

Portable Near Field Analyzer / Power meter

1 MHz to 4 GHz

Features

- Wide measurement range from 1 MHz up to 4 GHz
- Fast RF and EMC troubleshooting with direct power indication with acoustic and haptic feedback
- Four selectable input filters for improved out-of-band signal rejection
- Calibrated RF power measurement
- Portable, battery-powered design with graphical and numeric display modes



Product description

EMCgear PNFA is a portable near-field analyzer designed for fast EMI troubleshooting and comparative RF measurements from 1 MHz to 4 GHz.

It combines selectable input filtering, calibrated dBm indication and intuitive visual, acoustic and haptic feedback.

Technical parameters

RF input impedance		50 Ohm nominal
RF input terminal		SMA female
Operating frequency range		1 MHz to 4 GHz
Measurement range (full)		approx. -75 to +20 dBm
Effective dynamic range		95 dB
Measurement range (calibrated)		-50 to +20 dBm
Effective dynamic range (calibrated)		70 dB
Absolute RF power accuracy	1 MHz–3 GHz	Typ. ± 0.2 dB; max. ± 0.5 dB
	3 GHz–4 GHz	Typ. ± 0.4 dB; max. ± 1.0 dB
Selectable filter bank	CISPR band B	Low-pass < 30 MHz
	CISPR band C	Band-pass 30 to 300 MHz
	CISPR band D	Band-pass 300 to 1000 MHz
	CISPR band E	High-pass 1000 to 4000 MHz

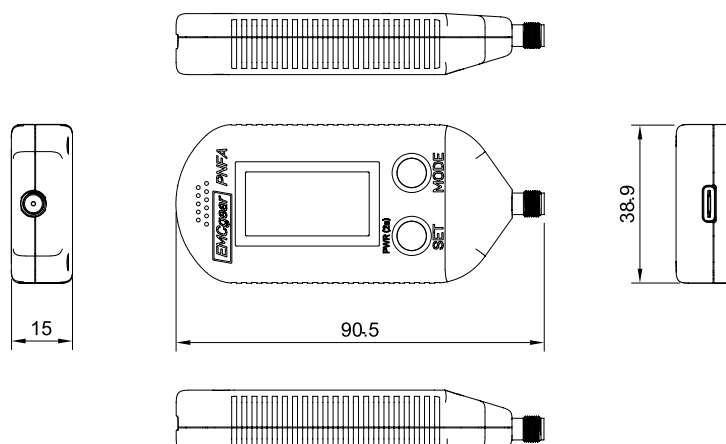
Selectable gain	<i>Direct input</i> <i>Internal attenuator</i>
Input-filter passband flatness	LP / BP1 / BP2 HP <i>Typ. +/-1 / +/-0.7 / +/-1 dB</i> <i>Typ. +/-3 dB</i>
Input return loss (typical)	<i>LP >30 dB;</i> <i>BP1 >20 dB;</i> <i>BP2 >15 dB</i> <i>HP >10 dB</i>
Power supply / charging	<i>USB-C input</i> <i>(5V/max. 500 mA)</i>
User interface	Display Feedback <i>128 x 64 OLED;</i> <i>white on black</i> <i>numeric and</i> <i>graph modes</i> <i>Acoustic and</i> <i>haptic</i>

Absolute maximum ratings

Maximum RF input power applied	<i>max. 25 dBm</i>
Maximum RF input input voltage (DC)	$\pm 5\text{ V}$
*) External DC bias on RF input should be avoided. External DC block is recommended.	

Mechanical properties

Enclosure material	<i>High precision CNC milled aluminum case</i>
Enclosure surface	<i>Protective blue anodizing</i>
Weight	<i>70 g</i>

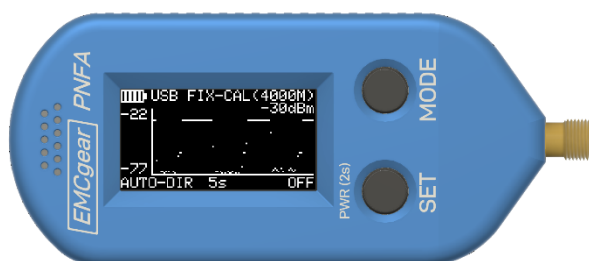


General display modes

Numeric mode



Graph mode



For detailed description of the controls a display items see dedicated "PNFA - User manual".

Scope of delivery

(all variants)

Portable Near Field Analyzer / Power meter; 1 MHz to 4 GHz	-
USB charging/data cable; 1 m USB-C to USB-A	-
Hard transport case with foam inserts	-
Factory calibration report / test report	-
Windows application; PNFA Monitor	downloadable

Optional accessories

Near field probe kit
NFPP

20 dB RF attenuator

Description

Set of 4 near field probes
3x H-field probe (6, 12, 21 mm sense loop
diameter)
1x E-field probe (4 mm sense tip length)
Nominal attenuation: 20 dB
Power rating: peak power max. 10 W / long
term typ. 2W
Frequency range: DC to 6 GHz; SWR ≤ 1.25

Order code

See product
variant list

See product
variant list



Near field probe kit NFPP



20 dB RF attenuator / 10 W / 6 GHz

Near-field probe kit NFPP

The optional NFPP Near-Field Probe Kit is designed for practical localization and comparison of electromagnetic emission sources together with PNFA.

The set contains four near-field probes:

H-field probe – 6 mm sensing loop diameter

Small magnetic-field loop for high spatial resolution and precise localization of individual traces, component pins, switching nodes and other concentrated current paths.

H-field probe – 12 mm sensing loop diameter

Medium-size magnetic-field loop offering a practical compromise between spatial resolution and sensitivity for general PCB-level EMI troubleshooting.

H-field probe – 21 mm sensing loop diameter

Large magnetic-field loop for rapid scanning of larger PCB areas and detection of weaker or more spatially distributed magnetic-field sources.

E-field probe – 4 mm sensing tip length

Electric-field probe for locating areas with strong electric-field coupling, including high-voltage nodes, clock signals, switching nodes and other high-impedance RF sources.

Start with the larger H-field loop for rapid area scanning, then use progressively smaller loops to localize the emission source more precisely.

The NFPP probe set is included with the PNFA Near Field Kit and PNFA Complete Kit variants.

<i>Variant list</i>	<i>Description</i>	<i>Order code</i>
<i>PNFA</i>	• Portable Near Field Analyzer / Power meter, 1 MHz to 4 GHz • USB-C cable • Hard transport case with foam inserts • Windows application – PNFA Monitor	<i>PNFA</i>
<i>PNFA RF power kit</i>	• Portable Near Field Analyzer / Power meter, 1 MHz to 4 GHz • USB-C cable • External RF attenuator: 20 dB / 10W / 6 GHz • Hard transport case with foam inserts • Windows application – PNFA Monitor	<i>PNFA-ATT20</i>
<i>PNFA Near field kit</i>	• Portable Near Field Analyzer / Power meter, 1 MHz to 4 GHz • USB-C cable • Near field probe set NFPP (3x H-field, 1x E-field probe) • Hard transport case with foam inserts • Windows application – PNFA Monitor	<i>PNFA-NFPP</i>
<i>PNFA Complete kit</i>	• Portable Near Field Analyzer / Power meter, 1 MHz to 4 GHz • USB-C cable • Near field probe set NFPP (3x H-field, 1x E-field probe) • External RF attenuator: 20 dB / 10W / 6 GHz • Hard transport case with foam inserts • Windows application – PNFA Monitor	<i>PNFA-NFPP-ATT20</i>

<i>Warranty</i>	2-year manufacturer warranty
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<i>Conformity</i>	
<i>EU</i>	EMC Directive 2014/30/EU EN IEC 61326-1 EN IEC 61326-2-1 EN 55011 / CISPR 11
<i>USA</i>	47 CFR Part 15, Subpart B Exempt from the specific technical standards of FCC Part 15 under 47 CFR §15.103(c) as industrial/commercial test equipment.

Intellectual property

The PNFA technical solution is protected by Czech Utility Model CZ 39657 U1.

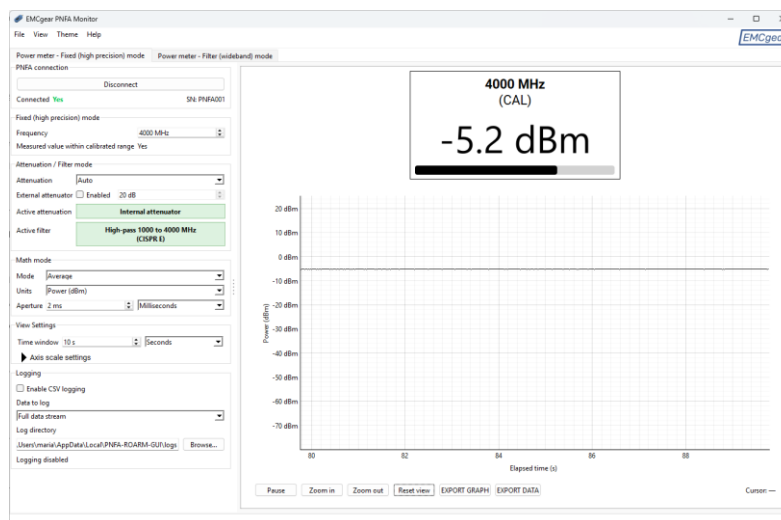
Remote control
software

Operating systems

Windows 10
Windows 11

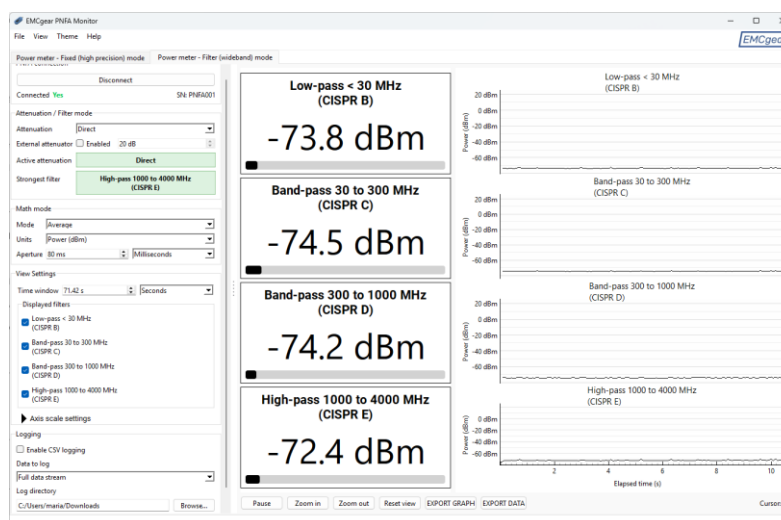
PNFA – Monitor

Fixed (high precision)
mode



PNFA – Monitor

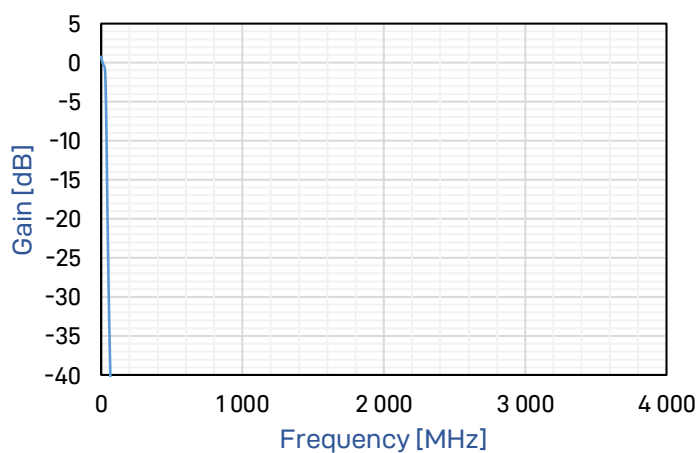
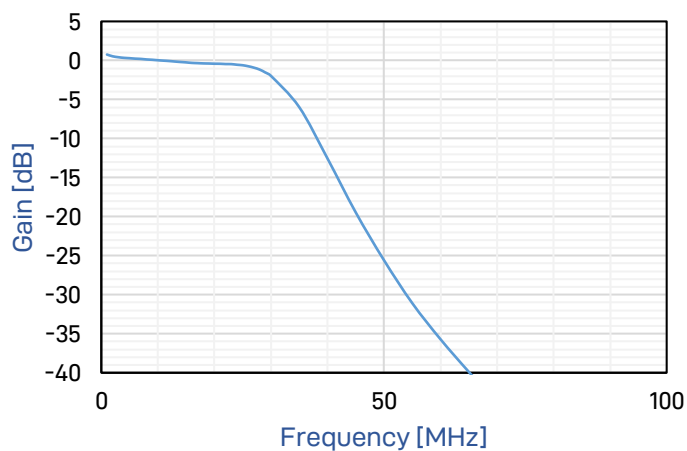
Filter (wideband) mode



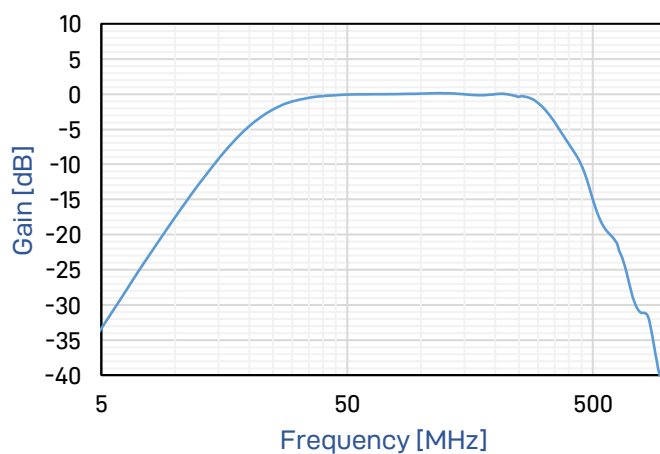
For detailed description of the remote application see dedicated *"PNFA Monitor – software manual"*.

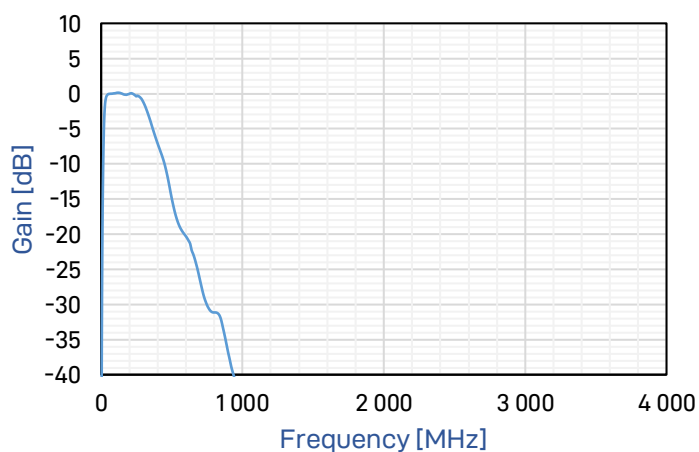
*Typical filter bank
selectivity*

*Filter bank
Low-pass < 30 MHz
(CISPR B)*

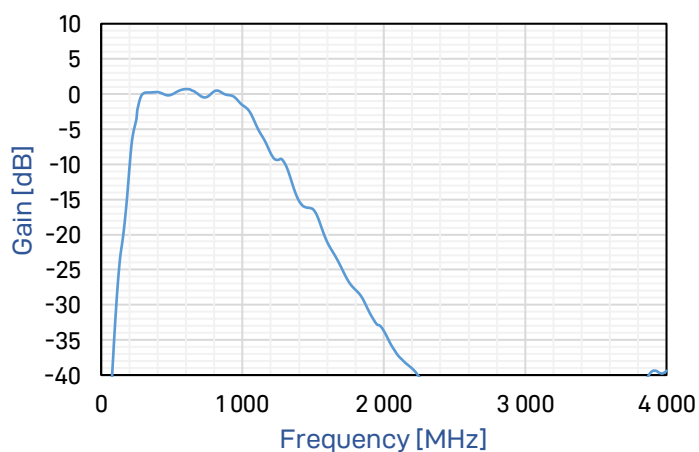
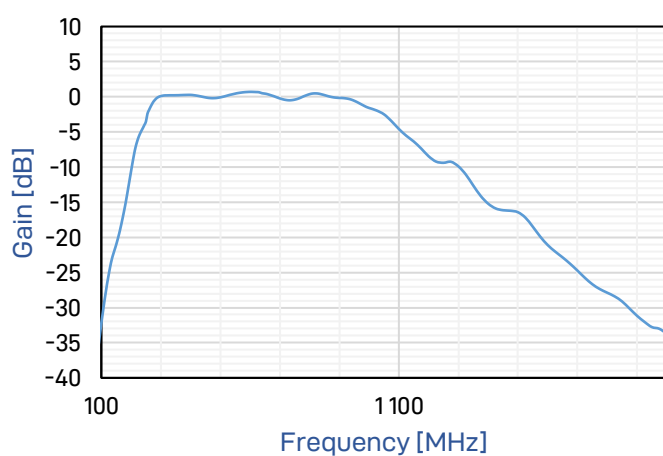


*Filter bank
Band-pass 30 to 300
MHz
(CISPR C)*

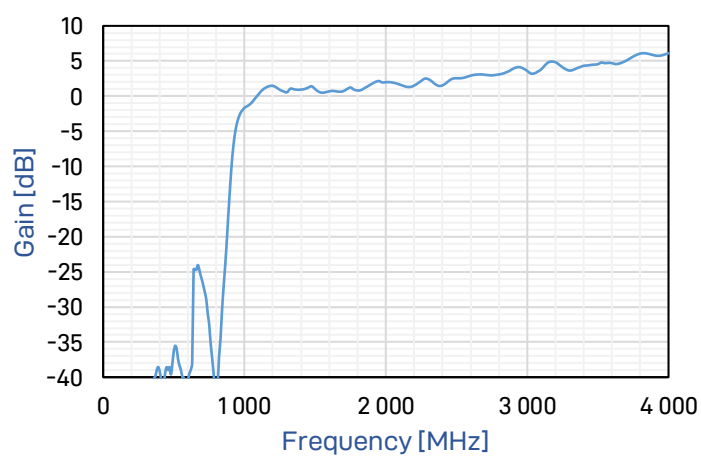
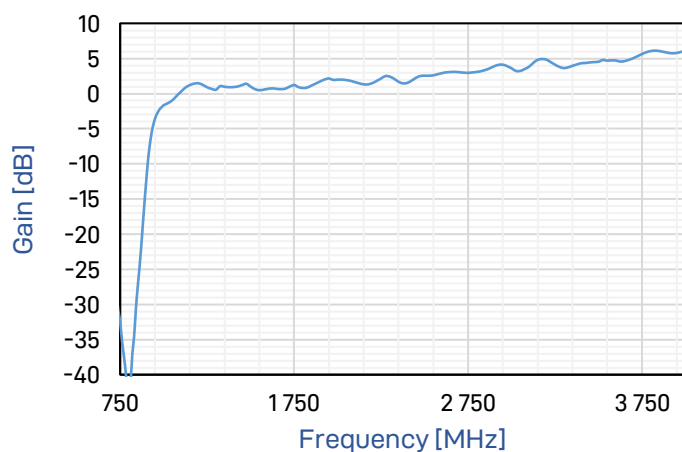




*Filter bank
Band-pass 300 to 1000
MHz
(CISPR D)*



Filter bank
High-pass 1000 to 4000
MHz
(CISPR E)

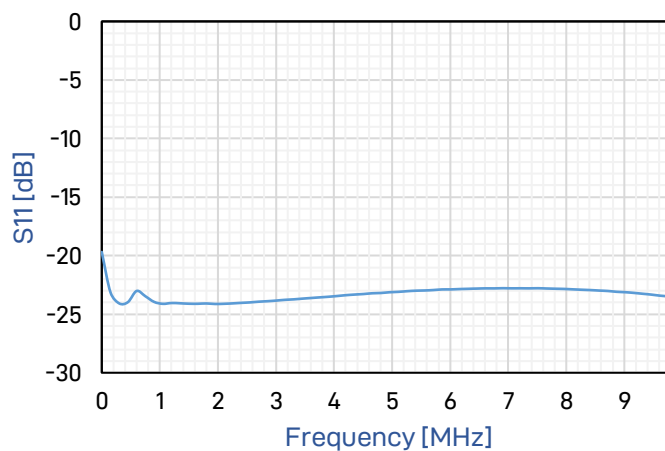


Test conditions

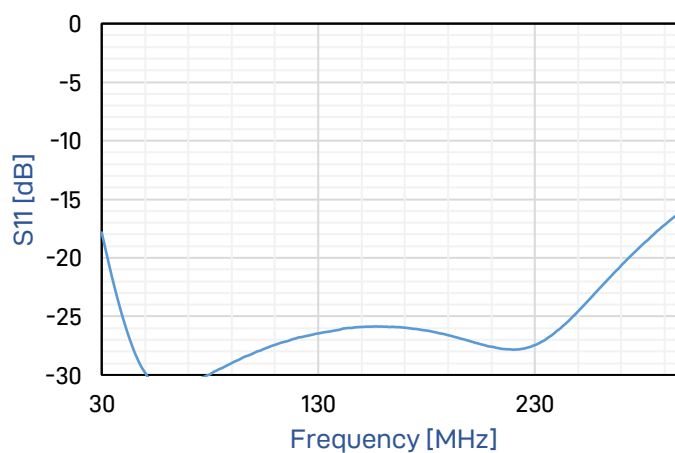
Source template plots – not PNFA measurement data

Return loss of the RF input

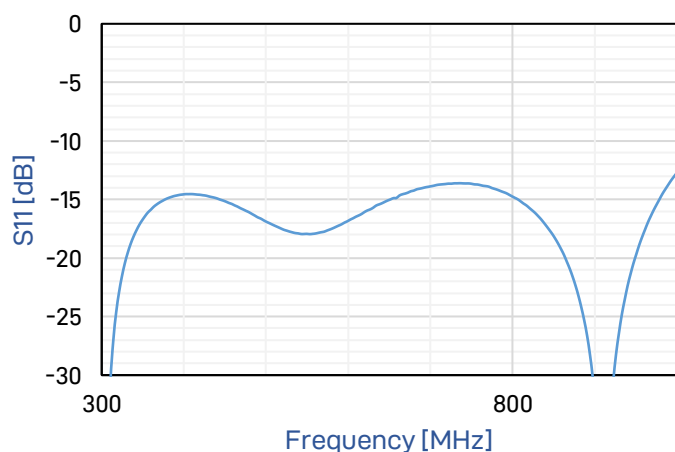
*Filter bank
Low-pass < 30 MHz
(CISPR B)*



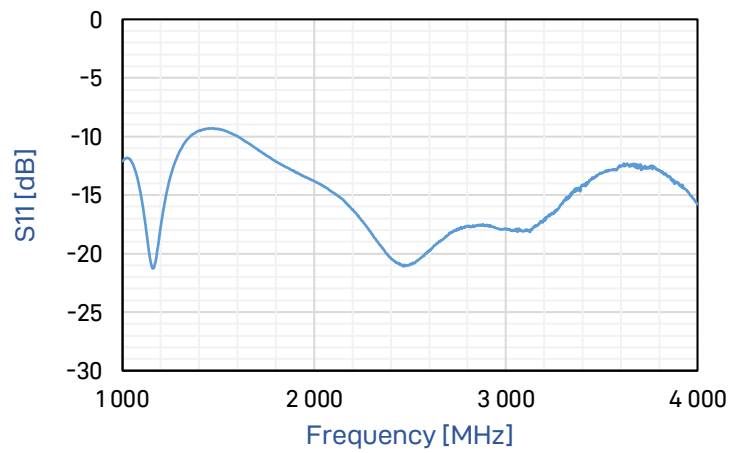
*Filter bank
Band-pass 30 to 300 MHz
(CISPR C)*



*Filter bank
Band-pass 300 to 1000 MHz
(CISPR D)*



*Filter bank
High-pass 1000 to 4000
MHz
(CISPR E)*



Test conditions

S11 of the SMA connector input

Tested in Gain mode = Direct with manually set Filter bank settings. Return loss performance in Gain mode = Internal attenuator is better or equal than Direct mode.