2400…2500 MHz / 4400…7125 MHz PCB Antenna (ISM, IoT, RFID, Bluetooth, WLAN, Wi-Fi 5/6E)

General information

The AN250203-01P is a dual-band internal PCB antenna developed for compact wireless equipment operating in the 2.4 GHz ISM band and the extended 5 GHz / 6 GHz spectrum up to 7.125 GHz. It provides reliable RF performance for IEEE 802.11 b/g/n applications at 2.4 GHz and IEEE 802.11 a/n/ac/ax, including Wi-Fi 6 and Wi-Fi 6E, in the higher frequency bands.

The antenna features omnidirectional radiation and linear polarization, ensuring uniform signal coverage in space-limited device enclosures. It is optimized for high-speed data communication and stable multi-band connectivity in modern WLAN and short-range wireless systems. Typical applications include wireless routers and access points, IoT hubs, smart home electronics, industrial communication units, Bluetooth, and embedded networking platforms.

Manufactured on an FR-4 PCB substrate, the antenna is equipped with a micro-coaxial cable terminated with an I-PEX MHF1 / Hirose U.FL (UMCC) compatible connector, enabling easy integration into RF modules and embedded communication platforms.

Electrical data

Antenna type	Embedded / internal PCB antenna	
Frequency band	ISM2400, Wi-Fi 5/6E GHz, ISM5800	
Frequency range [MHz]	2400…2500	4400…7125
Return loss [dB]	-8	-11
Peak gain [dBi]	0.2…1.5	3…5
Radiation efficiency [%]	70…85	70…85
Nominal input impedance [Ohm]	50	
Polarization	linear	
Radiation pattern	omnidirectional	
Maximum input power [W]	5	

Mechanical data

Antenna PCB dimensions [mm]	46 x 18 x 0.8
Connector type [1)]	IPEX MHF1 / Hirose U.FL (UMCC) compatible [1)]
Cable type and thickness [2)] [mm]	micro coax 1.13 [2)]
Cable length [3)] [mm]	175 [3)]
PCB material	FR4

Additional information

[1)] Other connector types can be offered on request.

[2)] Following cable thicknesses can be used with MHF1 connector: 0.81 mm, 1.13 mm, 1.32 mm, 1.37 mm.

[3)] Other cable lengths can be provided.

Antenna performance was measured using the recommended cable length in free space.

Further customization, electromagnetic simulations and measurements can be offered on request.

The antenna can be additionally equipped with adhesive tape and mounting holes.

Sevskiy GmbH, CEO: Dr. Sergey Sevskiy
Office: Schatzbogen 43, Munich, Germany
Tel.: +49 89 38-90-7229
Fax: +49 89 38-90-7230
E-Mail: sergey@sevskiy.de
Internet: www.sevskiy.com

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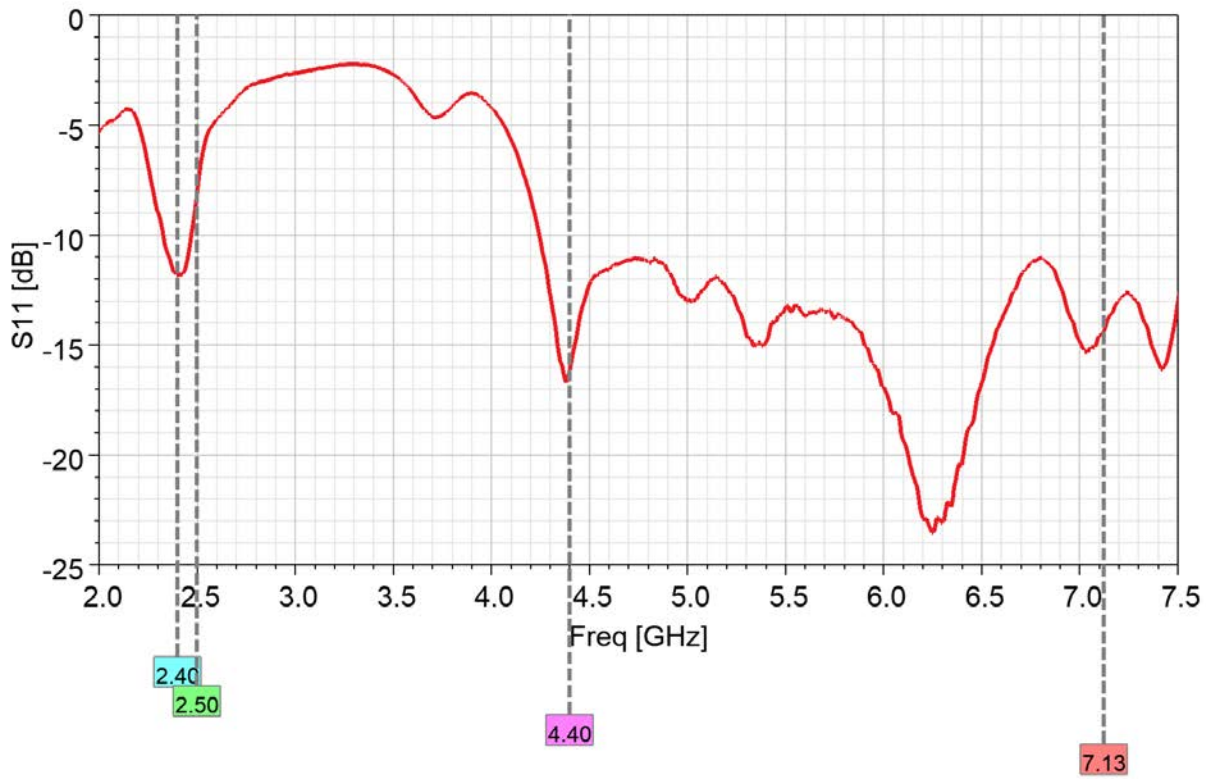
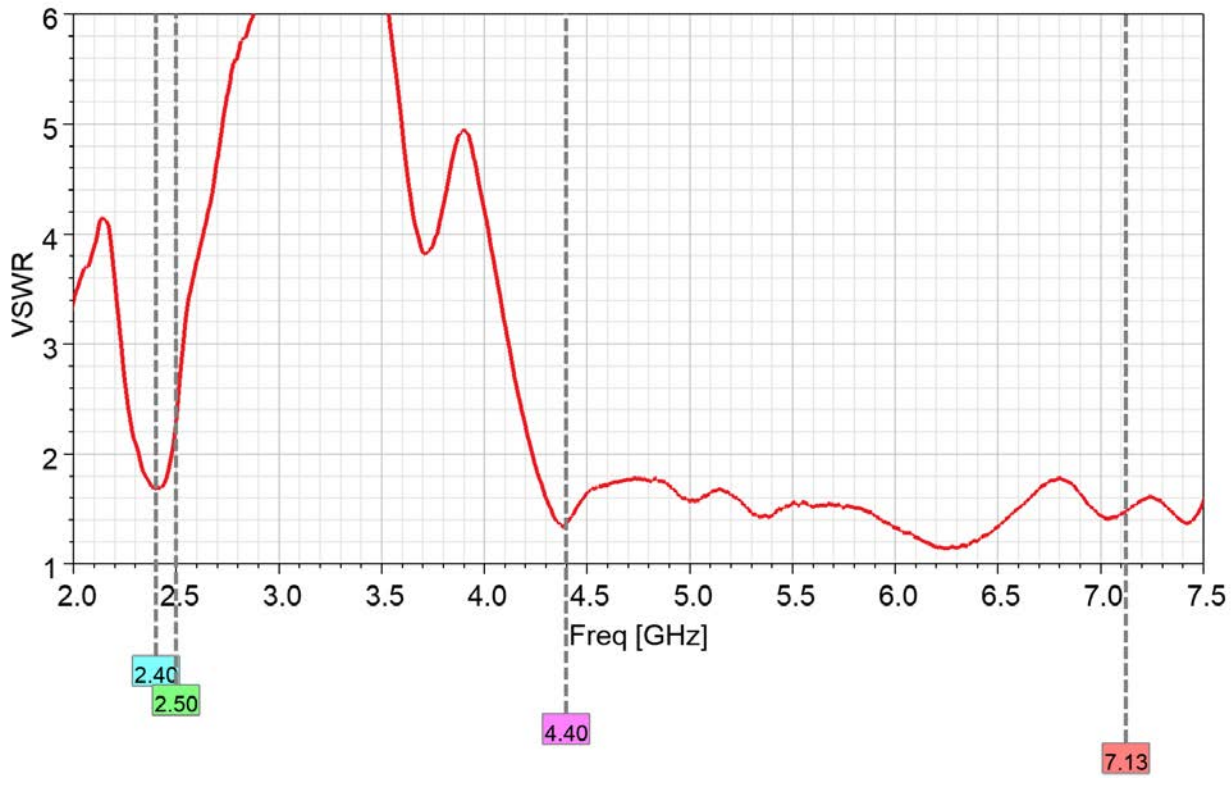
Measured input impedance matching



VSWR



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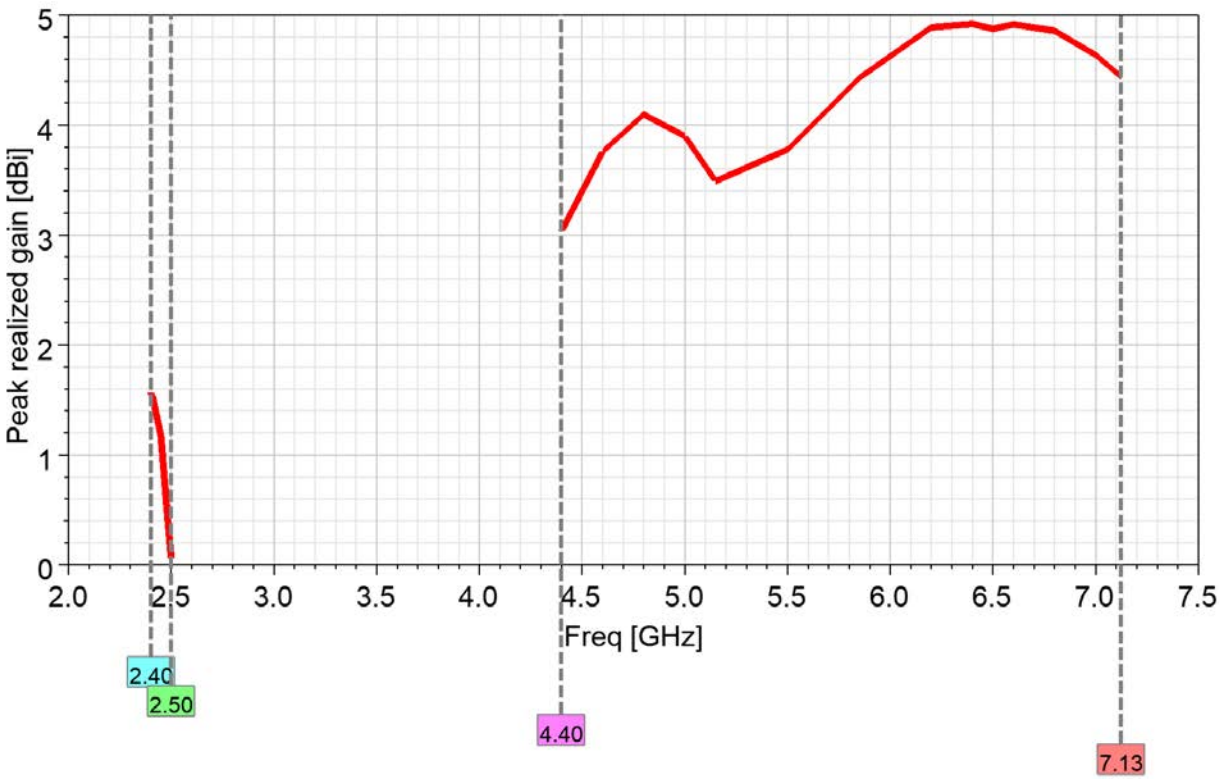
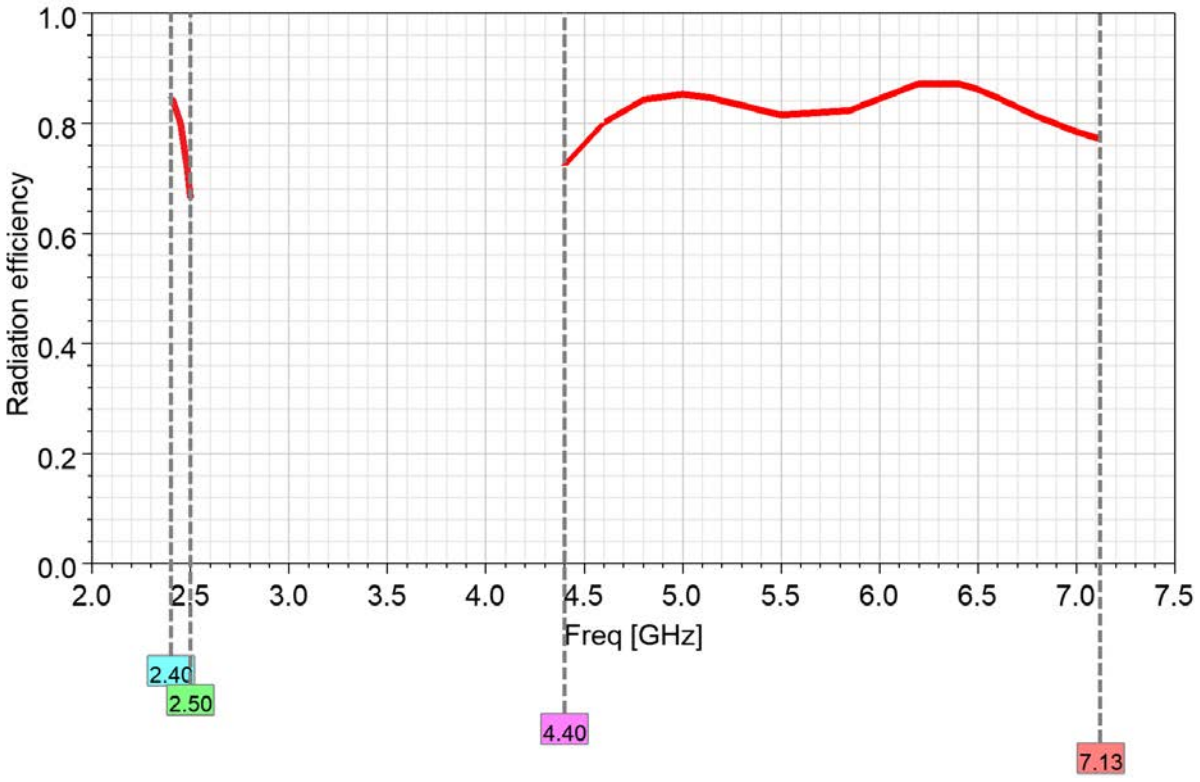
Peak realized gain



Radiation efficiency



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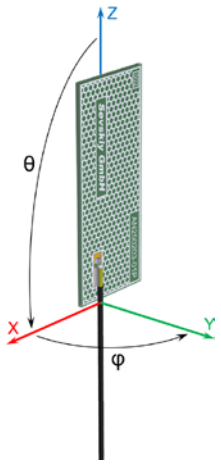
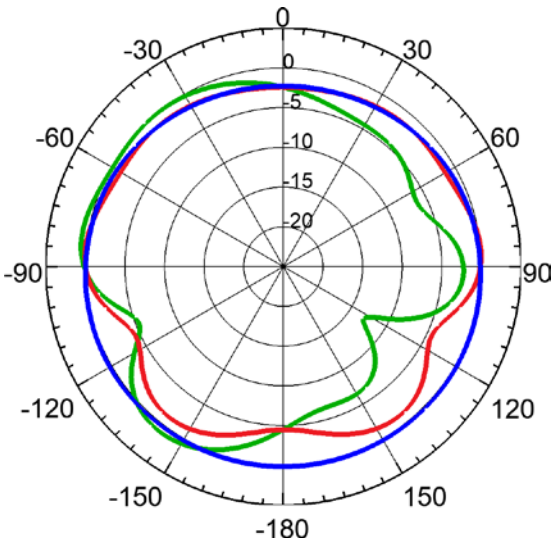
Product dimensions

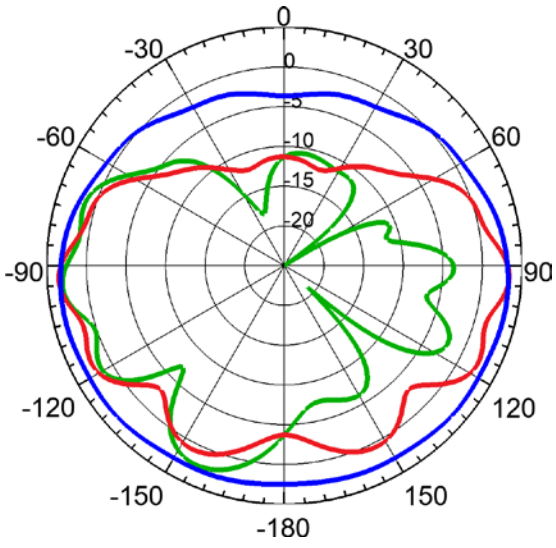
Radiation pattern



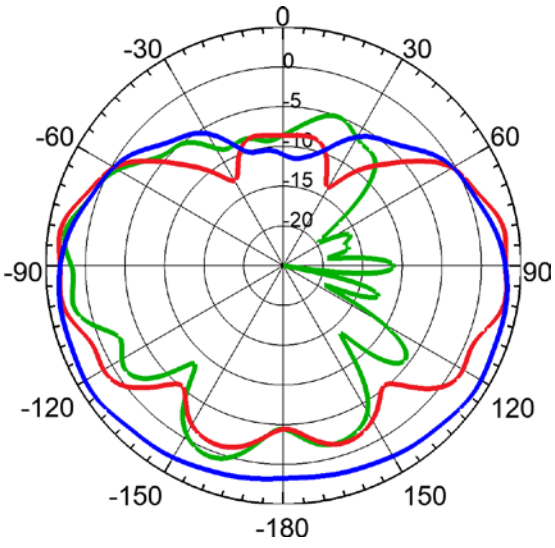
Total realized gain [dBi]
Phi=0°, plane XZ, green curve
Phi=90°, plane YZ, red curve
Theta=90°, plane XY, blue curve



2450 MHz



5500 MHz



7000 MHz

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