202011044535, Indian Patent no. 503691

inPASS
Indian Patent Advanced Search System

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS

Patent Search

Patent Search | Patent E-register | Application Status | Help

Invention Title	"A METHOD AND AN APPARATUS FOR WIRELESS INFORMATION AND ENERGY TRANSFER USING DISTRIBUTED BEAMFORMING"
Publication Number	16/2022
Publication Date	22/04/2022
Publication Type	INA
Application Number	202011044535
Application Filing Date	13/10/2020
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRONICS
Classification (IPC)	H04B0007060000, H04W0052140000, H04L0027260000, H02J0005000000, B60L0058200000

Inventor

Name	Address	Country	Nationality
DE, Swades	Department of Electrical Engineering Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016	India	India
SACHDEV, Smriti	Department of Electrical Engineering Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016	India	India

Applicant

Name	Address	Country	Nationality
INDIAN INSTITUTE OF TECHNOLOGY DELHI	Hauz Khas, New Delhi-110016	India	India

Abstract:

Apparatus and method of the present disclosure relates to facilitating at least one of wireless data communication and energy transfer using distributed beamforming in a wireless network. The present disclosure introduce a DBF scheme optimizes the receiver-end processing by significantly reducing the search-space for optimum phase shifts for each of the transmitters (102a.....102n). This contributes to significant reduction in energy expenditure at the energy-constrained receiver node. Also, a short broadcast feedback is employed to achieve high beamforming gain for several consecutive slots in the coherence time, thereby achieving high data rate information transfer and quick charging.

Complete Specification

The present disclosure relates to wireless communication. More particularly, but not exclusively, to a method and apparatus for distributed beamforming (DBF) techniques which enables efficient wireless information and wireless energy transfer in wireless networks.

BACKGROUND

[0002] Wireless sensor networks are becoming ubiquitous in the age of IoT. Low-power devices running on battery are preferred in many applications due to small form factor and their ability to be deployed in remote locations irrespective of the availability of power source. As more and more battery-powered IoT sensor nodes are deployed, there arises a need to devise an efficient charging mechanism that provides economies of scale and also caters to those sensor nodes which are remotely placed or are placed in hazardous environments. Wireless energy transfer via RF radiation is one such possibility in this direction. However, Distributed Beam Forming (DBF) increases the efficiency of wireless power transfer by using multiple collaborative nodes to concentrate energy in the direction of the receiver. It also enables more information (data) to be transferred in shorter time. In a scenario with 𝑁 transmitting nodes with independent clocks, by DBF the signal-to-noise ratio (SNR) can be increased by up to 𝑁

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

क्रम सं/SL No :011194792

पेटेंट कार्यालय,भारत सरकार | The Patent Office, Government Of India

पेटेंट प्रमाण पत्र | Patent Certificate

(पेटेंट नियमावली का नियम 74) | (Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No.	:	503691
आवेदन सं. / Application No.	:	202011044535
फाइल करने की तारीख / Date of Filing	:	13/10/2020
पेटेंटी / Patentee	:	INDIAN INSTITUTE OF TECHNOLOGY DELHI

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित *"A METHOD AND AN APPARATUS FOR WIRELESS INFORMATION AND ENERGY TRANSFER USING DISTRIBUTED BEAMFORMING"* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख अक्टूबर 2020 के तेरहवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *"A METHOD AND AN APPARATUS FOR WIRELESS INFORMATION AND ENERGY TRANSFER USING DISTRIBUTED BEAMFORMING"* as disclosed in the above mentioned application for the term of 20 years from the 13th day of October 2020 in accordance with the provisions of the Patents Act,1970.

अनुदान की तारीख : 25/01/2024
Date of Grant :

पेटेंट नियंत्रक
Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अक्टूबर 2022 के तेरहवें दिन को और उसके पश्चात प्रत्येक वर्ष मे उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 13th day of October 2022 and on the same day in every year thereafter.