In at least one embodiment, a receiver includes a receiver signal path configured to provide digital IQ signals corresponding to an in-phase component of a received radio frequency signal and a quadrature component of the received radio frequency signal. The receiver includes a demodulator configured to provide an instantaneous frequency signal based on the digital IQ signals. The receiver includes a selectable filter configured to provide output digital IQ signals based on the digital IQ signals and a center frequency. The receiver includes a select circuit configured to select the center frequency of the selectable filter according to whether an interfering signal is detected in a target frequency band of the received radio frequency signal. The center frequency is selected from a predetermined frequency and an estimated center frequency determined using the instantaneous frequency signal.

In at least one embodiment, a program product is encoded in a tangible machine-readable medium. The program product includes instructions executable by a processor to: receive digital IQ signals corresponding to an in-phase component of a received radio frequency signal and a quadrature component of the received radio frequency signal; demodulate the digital IQ signals to generate an instantaneous frequency signal; select a center frequency of a selectable filter according to whether an interfering signal is detected in a target frequency band of the received radio frequency signal, the center frequency being selected from a predetermined frequency and an estimated center frequency determined using the instantaneous frequency signal; and filter the digital IQ signals using the selectable filter to generate an output digital signal.

SUMMARY

In one aspect, the present disclosure refers to a method for reducing a dynamic range of a received radio frequency signal, the method comprising receiving digital IQ signals corresponding to an in-phase component of the received radio frequency signal and a quadrature component of the received radio frequency signal, demodulating the digital IQ signals to generate an instantaneous frequency signal, selecting a center frequency of a selectable filter according to whether an interfering signal is detected in a target frequency band of the received radio frequency signal, the center frequency being selected from a predetermined frequency and an estimated center frequency determined using the instantaneous frequency signal, and filtering the digital IQ signals using the selectable filter configured using the center frequency to generate output digital IQ signals.

In another aspect, the present disclosure refers to a receiver comprising, a receiver signal path configured to provide digital IQ signals corresponding to an in-phase component of a received radio frequency signal and a quadrature component of the received radio frequency signal, a demodulator configured to provide an instantaneous frequency signal based on the digital IQ signals, a selectable filter configured to provide output digital IQ signals based on the digital IQ signals and a center frequency, and a select circuit configured to select the center frequency of the selectable filter according to whether an interfering signal is detected in a target frequency band of the received radio frequency signal, the center frequency being selected from a predetermined frequency and an estimated center frequency determined using the instantaneous frequency signal.

In yet another aspect, the present disclosure refers to a program product encoded in a tangible machine-readable medium, the program product comprising instructions executable by a processor to, receive digital IQ signals corresponding to an in-phase component of a received radio frequency signal and a quadrature component of the received radio frequency signal, demodulate the digital IQ signals to generate an instantaneous frequency signal, select a center frequency of a selectable filter according to whether an interfering signal is detected in a target frequency band of the received radio frequency signal, the center frequency being selected from a predetermined frequency and an estimated center frequency determined using the instantaneous frequency signal, and filter the digital IQ signals using the selectable filter to generate an output digital signal.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be better understood, and its numerous objects, features, and advantages made apparent to those skilled in the art by referencing the accompanying drawings.

Figure 1 illustrates a functional block diagram of an exemplary receiver signal path including a tracking and rejection filter consistent with at least one embodiment of the invention.