824…924 MHz / 2400…2500 MHz / 4400…6000 MHz PCB Antenna (ISM, IoT, BT, Wi-Fi, 5G, LTE)

General information

The AN250201-01C is a compact wideband embedded PCB antenna designed for internal integration into multi-standard wireless devices requiring reliable operation across sub-GHz, 2.4 GHz, and wideband 5 GHz frequency ranges. The antenna covers the 824…924 MHz, 2400…2500 MHz, and 4400…6000 MHz bands, supporting a broad set of wireless technologies including LTE and sub-GHz cellular bands, 5G NR bands below 6 GHz, Bluetooth, and IEEE 802.11 a/b/g/n/ac/ax (Wi-Fi).

With omnidirectional radiation characteristics and linear polarization, the antenna is well suited for compact devices where stable all-around coverage is required. Typical applications include IoT and LPWAN devices, smart meters, industrial sensors, asset tracking systems, wireless gateways, and portable or embedded communication modules. The antenna is implemented on an FR-4 PCB and is supplied with an attached micro-coaxial RF cable terminated with an I-PEX MHF1 / Hirose U.FL (UMCC) compatible connector, allowing flexible integration into compact device enclosures.

Electrical data

Antenna type	Embedded / internal PCB antenna		
5G bands	5, 18, 26, 46, 47, 53, 79, 81, 82, 89		
4G bands	5, 6, 18, 19, 20, 26, 27, 46, 47, 53		
Other frequency bands	SRD860, ISM915, ISM2400, Wi-Fi 2.4/5 GHz, ISM5800		
Frequency range [MHz]	824...924	2400…2500	4400…6000
Return loss [dB]	-8	-20	-10
Peak gain [dBi]	-1.2…0.7	3.5…4	2.7…4.4
Radiation efficiency [%]	75…83	75…85	70…85
Nominal input impedance [Ohm]	50		
Polarization	linear		
Radiation pattern	omnidirectional		
Maximum input power [W]	5		

Mechanical data

Antenna PCB dimensions [mm]	38 x 17 x 1
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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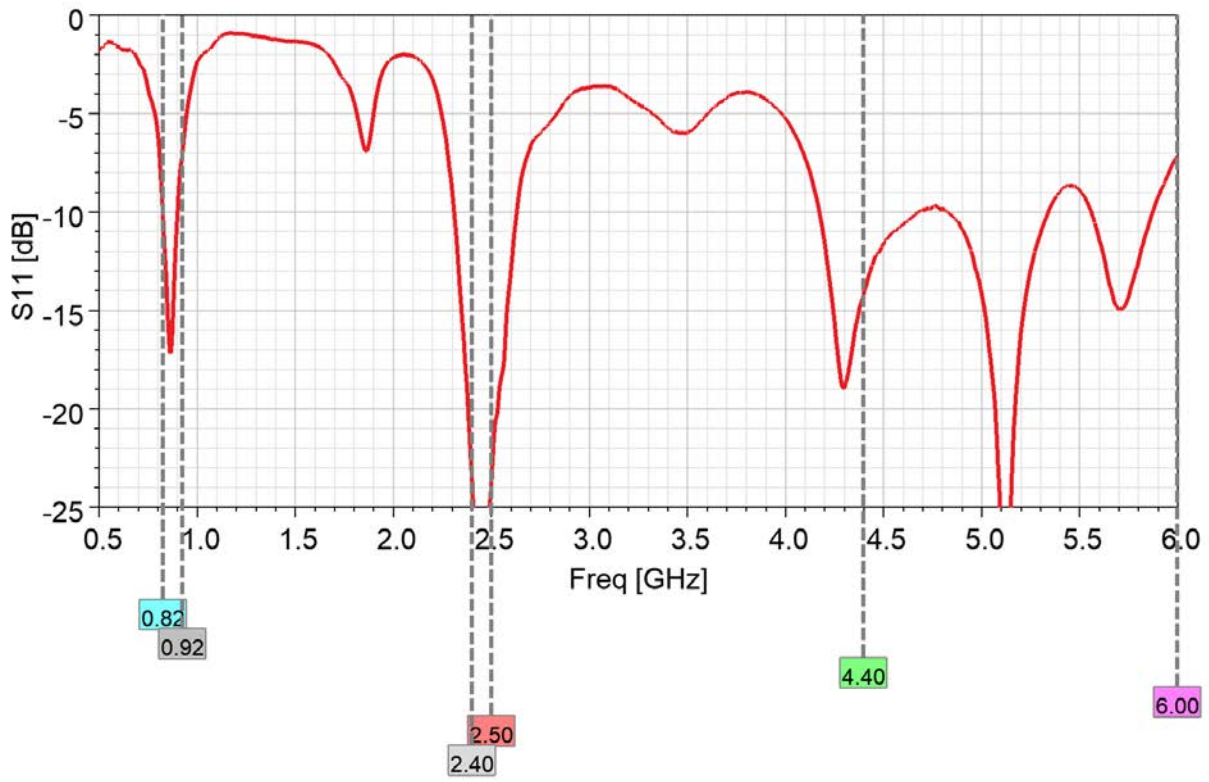
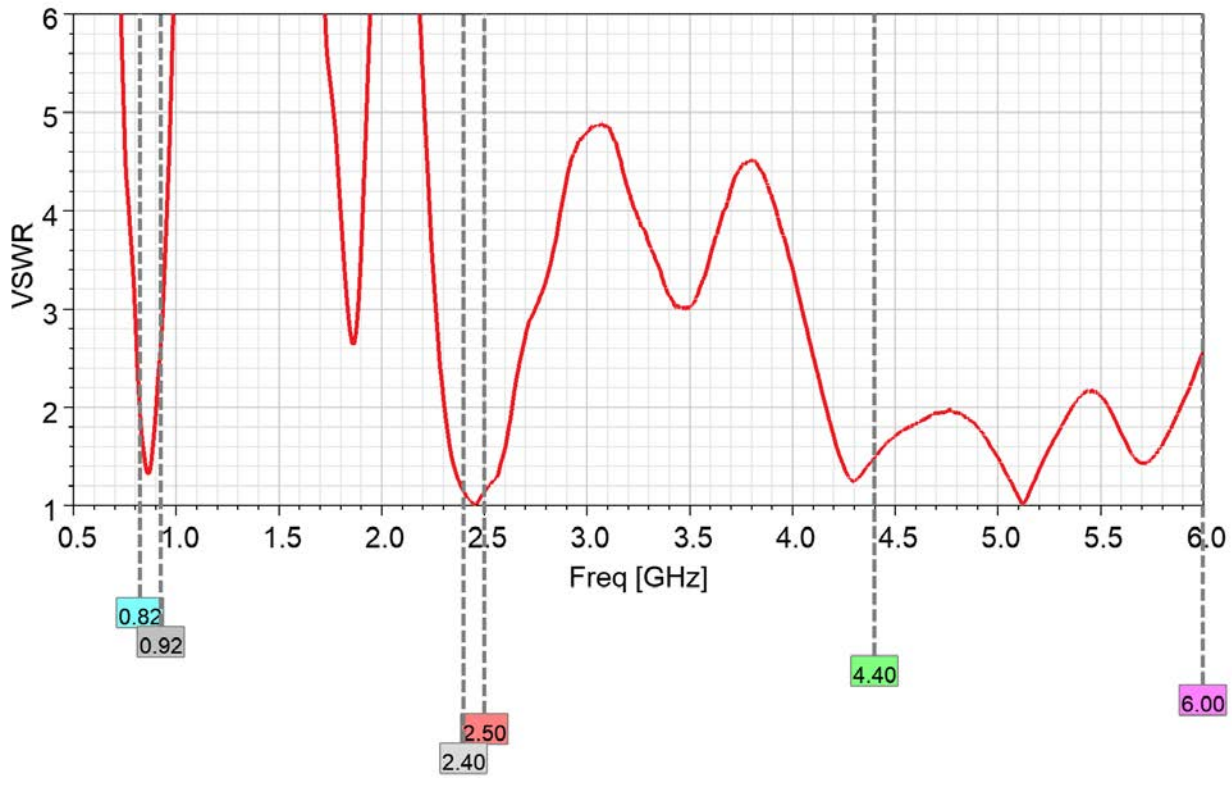
Measured input impedance matching



VSWR



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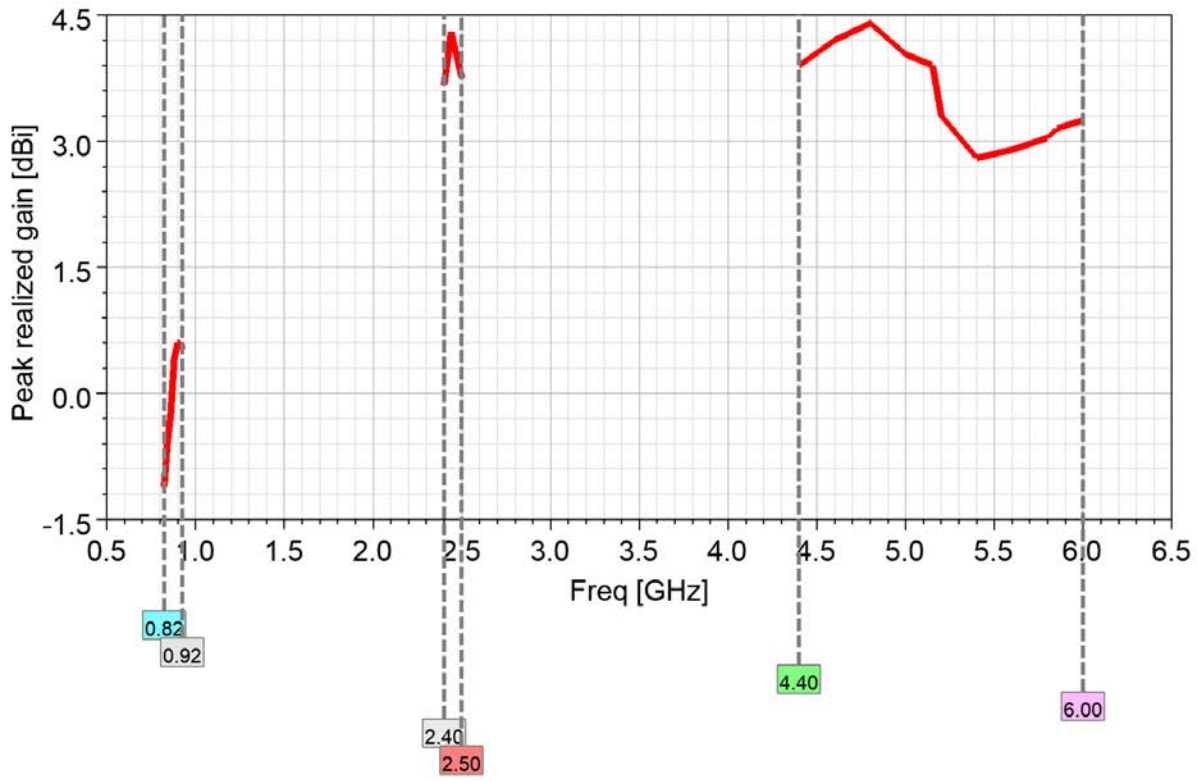
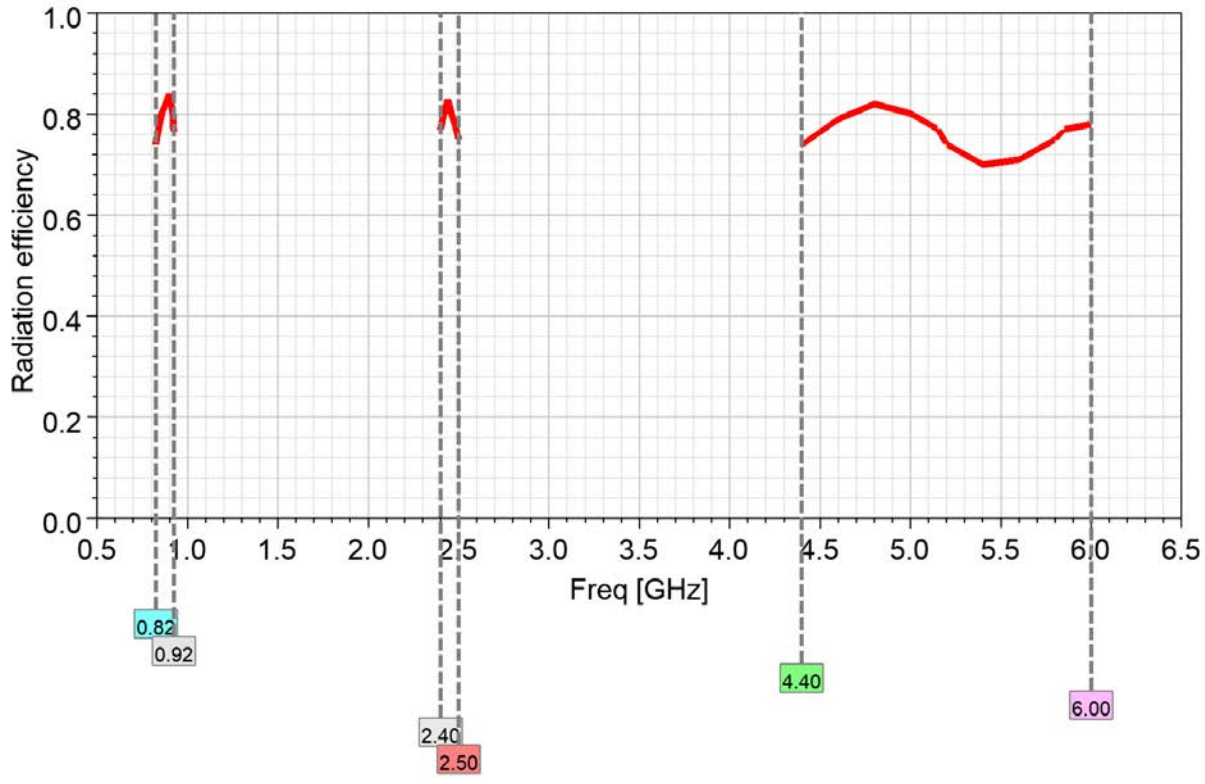
Peak realized gain



Radiation efficiency



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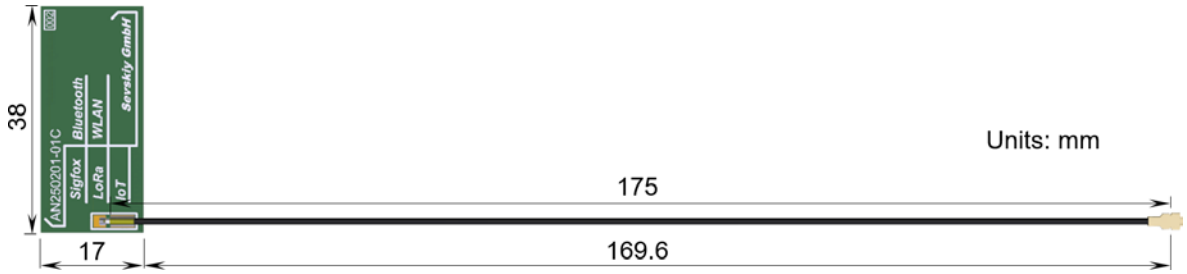
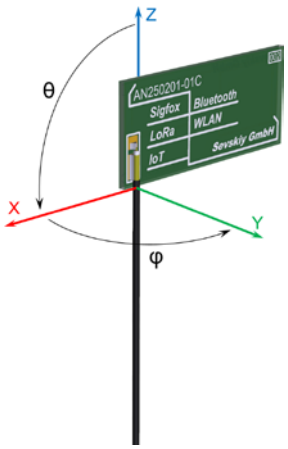
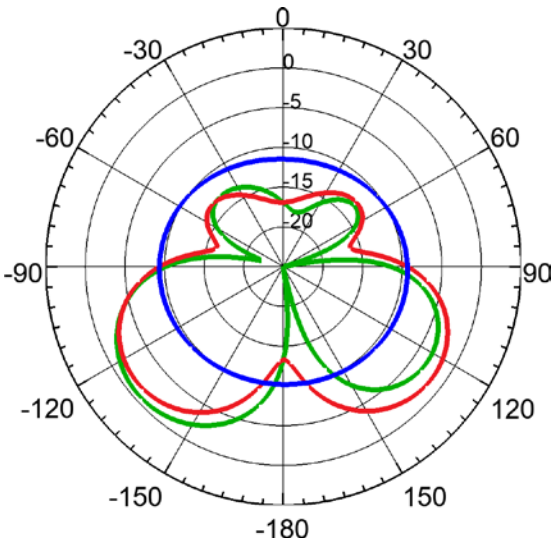
Product dimensions



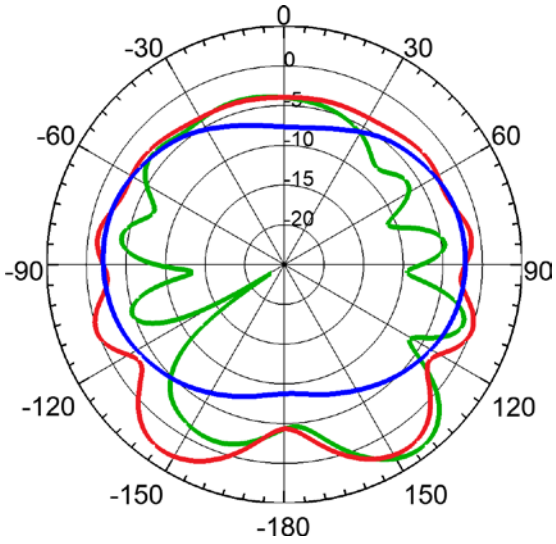
Radiation pattern



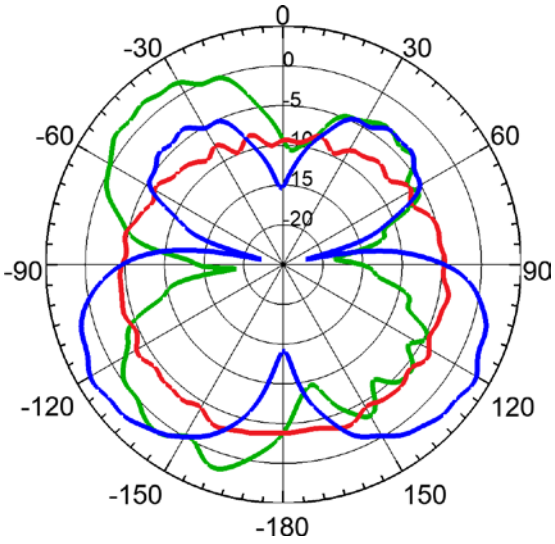
Total realized gain [dBi]
Phi=0°, plane XZ, green curve
Phi=90°, plane YZ, red curve
Theta=90°, plane XY, blue curve



840 MHz



2420 MHz



5400 MHz

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