Hidden Active Cellphone Detector
Introduction:

➢ It is a handy, pocket-size mobile transmission detector or sniffer.

➢ It is a circuit for a mobile transmission detector which can detect use of a mobile phone within the range of 1.5 meters.

➢ Whenever usage of mobile phone is detected such as calling or texting a beep alarm starts sounding and a led blinks.

➢ The circuit can detect the incoming and outgoing calls and sms even if the mobile phone is kept in the silent mode.

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Hidden Active Cell Phone Detector

- It can be used to prevent use of mobile phones in examination halls, confidential rooms, etc. It is also useful for detecting the use of mobile phone for spying and unauthorized video transmission.
How Cell Phone Detector Works:

- The moment the bug detects RF transmission signal from an activated mobile phone, it starts sounding a beep alarm and the LED blinks.

- The alarm continues until the signal transmission ceases.

- An ordinary RF detector using tuned LC circuits is not suitable for detecting signals in the GHz frequency band used in mobile phones.
Frequency Range of Detector:

- The transmission frequency of mobile phones ranges from 0.9 to 3 GHz with a wavelength of 3.3 to 10 cm, so a circuit detecting gigahertz signals is required for a mobile bug.

- The disk capacitor along with the leads acts as a small gigahertz loop antenna to collect the RF signals from the mobile phone.

- When mobile phone is active, it transmits the signal in the form of sine wave which passes through the space.
The encoded audio/video signal contains electromagnetic radiation which is picked up by the receiver in the base station.

Distance to cellular base station is the most important environmental factor. The nearer a mobile phone is to a base station or transmitting tower, the weaker will be the signal that needs to come from the phone.
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Circuit Diagram:

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Block Diagram:

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Operational Amplifier:

- Antenna signal is given as input to an operational amplifier, which is an eight pin IC.

- It is an integrated circuit with differential inputs i.e. it has two inputs of opposite polarities.

- The output signal of the op-amp is very high while compared to the input signal and the op-amp is also designed for performing arithmetic operations on an analog circuit

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Monostable Multivibrator:

- The output of the op-amp is fed to a monostable multi vibrator; It is a one shot multivibrator which is used to generate a single pulse.

- In this one state of the output is stable, and another state of output is in unstable mode.

- It is triggered when a logic low signal is given to the input, and a high logic signal appears at the output.

- When not triggered, the output is normally low, and when triggered, it will go high for a short length of time depending on the values of the resistor and capacitor components.
Piezo Buzzer:

- When the output from the multivibrator reaches the buzzer, the buzzer rings to indicate the active action of the mobile phone.

- A piezoelectric element may be driven by an oscillating electronic circuit or other audio signal source driven with a piezoelectric audio amplifier.

- Sounds commonly used to indicate that a button has been pressed are a click, a ring or a beep.
It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has elapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound.

The effect of piezo buzzer is related to a change of the polarization density with the material; a buzzer is placed for signaling the device at the output.
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Applications:

- It can be used to prevent the use of mobile phones in examination halls, confidential rooms, etc.

- It is also useful for detecting the use of mobile phone for spying and unauthorized video transmission.

- It is useful where the use of mobile phone is prohibited like petrol pumps and gas stations, historical places, religious places and court of laws.
CONCLUSION:

- This pocket-size mobile transmission detector or sniffer can sense the presence of an activated mobile phone from a distance of one-and-a-half meter. So it can be used to prevent use of mobile phones in examination halls, confidential rooms.

- **Hidden Active Cell Phone Detector** is useful to Engineering Students.
Future Work:

- The prototype version has only limited range of 2 meters. But if a preamplifier stage using JFET or MOSFET transistor is used as an interface between the capacitor and IC, range can be increased.
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Thank you!