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A WIRELESS COMMUNICATION TRANSCEIVER SYSTEM BASED ON PROXIMITY-1 SPACE  
LINK PROTOCOL

**Abstract**

Proximity space communication links are short, two-way, fixed or mobile wireless links, which are used to communicate between detector, lander, patrol unit, rail constellation and relay satellite. According to the characteristics of the proximity space communication links environment and the proximity-1 space link protocol which is issued by the Consultative Committee for Space Data Systems (CCSDS), this paper proposes a realization scheme of the proximity space communication transceiver system which includes the transmitter and the receiver. Based on the basic wireless communication architecture, the (2,1,7) convolution code and CRC-32 cyclic redundancy code are used to improve the reliability of the information transmission. Because the communication links have the characteristics of multipath fading channels, the scheme uses the channel estimation and equalization by using attached synchronization marker (ASM) which is in the front of every transmission frame as the training sequence to eliminate the influence of channel. Finally, combined with the actual situation and the system parameters required in the recommend standards, the transceiver system performance is analyzed and the key technologies are evaluated. The simulation results verify the effectiveness of the scheme. The scheme has very high references for the design of proximity space communication system.