EXHIBIT "C"

TECHNICAL REPORT

CENSUS TAGS

FCC ID: JHD-CEN3

Identec Census Tag Technical Description

This technical description covers the TC1A, TC2A, TC3A, and TC4A tags, all of which use the same ASIC and operate in the same way.

The circuit diagram of the tag is shown, where it can be seen that the tag is built around an E45101 ASIC.

The other major components of the tag are the 38.4kHz crystal, and the 3V lithium battery. The tag uses the same coil for both transmit and receive. The coil is retuned by the fact that output OUT1 switches between low impedance and high impedance states, changing the resonant frequency of the coil from the receive frequency of 153.6kHz and the transmit frequency of 115.2kHz. These frequencies are respectively 4 times and 3 times the crystal frequency.

The tag also contains a phase-locked loop (PLL), for which R5 and C5 set the centre frequency and time constant (with some components inside the ASIC). The PLL is used to decode the incoming signals, and to derive the 115.2kHz output.

The tag has a low current quiescent state, and only starts to respond if it sees a sufficiently large input signal at 153.6kHz. This signal is decoded and if it corresponds to a valid signal from the reader the tag will respond. The tag's response is decoded by the reader, which is able to deduce the tag's identity number.

The identity number of that tag is programmed into the tag during manufacture, using the programming pin. The tag then has a one-time bit set to prevent reprogramming. The programming pin is therefore irrelevant during normal operation.