The HP-RXM is a high performance, eight channel, dual conversion superhet FM receiver capable of receiving digital data. Digital information is modulated at the transmitter using FSK , the binary for of frequency modulation. The RF signal coming in from the antenna is filtered by a SAW filter. The filtered signal is then amplified by a low-noise amplifier to increase the receiver sensitivity and lower the overall noise figure of the receiver. After the LNA the signal is mixed with a synthesized local oscillator to perform the first frequency conversion.

The first IF frequency is 14.7 MHz. This frequency is achieved by setting the synthesizer frequency to a value that is 14.7 MHz higher than the incoming RF energy from the antenna. The 14.7 MHz IF frequency also inherently eliminates the low image for the second conversion to 10.7 MHz, thus eliminating the possibility of an in-band image from an unwanted source.

A high performance IF receiver strip is used to perform the second conversion and the FM demodulation. The IF strip takes the 14.7 MHz frequency from the first conversion, mixes it with a high precision 4.0 MHz crystal oscillator generated frequency to produce the second IF of 10.7 MHz and amplifies it preparation for FM demodulation.

FM demodulation is achieved with an on board gilbert multiplier. The output of the IF strip is a demodulated waveform that, after filtering, very closely resembles the original waveform.

An on board micro controller is used to manage the receiver function and to provide a simple interface to the external circuitry. The micro controller performs the following functions: 1) Frequency Synthesizer Programming. The micro controller reads the three channel select input lines and programs the frequency synthesizer registers to the proper values for a given channel, 2) Baseband Data Qualification. The micro controller monitors the signal quality and squelches the data output when the signal is not strong enough for accurate data detection