



845 Larch Ave.  
Elmhurst, IL 60126  
phone 630.993.6306  
fax 630.530.6140  
email: barbara.kelkhoff@chamberlaingroup.com

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Federal Communications Commission  
EQUIPMENT APPROVAL SERVICES  
PO Box 358315  
Pittsburgh, PA 15251-5315

Re: Request for Certification

Enclosed is an application, fee in the amount of \$895, and exhibits for Certification of a Remote Control Transmitter, Model 1A5232-1.

The final instruction sheet is not available at this time, so I have included a typical instruction sheet indicating the FCC statement and important information.

The FCC ID of this model, upon certification, will be HBW1337.

We would appreciate your prompt attention to the submittal.

Sincerely,  
THE CHAMBERLAIN GROUP, INC.

A handwritten signature in black ink that reads "Barbara P. Kelkhoff". The signature is written in a cursive, flowing style.

Barbara P. Kelkhoff  
Manager, Product Safety

**LIST OF EXHIBITS**  
**3 FUNCTION, REMOTE CONTROL TRANSMITTER**  
**MODEL 41A5232-1**

1. Expository Statement
2. Theory of Operation
3. Schematic
4. Photographs
5. FCC Label Drawing
6. Operating Instructions
7. Test Report

**EXPOSITORY STATEMENT  
REMOTE TOUCHCODE TRANSMITTER  
MODEL 41A5232-1**

1. Since the final instruction sheet is not available at this time, a marked-up typical version has been included. The instructions include statements required to assure compliance with the Commission's Rules; Part 15.
2. Labeling is in accordance with the Commission's labeling requirements, Parts 2 and 15, Section 15.19.
3. This transmitter is intended for use with the certified receivers of our manufacture only.
4. The transmitter is equipped with an automatically releasing push-button switch. Transmission is terminated upon release of the push-button.
5. The 41A5232-1 is factory set to  $433 \pm 0.1\%$  MHz. It is not intended to be readjusted in the field, and specific instruction prohibiting tampering are provided to the user.
6. Test data for the Model 41A5232-1 is part of this submission. No emissions were detected in the forbidden bands below 1.0 GHz.

Certified by:   
Barbara P. Kelkhoff  
Manager, Product Safety

**THEORY OF OPERATION AND  
CIRCUIT DESCRIPTION  
MODEL 41A5232-1  
REMOTE TOUCHCODE TRANSMITTER**

(Please refer to enclosed schematic drawing: 195D1337A)

The model 41A5232-1 transmitter uses a 4 digit number entered on a numeric keypad to determine the code that will be transmitted. The sequence of operation is to press 4 digits on the keypad, then press and hold the "ENTER" button (within 10 seconds of entering the last digit of the code) to operate the desired receiving device (usually a garage door opener). RF transmission begins when the "ENTER" button is pressed and continues until the button is released or 52 seconds elapses, whichever comes first.

The transmitter consists of a low power RF oscillator (Q1 and related parts), a digital encoder (U1 and related parts), a voltage regulator (Q3 and related parts), and a keypad having buttons labeled "0" through "9" and "ENTER".

Operation is initiated by pressing any one of the buttons on the keypad. This turns on transistor Q4 through diodes D7, D8 or D9, which supplies current to zener diode D5. The voltage developed across D5 provides bias to the voltage regulator circuitry of Q3. The regulator applies 5V to the VCC input of U1 which causes the microprocessor to begin operation by turning on Q6 which acts to keep the voltage regulator on when the button is released.

After 4 numeric buttons have been pressed, activation of the "ENTER" button will cause a digital PWM signal to appear at pin 17 of U1. This signal drives and modulates the RF oscillator.

The RF oscillator is of the grounded base type. C1, C2, C11 and C12 and foil inductor, L1, set the oscillator's center frequency to 433 MHz. R1-R3 establish DC bias conditions. L2 and L3 reduce harmonic output.

In order to preserve battery life, U1 turns Q6 off when operation has ended. Turn-off occurs 20 seconds after the last RF transmission.

LEDs, D1-D3 and D11-D13, provide back illumination to the keypad.

# **1. EXPOSITORY STATEMENT**

## **2. THEORY OF OPERATION**

### **3. SCHEMATIC**

## **4. PHOTOGRAPHS**

## **5. FCC LABEL DRAWING**

## **6. OPERATING INSTRUCTIONS**

## **7. TEST REPORT**