

FUNCTIONAL DESCRIPTION

The 5805-6A is a remote key-fob type transmitter, used to send arm, disarm, and panic messages to Ademco alarm systems. It may also be used to perform auxiliary control of lighting or garage doors, through the system. It does not send supervisory signals.

CIRCUIT DESCRIPTION

The RF transmitter portion of the 5805-6A key-fob is a single chip (U2) phase locked transmitter, using crystal, YL3 as its FDE. L1 & C9 make up the external tank circuit for the chips internal PA, and L2, C11 provide harmonic suppression, while C10, C12, and C13 match the printed antenna. Microprocessor U1 controls all functions of the key-fob. The 5805-6A comes in a 4 or 6 button version, but the circuit board is the same for both units, only the number of switches changes.

Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. The exact method of calculating the average field strength shall be submitted with any application for certification.

The 5805-6A sends both standard and encrypted messages

Standard 5800 (10%) Duty Cycle Calculation

Message protocol, timing and duty cycle calculation:

The data output is phase-encoded Manchester that has inherent 50% duty cycle and consists of 64 bits per word sent at a nominal data rate of 3.7 kb/s (3.2kb/s min to 4.2kb/s max).

Therefore the duty cycle is calculation is as follows:

The word format consists of 64 bits,

The duration of each bit is 312.5 uSec max.

The duty cycle over a 100 mSec measuring period is calculated as follows:

Duty cycle = Actual RF transmission ON time / 100 mSec

Actual transmission ON time = 64 bits X 50% X 312.5 uSec = 10 mSec

Therefore duty cycle = 10 / 100 mSec = .10 = 10%,
and peak to average field strength is 20 db.

Total on-air time for a supervision transmission is:

$64 \times 312.5 \text{ uSec} + (5 \times 150 \text{ mSec}) = 0.77 \text{ seconds}$

The group of six transmissions is repeated twice, with the second group delayed from the first by a max time of 2 seconds.

The worst case on-air time is $1.54 + 2 = 3.54 \text{ seconds}$

Summary: - Duty cycle = 10%

On airtime = 3.54 seconds

ROLLING CODE ENCRYPTION (14.3%) - HCS 300 ENCODER MESSAGE

$$T_E = 3+1+10+11+4 = 29$$

Calculation is basis of worst case data content in order to maximize duty cycle On-time.

Message packet is as follows:

2.3mS preamble

1.0ms header

62 bits at data '0'

4 bits at data '1'

3.9mS guard

$$\text{Total Message packet Time} = ((23 + 10 + (66 \times 3)) \times 0.1) + 3.0 = 23.1 + 3.9 = 27.0 \text{ mS}$$

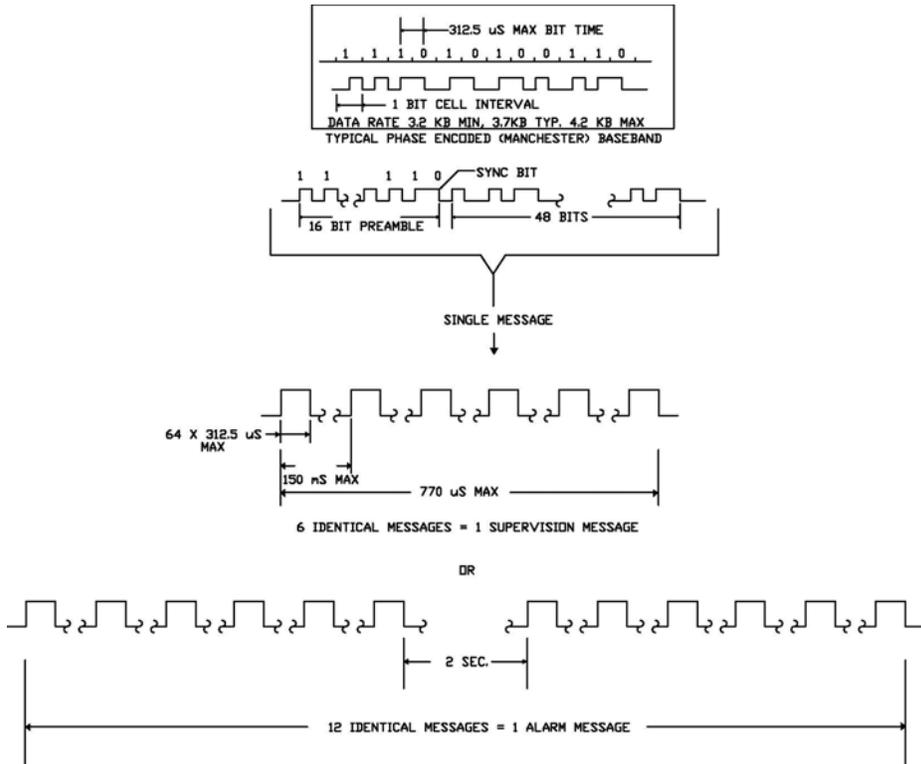
$$\text{Total Message packet On Time} = (23 \times 0.1) + ((66 \times 2) \times 0.1) = (155 \times 0.1) = 15.5 \text{ mS}$$

Therefore the duty cycle for the peak to average power conversion is:

$$\text{Duty Cycle} = \frac{15.5}{(27.0 \times 4)} = 14.3 \%$$

Section 15.255(b), The exact method of calculating the average field strength shall be submitted with any application for certification.

5800 (10%) Messages:



Rolling code encryption (14.3%) with the HCS 300 Encoder:

