

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341026280 A

(19) INDIA

(22) Date of filing of Application :07/04/2023

(43) Publication Date : 05/05/2023

(54) Title of the invention : A compact 4-Element U-shaped MIMO Antenna with Slotted Ground for 5G mmWave Wireless Communications.

(51) International classification :H01Q 013800, H01Q 014800, H01Q 015200, H01Q 212800, H04B 070600
(86) International Application No :PCT//
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)Name of Applicant :

1)Jetti Chandrasekhar Rao

Address of Applicant :Associate Professor, Department of Electronics and Communication Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India -----

2)Tanimki Gayatri Konni

3)Yadlapalli Akhila

4)Raja Sai Sindhu

5)T. Chandra Sekhar Rao

6)B. Ratna Sunil

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

1)Jetti Chandrasekhar Rao

Address of Applicant :Associate Professor, Department of Electronics and Communication Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India -----

2)Tanimki Gayatri Konni

Address of Applicant :Department of Electronics and Communication Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India Bapatla -----

3)Yadlapalli Akhila

Address of Applicant :Department of Electronics and Communication Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India Bapatla -----

4)Raja Sai Sindhu

Address of Applicant :Department of Electronics and Communication Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India Bapatla -----

5)T. Chandra Sekhar Rao

Address of Applicant :Professor, Department of Civil Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India Bapatla -----

6)B. Ratna Sunil

Address of Applicant :Associate Professor Department of Mechanical Engineering Bapatla Engineering College, Bapatla 522102, Andhra Pradesh, India Bapatla -----

(57) Abstract :

For 5G mmWave n257, n258 and n262 band applications, a new compact four-element MIMO (multiple-input multiple-output) antenna is proposed. The antenna, which measures 11.6 mm × 12 mm × 0.508 mm, is made of the Rogers RT/duroid 5880 (tm) dielectric material, which has a dielectric loss tangent of 0.0009 and a relative permittivity of 2.2. The suggested antenna has a slotted ground at the bottom and four U-shaped radiating components on top of the dielectric material. A 50-ohm microstrip line feed excites the radiating elements. Using a U-shaped element, the first operational band at 26.6GHz from 25.10 to 27.50GHz is made possible. By etching square slots onto the ground plane, the second functional band at 47GHz, spanning 45.45 to 48.45GHz, is created. Rectangular slots on the ground plane and radiating elements that are orthogonally positioned improve the isolation of the proposed MIMO antenna. The proposed antenna operates with good impedance matching and improved isolation at the n257, n258 and n262 bands.

No. of Pages : 19 No. of Claims : 5