

**Record ID:**  
**Technical Specifications of the  
Road Voice Receiver**  
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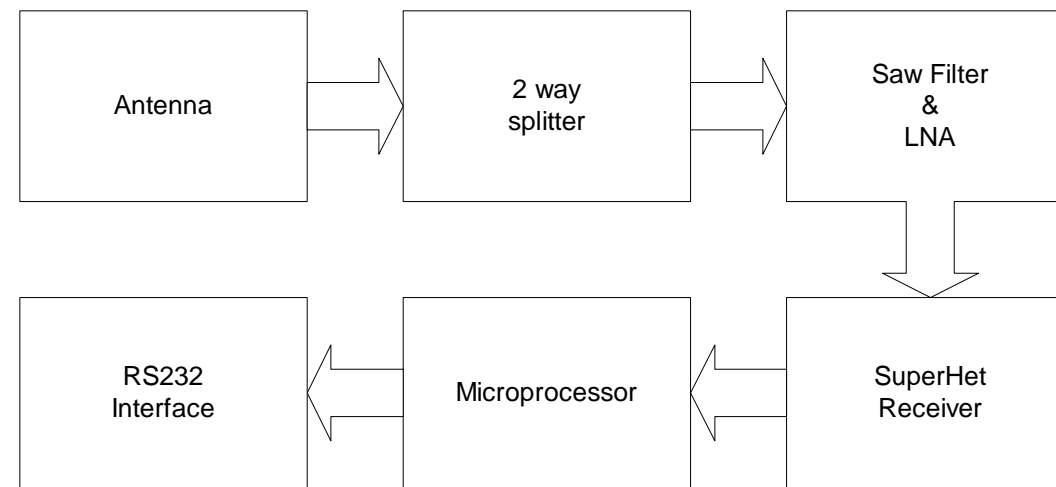
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### **Technical Description of the SmarTire Road Voice Receiver**

The SmarTire Receiver receives wireless signals transmitted from the sensor modules (which are mounted inside the tires of the automobile). The signal is demodulated by the receiver and processed by a microprocessor. The information is sent to RS232 interface. The following outlines the specifications of the receiver.

- |                               |                          |
|-------------------------------|--------------------------|
| 1. Frequency:                 | 433.92 MHz $\pm$ 75 kHz  |
| 2. Bandwidth (3dB):           | 500 kHz ( $\pm$ 250 kHz) |
| 3. IF Frequency:              | 500 kHz                  |
| 4. LO Frequency:              | 433.35 MHz $\pm$ 74 kHz  |
| 5. Sensitivity (12 dB SINAD): | -111 dBm $\pm$ 2 dBm     |
| 6. LO emissions:              | < 200 uv/m @ 3 meters    |
| 7. Temperature Range:         | -40 to 85 $^{\circ}$ C   |

### **Functional Block Diagram of the 433 MHz Road Voice Receiver**



**Diagram 1. Block Diagram of Road Voice Receiver**

### **Theory of operation**

As can be seen from the block diagram, the radio portion of the receiver consists of a SuperHet Receiver circuit, front-end filter and LNA and a detector circuit. The RF signal Received by the antenna is mixed with the local oscillator, which converts the signal to an IF of 500 kHz. The signal is then passed through a filter and detected. The digital signal is then processed by a microprocessor. The microprocessor sends data through the RS232 interface.