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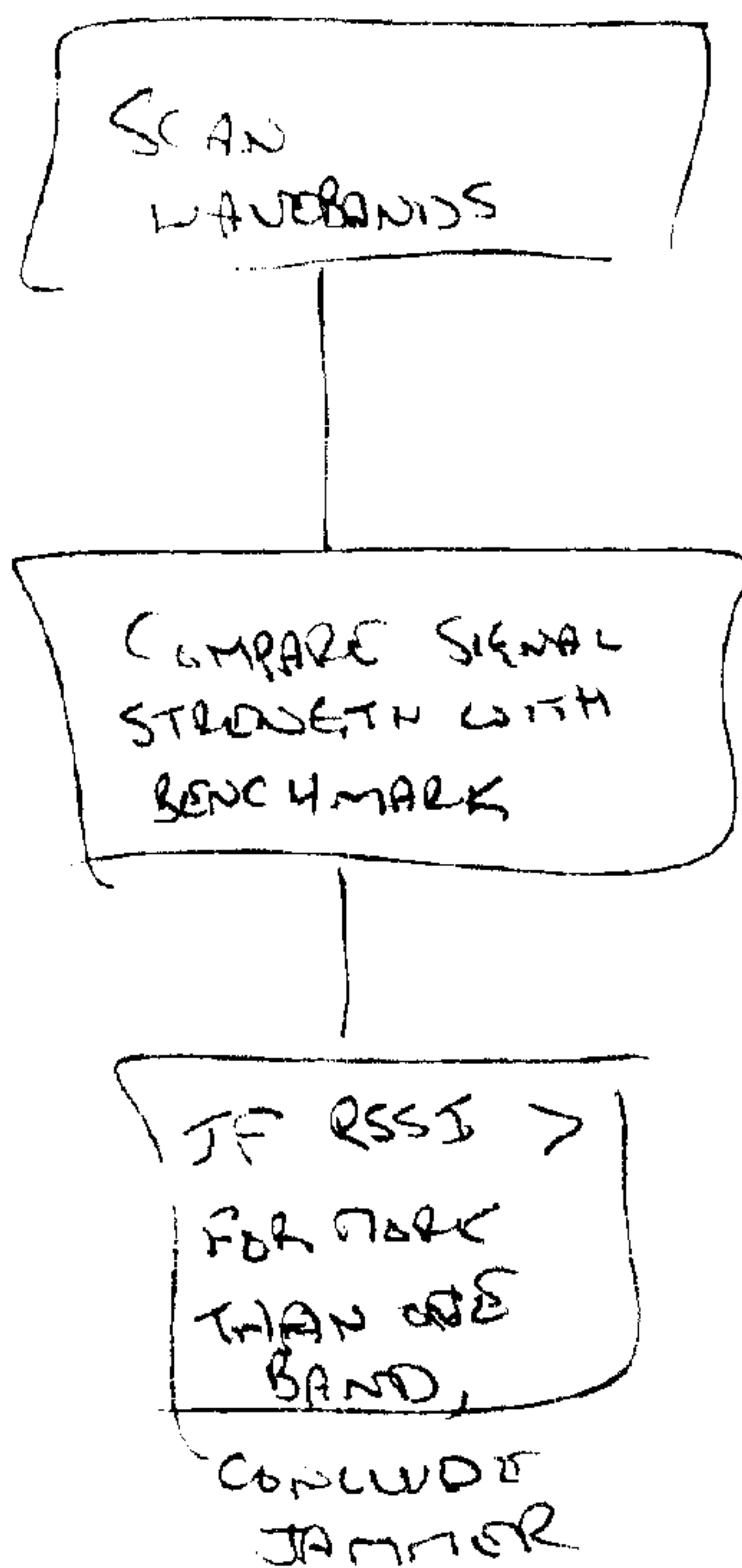
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(71) Demandeur/Applicant:  
BOOMERANG TRACKING INC., CA

(72) Inventeurs/Inventors:  
BOULAY, ANDRE ERIC, (UNKNOWN);  
NELSON, ROBERT, (UNKNOWN)

(74) Agent: ROBIC

(54) Titre : METHODE ET APPAREIL DE DETECTION DE BROUILLEURS A ONDES RADIOELECTRIQUES  
(54) Title: METHOD AND APPARATUS FOR DETECTING A RADIO WAVE JAMMER



## **METHOD AND APPARATUS FOR DETECTING A RADIO WAVE JAMMER**

### 5 **Field of the invention**

The present invention relates to a method and apparatus for detecting a radio wave jammer. The present invention finds particular application with stolen vehicle location detection systems, as well as in security applications.

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### **Description of the prior art**

Systems for locating stolen vehicles are become more and more prevalent as the frequency of theft increases, and as the value of the vehicles increases. Such systems function in a variety of manners, but essentially consist of a mechanism for indicating that the vehicle has been stolen. Once theft of a vehicle has been established, an on-board unit sends a message to a central location containing information about the location of the vehicle. This information may be periodically updated. A recovery vehicle is then dispatched to the general location of the vehicle and using a signal emitted by the on-board unit, attempts to pinpoint the exact location of the vehicle for recovery, or if the unit does not emit a signal, by other positioning means.

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However, if the signal emitted by the on-board unit is being jammed, then the signal containing location information cannot be received by the central location.

### **Summary of the invention**

It is an object of the present invention to provide a system and method for detecting a jamming signal. The signal is detected by analyzing a spectrum of PCS, wireless network and pager wavebands (or, in other words, any wireless

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network) and by calculating an RSSI level. If the level is above a threshold in more than one channel, it is considered that a jammer is present. In a preferred embodiment of the invention, the system can be aboard a recovery vehicle, or be an integral part of an on-board unit on a vehicle.

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### **Brief description of the drawings**

10 The present invention and its advantages will be more easily understood after reading the following non-restrictive description of preferred embodiments thereof, made with reference to the following drawings in which:

Figure 1 is a schematic flow chart of the method according to a preferred embodiment of the invention;

15 Figure 2 is a block diagram of a system according to a preferred embodiment of the invention integrated with an on-board unit (OBU) on a vehicle.

### **Description of a preferred embodiment of the invention**

20 A wireless network jammer is a device which interferes with wireless network communications channels. The jammer transmits an RF signal over one or more wavelength bands, which are used for wireless network communications, PCS and pagers. These wavelength bands vary between 800-950 MHz and 1.7-1.9 GHz. The jammer sweep can vary between 50-200 MHz and 1-2 GHz, at a  
25 frequency between 1 KHz and 20 KHz, as a sine wave, or background noise having a large frequency or amplitude component. The power of a jamming signal can vary between 5 mW and 100 mW.

The system and method of the present invention uses this profile of a jamming signal to analyze a spectrum of wavelengths in the PCS, wireless  
30 network and pager wavebands to determine if a jammer is present. If a jammer is

detected, corrective action can be taken, such as alerting the appropriate authorities to cease operation of the jammer.

In a preferred embodiment of the invention, the system and method of the present invention will analyze channels, and measure an RSSI level. If the level is  
5 higher than expected for a few of the channels, a jammer is presumed.

In another preferred embodiment of the invention, the system of the present invention is integrated into an on-board unit on a vehicle. The system constantly, or periodically, or sporadically, analyzes the wavebands while the vehicle is in motion (whether stolen or not). If the system detects or concludes that a jammer is  
10 present, the on-board unit sends a signal to a central location indicating an occurrence of a jammer, and providing the general location of the jammer. This embodiment is particularly useful for example for detecting warehouses or other locations where jamming equipment is present, perhaps indicating the location of a chop shop.

15 An on-board unit of a vehicle would then, when being in proximity to the jammer, detect the jammer. Once the vehicle has moved out of the jamming range, the central location would be advised of the location of the jammer equipment.

20 Although the present invention has been explained hereinabove by way of a preferred embodiment thereof, it should be pointed out that any modifications to this preferred embodiment within the scope of the appended claims is not deemed to alter or change the nature and scope of the present invention.

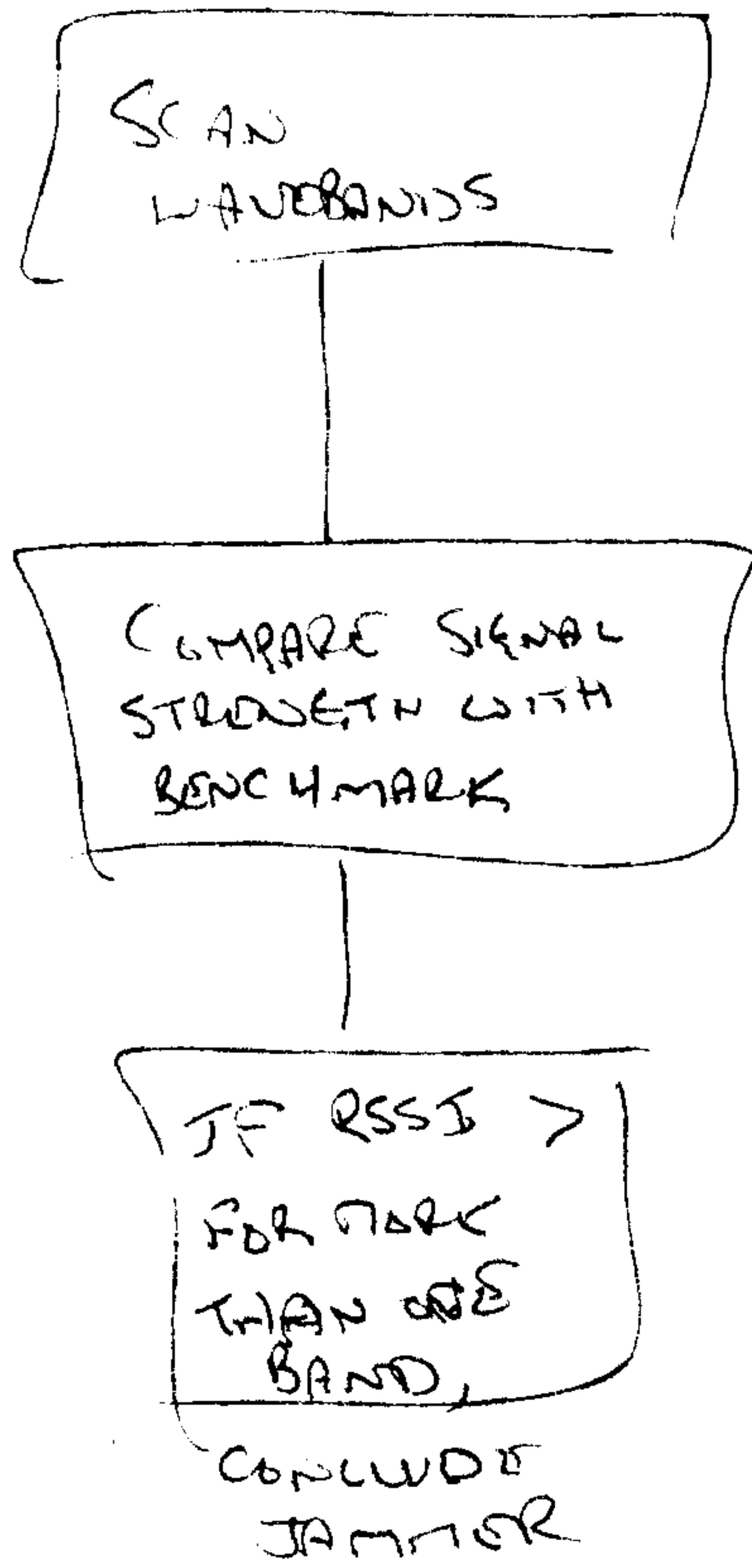


Fig. 1

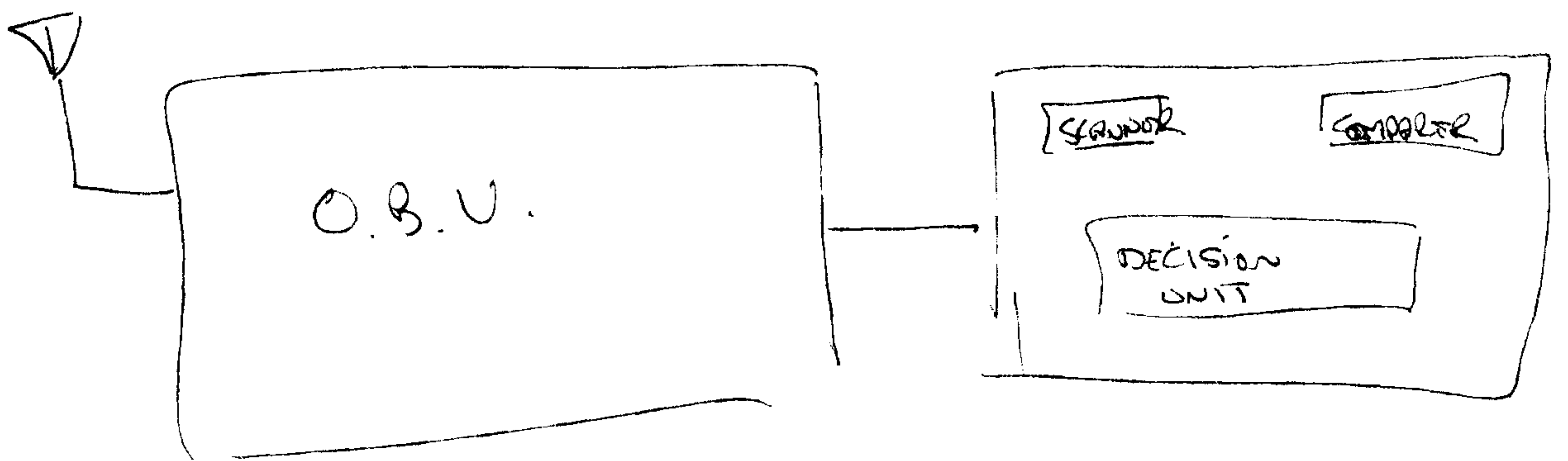


Fig. 2

SCAN  
WAVEBANDS

COMPARE SIGNAL  
STRENGTH WITH  
BENCHMARK

IF  $RSSI >$   
FOR MORE  
THAN ONE  
BAND,

CONCLUDE  
JAMMER