Author: Roger Lee
Date: 9 November 1999
Filed as: TechDec315.DOC
Updated: 9 November 1999

315 MHz 20TN-1 Technical Description

Type Designation Lucas 20TN-1 315 MHz Radio Key

Declaration of Equipment Characteristics

Type	Transmitter
Frequency Range	315 MHz Fixed ± 200kHz
Method of Carrier Frequency Generation	SAW Oscillator
Adjacent Channel Separation	300KHz
Class of Emission	L1DAN
Type of Modulation	Amplitude
Modulation Signal Input Level	N/A
Modulation Input Impedance	N/A
Modulation Bandwidth	5kHz
Coupling Methods	Electrical
Number of Channels	1
Utilisation	Portable
Duplex operation	No
Antenna	Integral
Alternative Antenna	No
Operating Temperature Range	-10°C to +55°C

Transmitter

Rated Output Power	63 dBµV/m at 3m
C.W. 2nd Harmonic Power	40 dBµV/m at 3m
Voltage supply range	2.5 to 3.3 V DC
Composition of Equipment	Single Unit

Brief Description Of Operation.

The product has two sections: an rf generator and a custom chip which provides the data input for the rf section. A block diagram of the 20TN-1 is shown in figure 1. The data is pulse-width encrypted and then amplitude modulated onto the rf carrier using a non-return-to-zero code at a maximum of 1k baud. The clock generator for the coding chip is crystal controlled. The message length is 56 bits. A rolling code system is used for added security.

When one of the transmitter buttons (‘lock’, ‘unlock’ or ‘trunk unlock’) is depressed and released, a single burst of rf is transmitted. This transmission is an rf signal amplitude modulated with a pulse train (see figures 2 and 3). If a transmitter button is depressed and held, an extended rf signal is transmitted until the button is released (see figure 4).

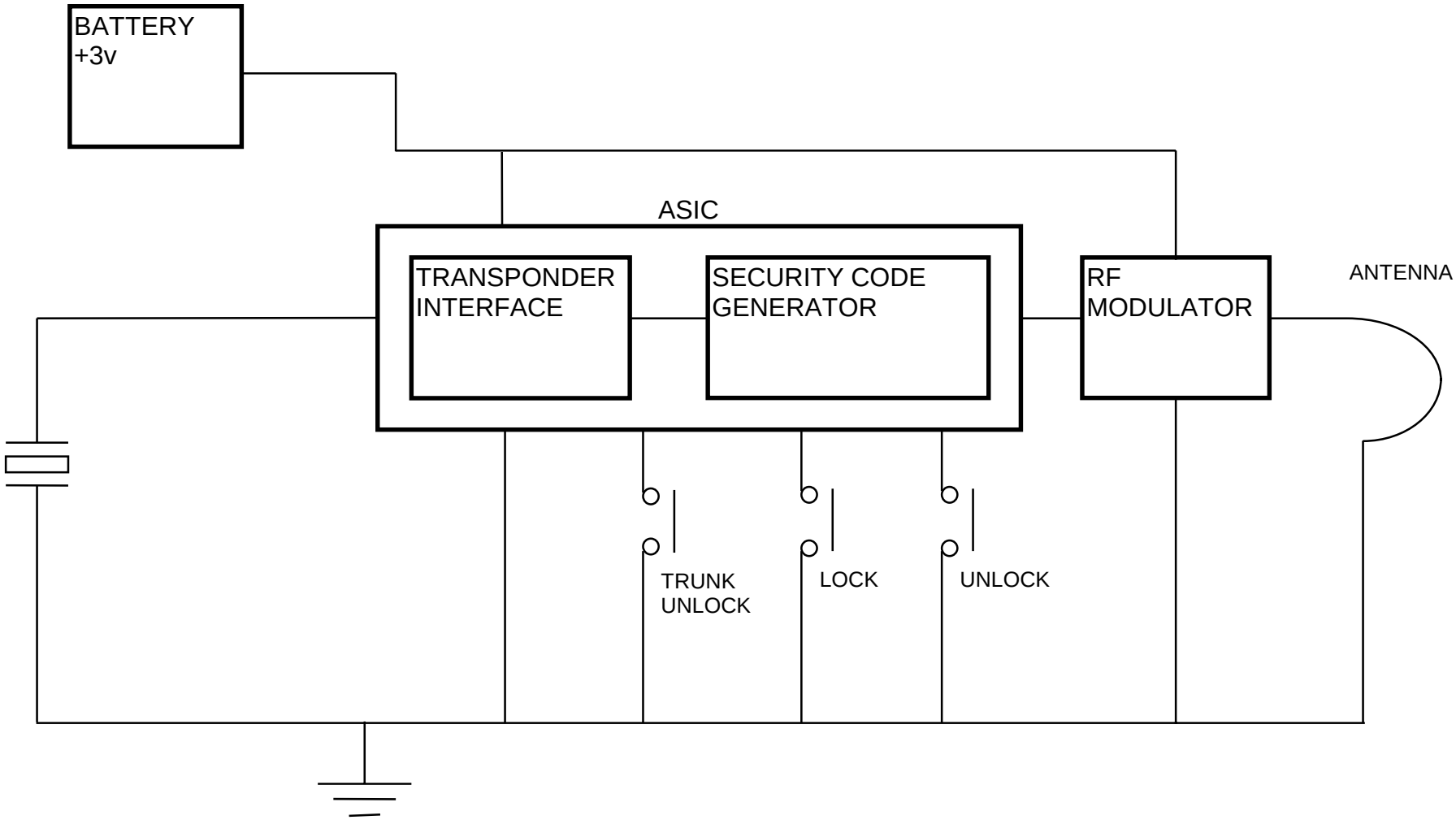
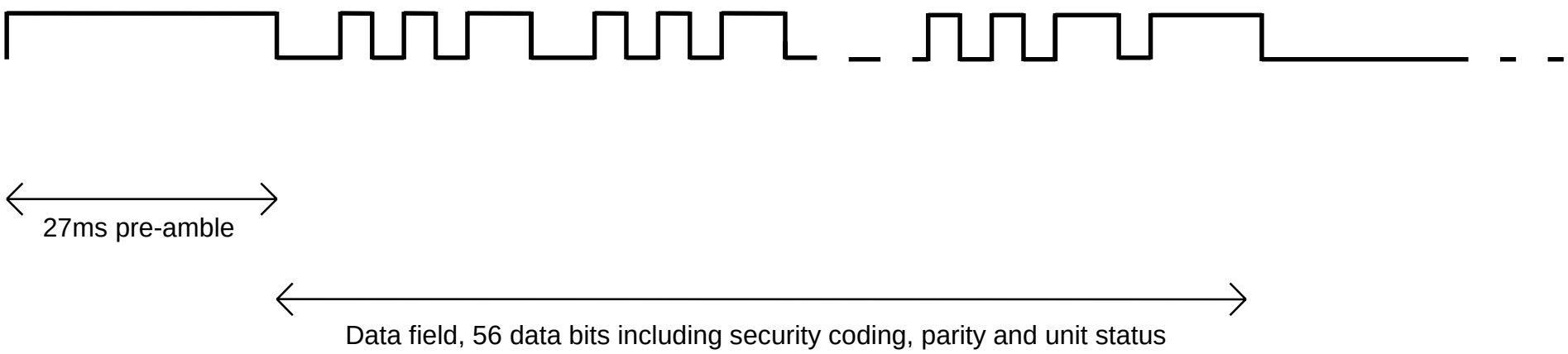


Figure 1 20TN-1 Block Diagram

Figure 2 Transmitter Output Diagram



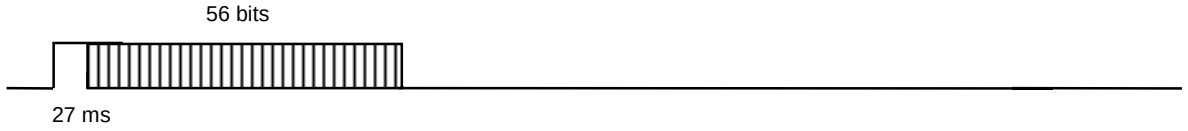


Figure 3 20TN-1 Output with Button Depressed & Released

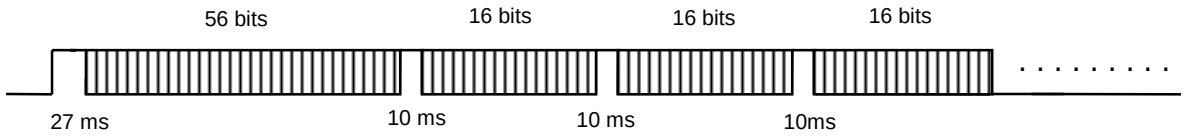


Figure 4 20TN-1 Output with Button Depressed & Held