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December 2022

## Detecting Energy on Restricted Bands to Automatically Configure Device State

Craig Dooley

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### Recommended Citation

Dooley, Craig, "Detecting Energy on Restricted Bands to Automatically Configure Device State", Technical Disclosure Commons, (December 26, 2022)

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## **Detecting Energy on Restricted Bands to Automatically Configure Device State**

### ABSTRACT

Smartphones and other mobile devices can be disruptive in certain contexts such as a play or concert. Users may fail to turn off their devices in such contexts or may not know the correct way to do so. Professional performances are often at venues where performance-related equipment transmits on restricted radio bands for reliable wireless communication necessary for the performance. With user permission, an existing radio in a user device is used to detect energy on restricted bands used for such communication. When energy is detected, it is indicative that the device is within range of a professional performance. With user permission, upon such detection, the user is provided a reminder to switch the device to a suitable mode. Alternatively, if the user permits, such mode switch can be performed automatically. At a subsequent time, when no energy is detected, one or more user-configured actions such as switching the device mode to normal, contacting a trusted user, etc. are performed automatically.

### KEYWORDS

- Restricted band
- Live performance
- Concert
- Silent mode
- Do not disturb
- 600-800 MHz
- Operating system

## BACKGROUND

Users carry smartphones and other mobile devices everywhere they go. However, such devices can be disruptive in certain contexts, e.g., when the user is attending a play or concert. While many venues request users to turn off their devices, some users may fail to do so, or may not know the correct way to do so.

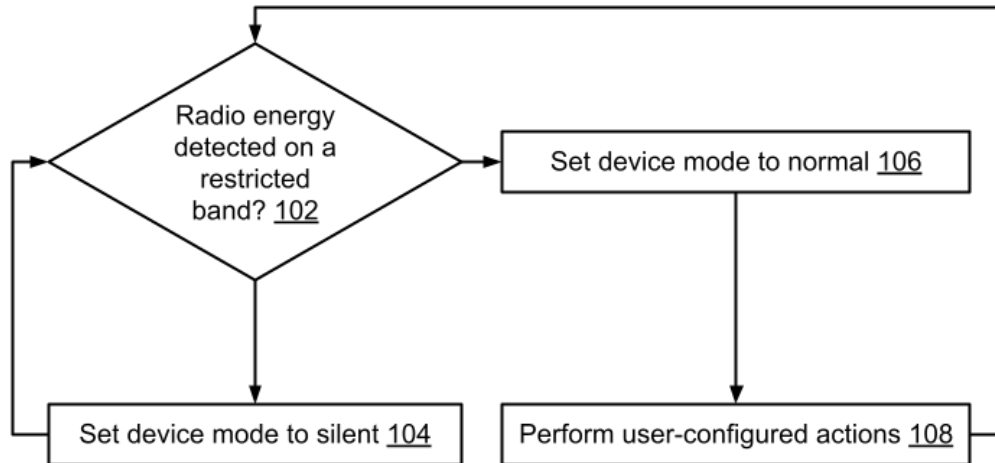
## DESCRIPTION

Professional performances are often at venues where performance-related equipment transmits on restricted radio bands for reliable wireless communication necessary for the performance, e.g., communication between performance participants. Such communication is allowed by regulatory authorities such as the federal communications commission (FCC) to transmit on restricted radio bands. While such communication is private, it is possible for devices to detect transmission on these bands. The mere detection of transmission on these bands indicates that the device that detects such transmission is within range of a professional performance. This disclosure leverages such detection as a hint to change the operating mode of the device.

With user permission, an existing radio in a smartphone (or other device) is used to detect energy on restricted bands, e.g., 600-800 MHz band. Such detection can be performed on any device that has a radio that can tune to the restricted bands. When energy is detected on these bands, it is indicative that the device is within range of a professional performance.

With user permission, upon such detection, the user is provided a reminder to switch the device to a mode such as "do not disturb" or "vibrate." Alternatively, if the user permits, such mode switch can be performed automatically. When the user of the device leaves the performance venue (is outside the range of communication on the restricted band), absence of a

previously detected signal can be used to perform user-permitted automatic actions. For example, the user may configure the device to automatically share the user location with another person or to send a message to a trusted contact.



**Fig. 1: Live performance detection to change device mode**

Fig. 1 illustrates an example process flow to detect whether a device is at a performance venue and to change device mode. With user permission, the radio on the user device (e.g., a smartphone, wearable device, or other portable device) is utilized to determine if radio energy is detected on a restricted band (102). For example, when the user is at a performance venue such as a concert hall, radio energy may be detected due to wireless communication between equipment at the concert venue (that is permitted to use the restricted bands).

If radio energy is detected, the device mode is set to silent (104), e.g., automatically if the user has configured the device for automatic mode switching, or by providing an alert to the user. If no radio energy is detected, the device mode is set to normal (106). Further, if radio energy on restricted bands is not detected after having previously detected radio energy, one or more user-configured actions are automatically performed (108). The failure to detect radio

energy is an indication that the user has likely left the venue or that there is a break in the performance, which triggers the user-configured actions.

The described techniques can be implemented on any smartphone or other device capable of wireless communication on restricted bands. The techniques can be implemented as part of the device operating system. Users are provided with options to enable or disable detection of communication on restricted bands and to set up pre-configured actions upon such detection.

## CONCLUSION

Smartphones and other mobile devices can be disruptive in certain contexts such as a play or concert. Users may fail to turn off their devices in such contexts or may not know the correct way to do so. Professional performances are often at venues where performance-related equipment transmits on restricted radio bands for reliable wireless communication necessary for the performance. With user permission, an existing radio in a user device is used to detect energy on restricted bands used for such communication. When energy is detected, it is indicative that the device is within range of a professional performance. With user permission, upon such detection, the user is provided a reminder to switch the device to a suitable mode. Alternatively, if the user permits, such mode switch can be performed automatically. At a subsequent time, when no energy is detected, one or more user-configured actions such as switching the device mode to normal, contacting a trusted user, etc. are performed automatically.

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