



# Patents

With unrivaled expertise in railroad technological solutions, we are firmly committed to continuous innovation. Our team of seasoned engineers work diligently to create new technologies to move the railroad industry forward.

Patent Number	Patent Link	Patent Abstract
US-10469586-B2 CA-2919646-A1	<a href="#"><u>Host-radio exchange interface for railroad communications and railroad communications methods using the same</u></a>	A method of exchanging messages between a railroad communications system radio operating in accordance with a host-radio exchange protocol and a railroad messaging system.
US-2019126961-A1 US-10160466-B1 (Continuation)	<a href="#"><u>Systems and Methods for Interfacing a Railroad Centralized Traffic Control Wayside and a Railroad Centralized Traffic Control Office Using Interoperable Train Control Messaging</u></a>	A method of exchanging centralized train control (CTC) messages in a railroad communication system includes generating a message having a format defined by a protocol with an application running on a sending one of a railroad wayside system and a railroad dispatch system.
US-9,840,260 CA-2888557-C	<a href="#"><u>Systems and methods for using a railroad rail as radiating element for transmitting wireless communications signals</u></a>	A railroad communication system includes a radio transmitter for generating radio communications signals and a length of railroad rail coupled to the radio transmitter.
US-2017324384-A1	<a href="#"><u>Systems and Methods Using Digital Pre-distortion to Linearize Radio Transmitter Operation</u></a>	A method of linearizing a relationship between a signal to an amplifier and an output signal from the amplifier includes applying an inverse of a transfer function of the amplifier to the signal prior to presenting the signal as the amplifier input.
US-2017324384-A1	<a href="#"><u>Systems and Methods Using Digital Pre-distortion to Linearize Radio Transmitter Operation</u></a>	A method of linearizing a relationship between a signal to an amplifier and an output signal from the amplifier includes applying an inverse of a transfer function of the amplifier to the signal prior to presenting the signal as the amplifier input.
US-8,605,754 CA-2960856-C	<a href="#"><u>Systems and methods for interoperability positive train control</u></a>	A method for implementing communications in a railroad communications system having a base station radio and remote radios, the remote radios including a mobile radio and a wayside radio.
US-8374291-B1	<a href="#"><u>Methods for bit synchronization and symbol detection in multiple-channel radios and multiple-channel radios utilizing the same</u></a>	A radio receiver including a memory storing a reference sample sequence and a synchronizer.
US-8279796-B1	<a href="#"><u>Multiple-channel software defined radios and systems using the same</u></a>	A radio system including a selected number inputs for substantially simultaneously receiving radio signals in different frequency bands and a selected number of conversion paths for converting the radio signals received at corresponding ones of the inputs into a corresponding number of digital streams.
US-7974246-B1	<a href="#"><u>Adaptive time division multiple access systems and methods</u></a>	A method for exchanging information within a radio communications system.
US-8032078-B1	<a href="#"><u>Wayside monitoring systems</u></a>	An interface device for interfacing a set of wayside systems with a radio transmitter includes a plurality of input ports each having at least one input for receiving a signal representing a state of a corresponding wayside system and first and second parallel data paths coupled to the plurality of input ports.