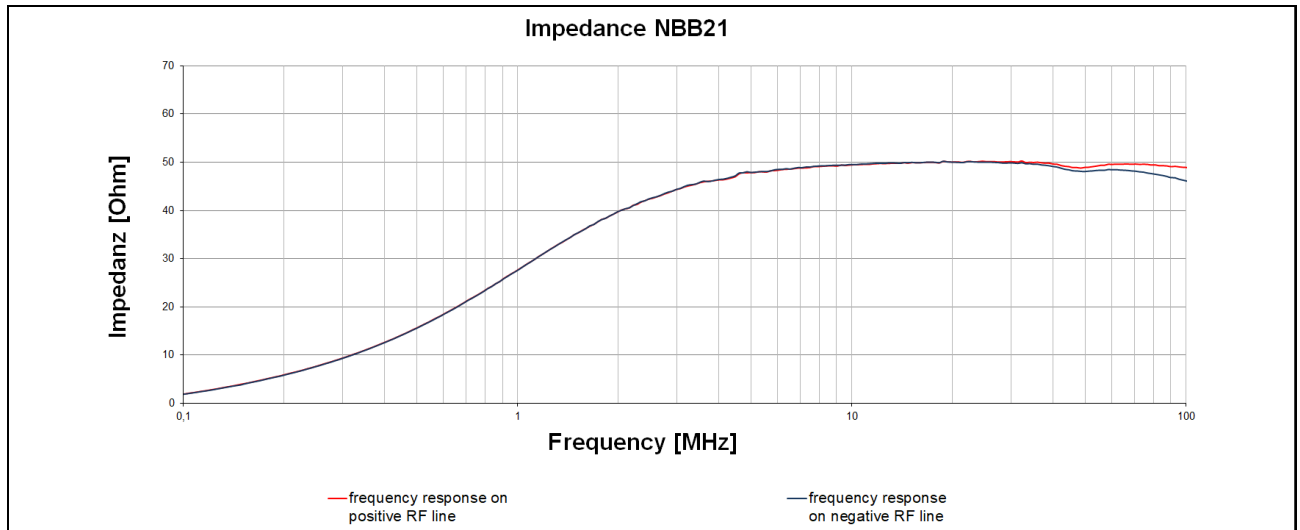


Figure 2: Measurement setup

7 Typical Frequency response



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