

Record ID:

Technical Specifications of the Gen II Receiver

By Robert Patterson

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Functionality of the SmarTire wireless tire-monitoring system:

- Continuous monitoring of tire pressure and tire temperature
- Transmits pressure and temperature every 4 to 6 minutes
- Transmits 10 packets of data within 500 ms.
- System consists of 4 sensor transmitters and 1 display module
- Sensor modules, which are mounted in each tire by either a stainless steel strap or a metal valve, transmit pressure and temperature when the car is moving or stationary.
- The display module, which houses the receiver and the computer, is mounted on the visor or dash inside the car and powered via the cars battery.
- When tire pressure decreases the sensor transmits more frequently and the receiver module displays a warning.
- The Gen II receiver module consists of the following:
 - Basic receiver module with LED display (5 LEDS)
 - High end display (LCD display which plugs into the low end module)
 - Power cord with cigarette lighter adaptor
 - Extension cable (7.5 foot) to remotely mount the LCD module further away from the basic receiver module.
 - Gooseneck adaptor module (which the receiver plugs into) to use in place of the power cord.
 - Mounting hardware (to mount the receiver in the car).

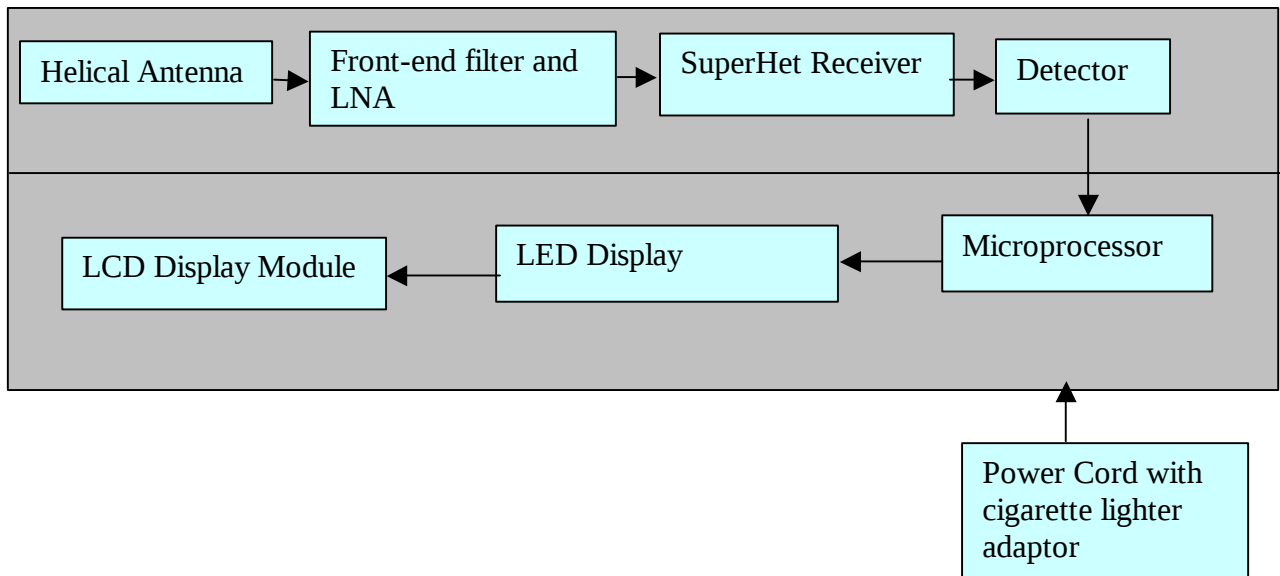
Technical Description of the SmarTire Gen II Receiver

The SmarTire Gen II Receiver receives wireless signals transmitted from the sensor modules (which are mounted inside the tires of the automobile. The signal is then demodulated by the receiver and processed by a microprocessor. The information is then displayed on either the LED or LCD display. The following table 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):	-113 dBm $\pm$ 2 dBm
6. LO emissions:	< 200 uv/m @ 3 meters

7. Temperature Range: -40 to 85 °C

Functional Block Diagram of the 433 MHZ GEN II 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 into 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 then displays the information on a LED or LCD display.