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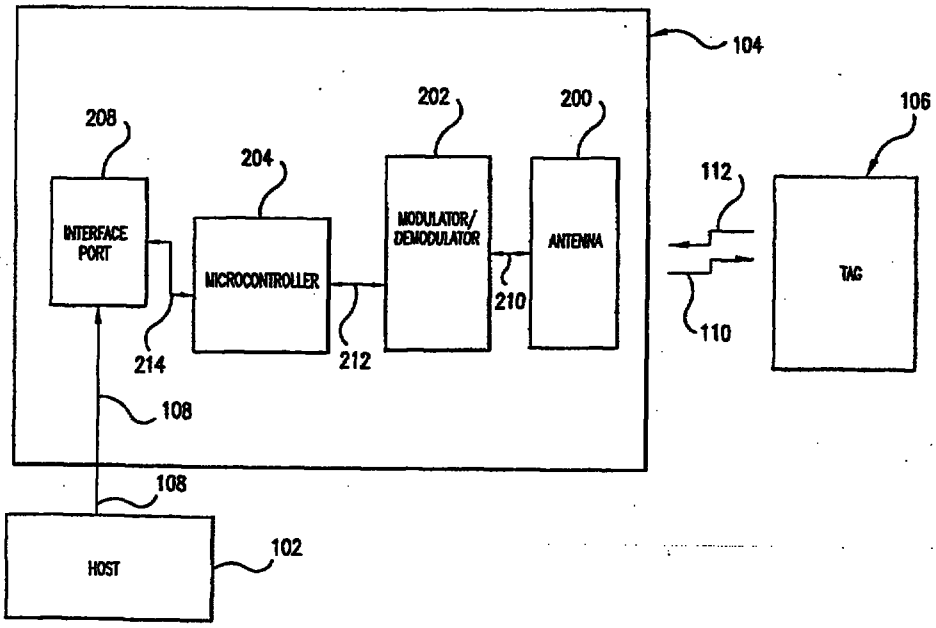
(54) Title: CONTACTLESS PROXIMITY AUTOMATED DATA COLLECTION SYSTEM AND METHOD

(57) Abstract

A fast data transfer collection system using message authentication and contactless RF proximity card technology in non-contact storage and retrieval applications. The system is generally comprised of Host computers (application computer systems), Target radio frequency (RF) terminals, and a plurality of portable Tags ("smart" or "proximity" cards). A Host provides specific application functionality to a Tag holder, with a high degree of protection from fraudulent use. A Target provides control of the RF antenna and resolves collisions between multiple Tags in the RF field. A Tag provides reliable, high speed, and well authenticated secure exchanges of data/information with the Host resulting from the use of a custom ASIC design incorporating unique analog and digital circuits, nonvolatile memory, and state logic. Each Tag engages in a transaction with the Target in which a sequence of message exchanges allow data to be read (written) from (to) the Tag. These exchanges establish the RF communication link, resolve communication collisions with other Tags, authenticate both parties in the transaction, rapidly and robustly relay information through the link, and ensure the integrity and incorruptibility of the transaction. The system architecture provides capabilities to ensure the integrity of the data transferred thus eliminating the major problem of corrupting data on the card and in the system. The architecture and protocol are designed to allow simple and efficient integration of the transaction product system into data/information processing installations.