(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :16/02/2024

(21) Application No.202441010865 A
(43) Publication Date : 08/03/2024

(54) Title of the invention : A 4-PORT ULTRA-COMPACT 5G MIMO ANTENNA FOR MM-WAVE N257 AND N261 BAND APPLICATIONS

(51) International classification :H01Q0001380000, H01Q0021060000, H01Q0001500000, H01Q0001240000, H01Q0001360000
(86) International Application No :NA
Filing Date :NA
(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)Shaik Idrish**
Address of Applicant :19-2-8/3g, NV palem ---------- ----------
**2)Bapatla Engineering COllege**
**3)Gatram Mahesh**
**4)Kakumanu Nagaraju**
**5)Kondapalli Aradhya**
**6)Veera Sai Ramesh Babu**
**7)CHebrolu Satya Sai**
**8)S Manjiri Angel Sweety**
**Name of Applicant : NA**
**Address of Applicant : NA**
(72)**Name of Inventor :**
**1)Shaik Idrish**
Address of Applicant :19-2-8/3g, NV palem ---------- ----------
**2)Gatram Mahesh**
Address of Applicant :Mr. Gatram Mahesh, Assistant Professor, Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India bapatla ---------- ----------
**3)Kakumanu Nagaraju**
Address of Applicant :Mr. Kakumanu Nagaraju, Assistant Professor, Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India bapatla ---------- ----------
**4)Kondapalli Aradhya**
Address of Applicant :Ms. Kondapalli Aradhya, Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India Bapatla ---------- ----------
**5)Veera Sai Ramesh Babu**
Address of Applicant :Mr. Veera Sai Ramesh Babu, Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India Bapatla ---------- ----------
**6)CHebrolu Satya Sai**
Address of Applicant :Mr. Chebrolu Satya Sai, Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India Bapatla ---------- ----------
**7)S Manjiri Angel Sweety**
Address of Applicant :Ms. S Manjiri Angel Sweety Department of Electronics and Communication Engineering, Bapatla Engineering College, Bapatla-522102, Andhra Pradesh, India bapatla ---------- ----------

(57) Abstract :
The demand for high-data-rate wireless communication systems has escalated with the advent of 5G technology, prompting the development of compact and efficient antenna solutions. This novel 5G micro-strip antenna designed to meet the stringent requirements of the fifth-generation wireless networks. Developments in data speeds, bandwidth, ultra-low response times, excellent dependability, considerable accessibility, and improved device-to-device connectivity are what have driven wireless systems toward 5G. These 5G wireless systems require small and efficient antenna designs. This 5G mm-wave compact four-port antenna covers the n257 and n261 bands. This structure consists of four patch elements and each patch with a four-square slots mounted on a Rogers/RT Duriod 5880 with in the dimensions of 12mm ×12 mmx0.9mm. An microstrip line feeding technique were employed to each patch. This novel antenna radiating structure resonates from 26.2-30.5 GHz, giving an impedance bandwidth of 4.3 GHz, with a centre frequency of 28 GHz. 5.33 dBi was the peak gain, and 75-82% efficiency was obtained over the wide band. Based on the extracted data from the proposed antenna, it was found that the antenna is capable of covering the 5G NR n257 and n261 with significant gain, bandwidth, and efficiency. Thus, the antenna has the ability to be considered a possible contender to be used in 5G wireless applications using mm-wave frequencies.

No. of Pages : 17 No. of Claims : 2