Patent Search

Invention Title	A DUAL-BAND IN-BAND FULL-DUPLEX (DB-IBFD) PLANAR ANTENNA SYSTEM
Publication Number	27/2025
Publication Date	04/07/2025
Publication Type	INA
Application Number	202521022281
Application Filing Date	12/03/2025
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRONICS
Classification (IPC)	H01Q0001520000, H01Q0001240000, H01Q0009040000, H01Q0021280000, H01Q0001480000

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Abstract:

The present invention generally relates to a dual-band in-band full-duplex antenna system designed for efficient signal transmission and reception in two distinct frec bands. The system comprises a substrate with two antennas fabricated at opposite ends in the same plane. The first antenna operates in a first frequency band, whil antenna operates in a second frequency band. Each antenna features a microstrip slot radiator with slot elements, resonator elements, and a defective ground struct integrated into the ground plane for enhanced performance. Independent feed lines are provided for each antenna to enable signal transmission and reception at th frequency bands. To ensure superior isolation between the two antennas and minimize interference, a row of metallic vias is positioned between them. This innovati compact, efficient, and suitable for applications requiring high isolation and reliable dual-band operation in full-duplex communication systems.

Complete Specification

DESC:FIELD OF THE INVENTION

The present disclosure relates to the field of antenna systems, particularly to a dual-band in-band full-duplex (DB-IBFD) planar antenna system. The invention focus the design and development of compact and efficient planar antennas capable of simultaneously transmitting and receiving signals at two distinct frequency bands high isolation. It is applicable to advanced wireless communication systems, including 5G networks, Internet of Things (IoT), radar systems, and other applications r full-duplex operation and multi-band functionality. The invention addresses challenges related to signal interference, isolation, and compact integration in modern communication devices.

BACKGROUND OF THE INVENTION

The increasing demand for high data rates on digital platforms is driving the rapid global implementation of fifth-generation (5G) communication systems. To addre demands, most countries are adopting the millimeter-wave (mm-Wave) frequency bands due to their significantly larger bandwidth, which enhances data rates and network capacity. The International Telecommunications Union and International Mobile Telecommunications have allocated frequency range 2 (FR2) bands, includi 28, and 38/39 GHz, for 5G communications. Among these, the 26 and 28/38 GHz channels are particularly attractive due to their superior performance, low absorpt reduced path loss

View Application Status