850…960 MHz / 1710…2700 MHz / 5150…6000 MHz PCB Antenna (ISM, IoT, BT, Wi-Fi, 5G, LTE)

General information

The AN110503-02C is a compact wideband embedded PCB antenna designed for internal integration into multi-standard wireless devices operating across sub-GHz, cellular, and 5 GHz frequency ranges. The antenna covers 850…960 MHz, 1710…2700 MHz, and 5150…6000 MHz bands, enabling support for GSM, LTE, and 5G NR bands below 6 GHz, as well as IEEE 802.11 a/n/ac wireless standards.

Its multi-band capability makes it suitable for devices requiring reliable cellular connectivity combined with high-speed WLAN operation. With omnidirectional radiation characteristics and linear polarization, the antenna ensures stable coverage in compact and space-constrained enclosures.

Typical applications include industrial IoT gateways, smart metering systems, telematics units, payment terminals, security and alarm systems, portable routers, smart city infrastructure, and embedded communication modules. The antenna is implemented on an FR-4 substrate and features a soldered micro-coaxial RF cable terminated with an I-PEX MHF1 / Hirose U.FL (UMCC) compatible connector for convenient connection to RF modules.

Electrical data

Antenna type	Embedded / internal PCB antenna		
5G bands	1 - 3, 7, 8, 25, 30, 34, 38 - 41, 46, 47, 53, 65, 70, 80, 81, 84, 86, 90		
4G bands	1 - 4, 7 - 10, 23, 25, 30, 33 - 41, 46, 47, 53, 65, 69, 70		
Other frequency bands	SRD860, ISM915, ISM2400, Wi-Fi 5 GHz, ISM5800		
Frequency range [MHz]	850...960	1710…2700	5150…6000
Return loss [dB]	-5	-7	-8
Peak gain [dBi]	-0.4…1.2	-3…3	2.3…5
Radiation efficiency [%]	60…85	43…84	65…85
Nominal input impedance [Ohm]	50		
Polarization	linear		
Radiation pattern	omnidirectional		
Maximum input power [W]	5		

Mechanical data

Antenna PCB dimensions [mm]	97 x 19 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.

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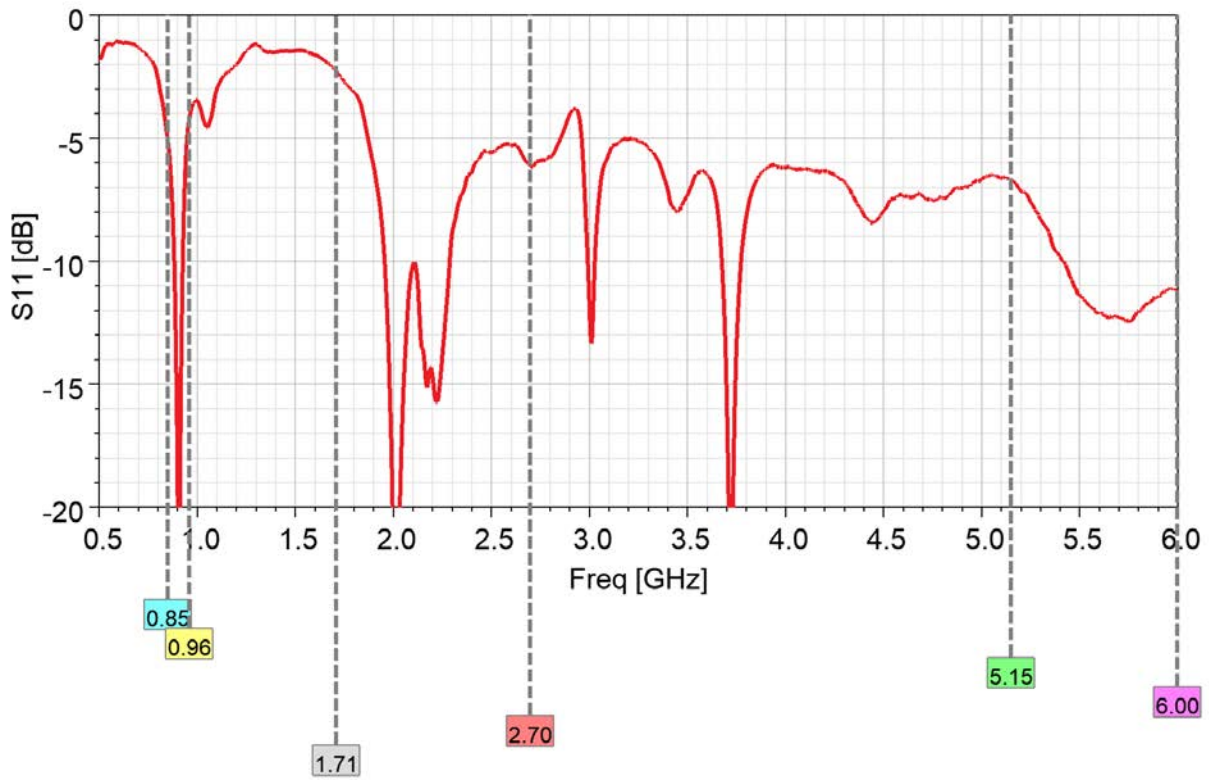
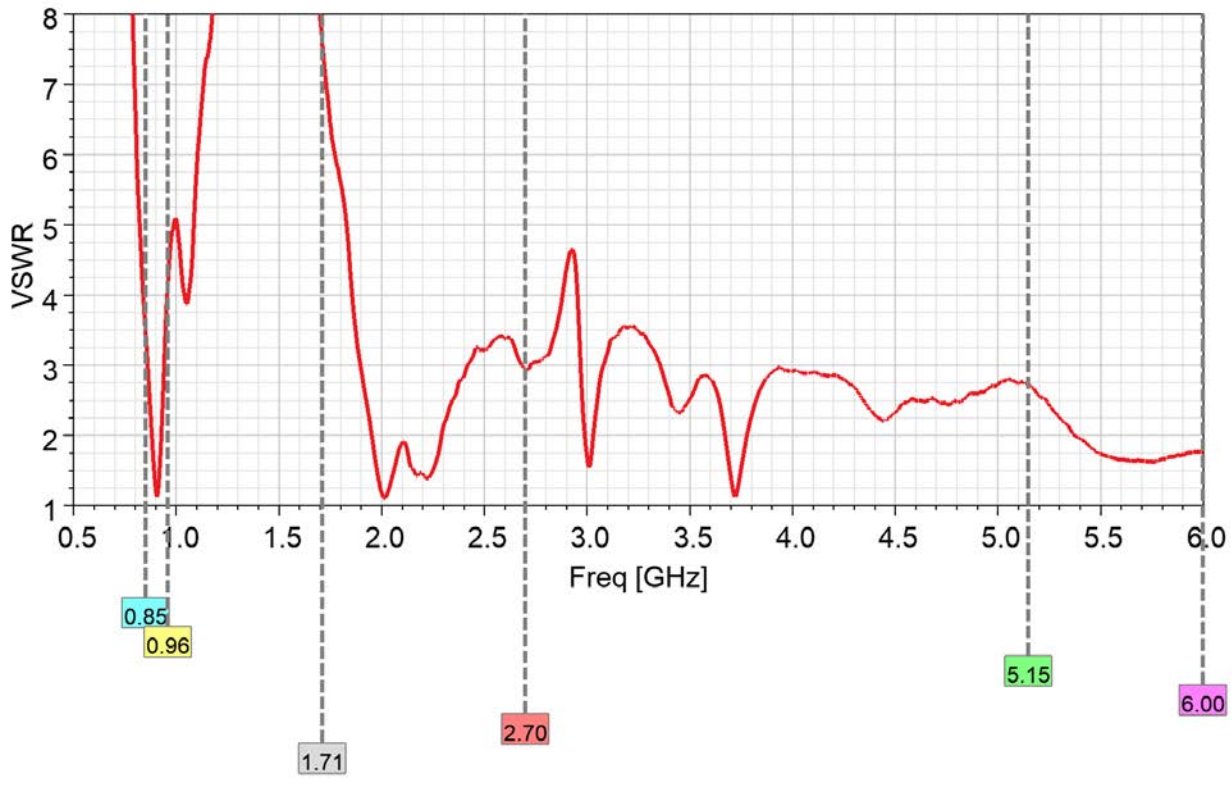
Measured input impedance matching



VSWR



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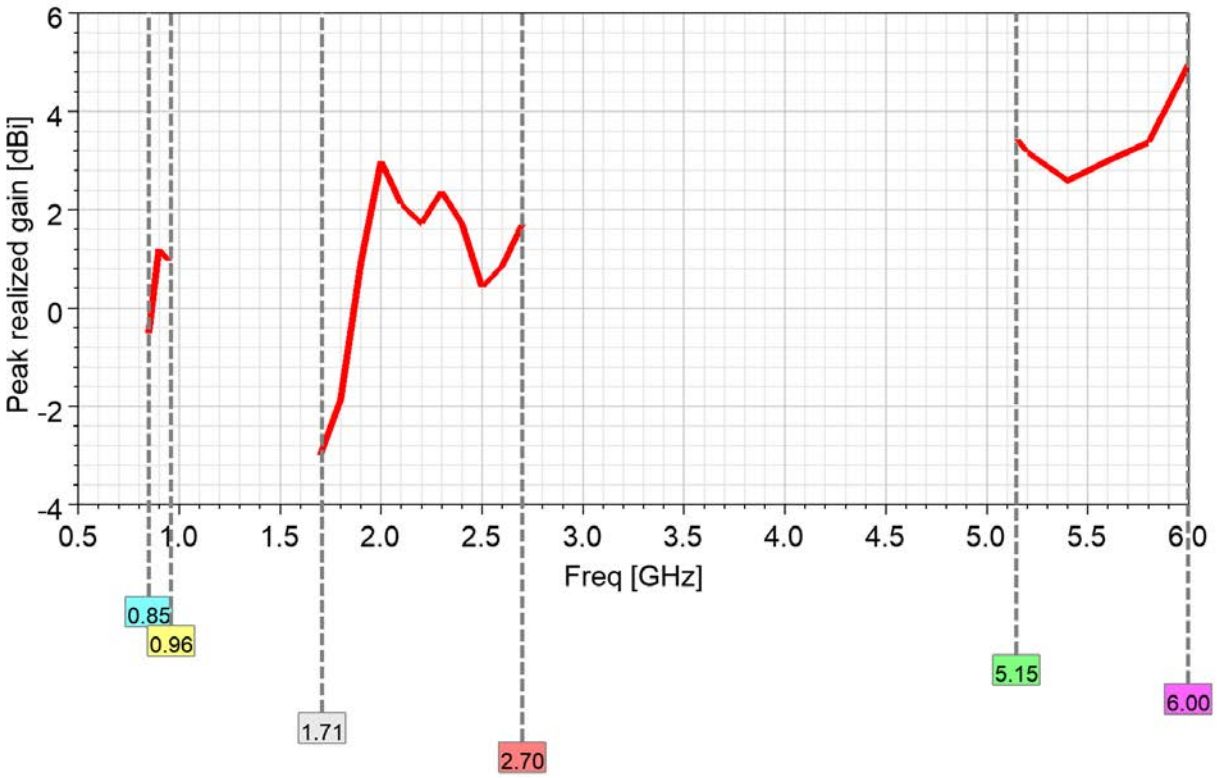
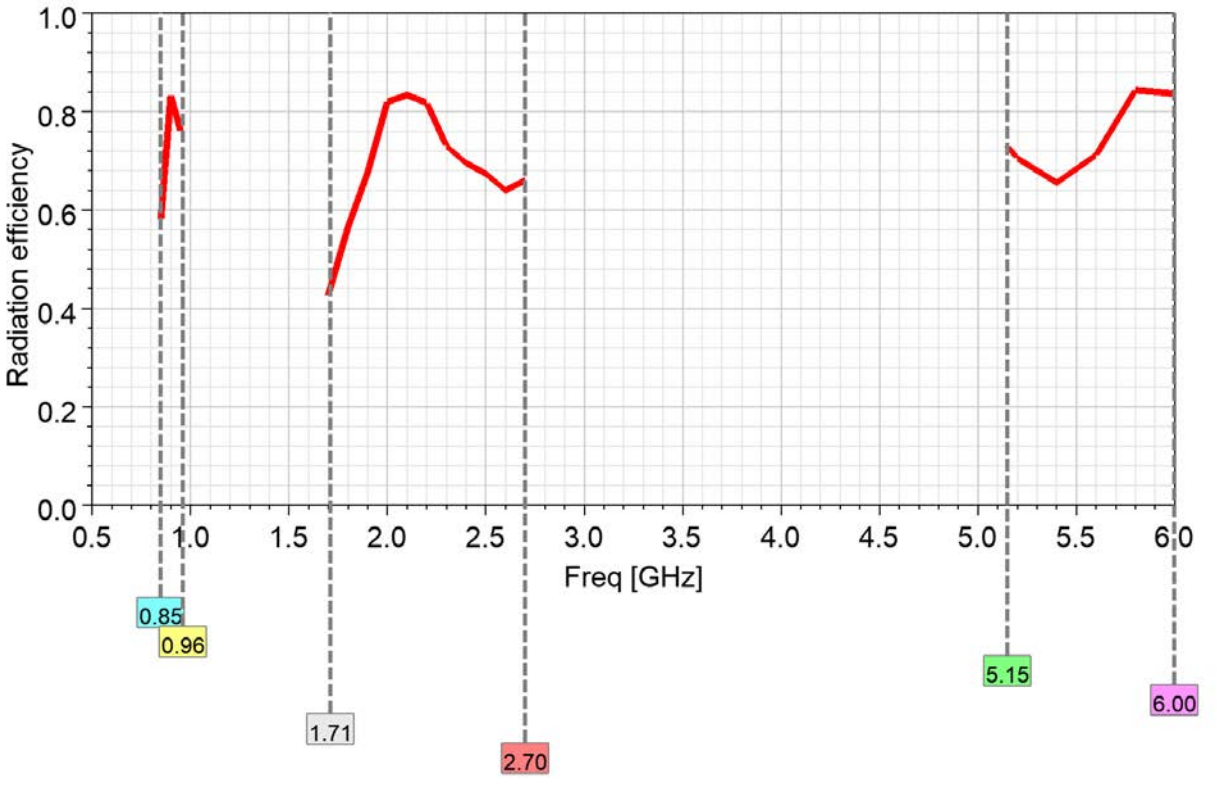
Peak realized gain



Radiation efficiency



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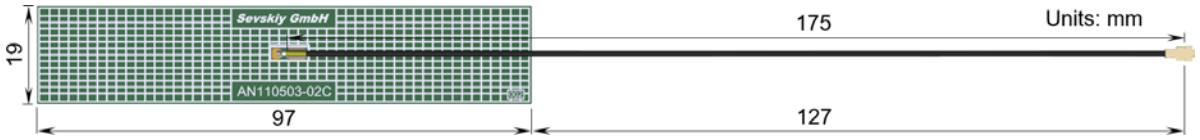
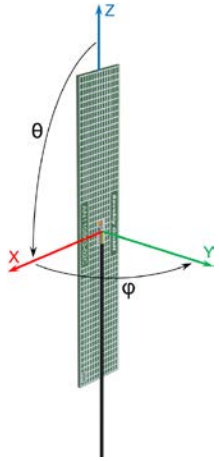
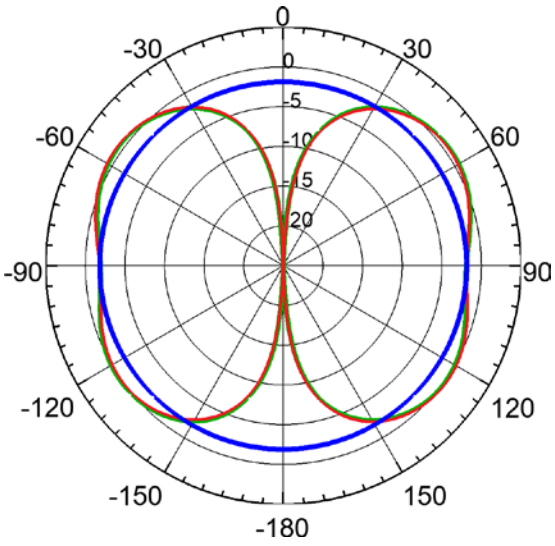
Product dimensions



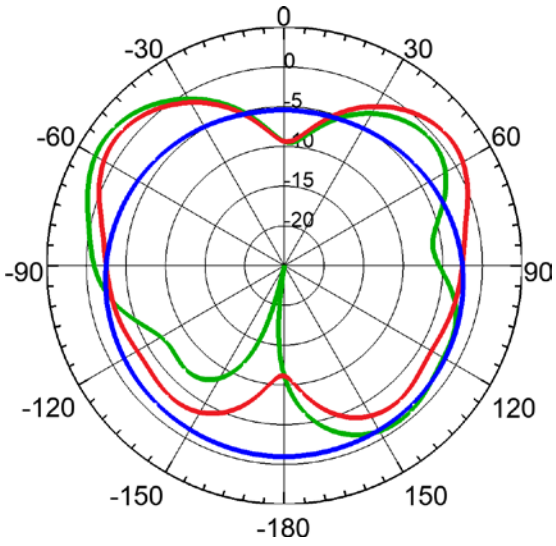
Radiation pattern



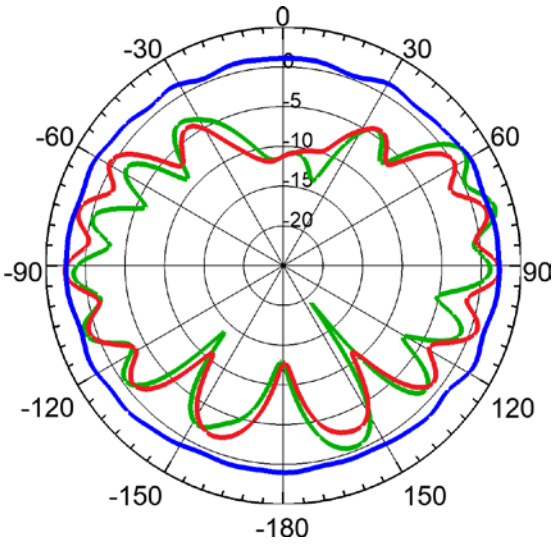
Total realized gain [dBi]
Phi=0°, plane XZ, green curve
Phi=90°, plane YZ, red curve
Theta=90°, plane XY, blue curve



900 MHz



2400 MHz



5600 MHz

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