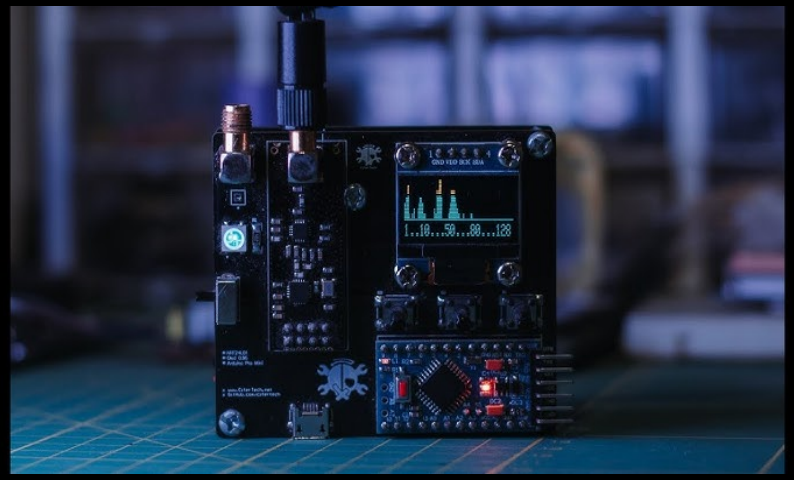
2.4 GHz JAMMER



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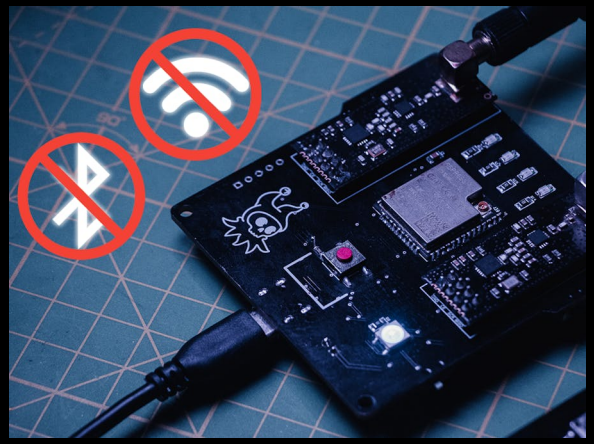
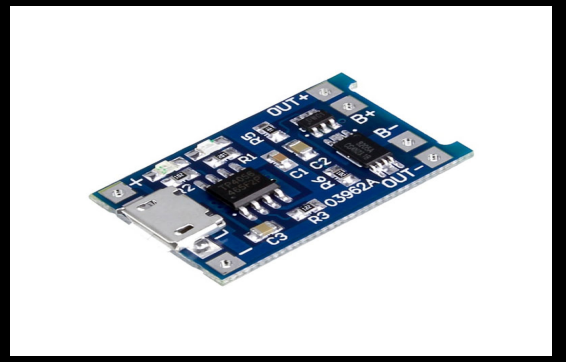
1.Introduction to 2.4 GHz jammer

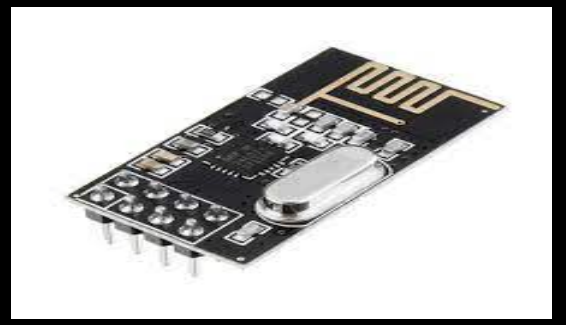
- A jammer works by transmitting radio signals on the same frequencies as the devices it's designed to disrupt, effectively blocking or interfering with their communication.
- RF jamming refers to the deliberate transmission of radio signals to interfere with or block the communication of an adversary.
- The 2.4 GHz frequency band is commonly used in various technologies, including radar, Wi-Fi, and automotive applications.



2.Technical mechanisms of 2.4 GHz Jammer

- TP4056 is a lithium ion battery charging IC that charges single-cell Li-ion Li-Po batteries using a USB input (typically 5V).
- NRF24L01 Operates in the same ISM band (2.400–2.525 GHz) as Wi-Fi and Bluetooth, making it capable of interfering with them.
- The ESP32-WROOM-32E is a powerful and versatile Wi-Fi + Bluetooth microcontroller module developed by Espressif Systems.





3.Applications of 2.4 GHz jammer

➢ SECURE COMMUNICATI

GHz jammers enhance secure communications by intercepting data, ensuring that military operations can be carried out without risk of information leaks.

Ø COUNTER-DRONE TECHNOLOGY

Counter- drone technology utilizes 2.4 GHz jammers to disrupt unauthorized drone operations, protecting sensitive areas from potential threats and unauthorized surveillance.

4.Legal and ethical considerations

- FCC REGULATIONS

The Federal Communications Commission (FCC) establishes rules for communication systems, ensuring fair access and competition while protecting consumer rights and fostering innovation in telecommunications.

- CONSEQUENCES OF MISUSE

Misuse of technology and data can lead to negative outcomes, including breaches of trust, legal repercussions, and societal harm, highlighting the importance of ethical practices in digital environments.

5.Challenges and limitations

- RANGE LIMITATIONS
- SIGNAL EVASION TECHNIQUES
- PUBLIC PERCEPTION AND ACCEPTANCE

PROJECT COST

COMPONENTS	QUANTITY	COST
TP4056(type c)	1	₹110
NRF24L01	2	₹300
ESP32-WROOM-32E	1	₹475
LITHION ION BATTERY	1	₹120
OTHER ACCESSORIES	-	₹250
TOTAL COST	-	₹1555

REFERENCE

- https://github.com/EmenstaNougat/ESP32-BlueJammer
- https://projecthub.arduino.cc/willy-js/esp8266-blebluetooth-wi-fi-jammer-53ca4b
- https://www.researchgate.net/publication/330361044_Jammers_signal_power_modelling_in_the_Wi-Fi_band
- https://ieeexplore.ieee.org/document/10722738