ABSTRACT

Radio communication technology is currently evolving towards convergence. Previously SDR (Software Defined Radio) is only used by amateur radio limited to communications only, but with the presence of SDR technology will have a huge impact on the development of technology in the field of radio communications. SDR technology can replace multiple devices in a certain range of frequencies and modes, primarily in military tactical equipment, so it has a light weight, smaller dimensions and is reconfigurable.

In this study, design and construction will be done RF front end devices that can be used on the VHF 144 – 148 MHz FM modulation with an audible sound and low noise, so that the resulting good performance. RF front end is designed using direct conversion architecture, where the incoming RF signal will go down to baseband. This component simulation using Agilent ADS 2009 software and design to PCB boards using Altium Designer Summer 9. Then made, followed by prototype for testing.

From the measurement results obtained by this system is quite good, because it has a signal level of -49.4 dBm with MDS approximately -90 dBm and SFDR 15.6 dB. In addition to the sub-system level, namely oscillator having an average output signal is -1.73 dBm for frequencies 144-148 MHz, although the filter does have a section of -11.262 dB attenuation. But literally, an RF front end can be changed in accordance with the wishes of the manufacturer, then the testing of the filter removed so that the antenna directly to the device sends downconverter.

Keywoord: SDR *(Software Define Radio)*, *RF Front End*, ADC, DSP, *receiver*, *direct conversion*