CHAMBERLAIN

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

March 20, 2001

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 $985, and exhibits for Certification of a Remote Control Transmitter 984LM, which is manufactured by Chamberlain.

I have included a typical instruction sheet indicating the FCC statement and important information.

The FCC ID of this model, upon certification, will be HBW1A5454.

We would appreciate your prompt attention to the submittal.

Sincerely,
THE CHAMBERLAIN GROUP, INC.

Barbara P. Kelkhoff

Barbara Kelkhoff
Manager, Product Safety

LIST OF EXHIBITS
4 FUNCTION, REMOTE CONTROL TRANSMITTER
Model 984LM

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

EXPOSITORY STATEMENT
4 FUNCTION, REMOTE CONTROL TRANSMITTER
Model 984LM

1. 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 garage door and gate operator systems manufactured by Chamberlain®.

4. The transmitter is equipped with an automatically releasing push-button switch. Transmission is terminated upon release of the push-button.

5. The Model 984LM transmitter is factory set to 390 ± 0.1% MHz.. It is not intended to be readjusted in the field, and specific instructions prohibiting tampering are provided to the user.

6. Test data for Model 984LM which is part of this submission. No emissions were detected in the forbidden bands below 1.0 GHz.

Certified by: Barbara P. Kelkhoff

Barbara P. Kelkhoff
Manager, Product Safety

TRANSMITTER CIRCUIT DESCRIPTION
FOR MODEL 984LM

The 4 Channel Narrow Band Transmitter Model 984LM.

Microprocessor and EEPROM - U1 is an 8-bit micro controller, which contains program and RAM memory. U2 is a x-bit non-volatile device, which holds the transmitter code information, and allows codes to be field programmable. The microprocessor timing is based on an on-board oscillator with an external 4 MHz ceramic resonator, Y1. The microprocessor provides the logic output to latch that keeps power on once a button press is detected, the LED drive, and the code output that excites the RF section.

RF Circuit - The transmit oscillator generates the RF energy which conveys the code information to the receiver. Capacitor C7, L1, and the PC board trace form the inductive radiating element of the circuit and are driven by Q1, the active device of the oscillator. The code information output of the micro excites the 390MHz SAW1, which is the frequency-determining device. L2 choke conveys battery power to the oscillator, and R4 provides base current to Q1 to turn the oscillator on and off. R3 provide biasing for the oscillator. Capacitors C2, C3, and C6 are dc blocking components that provide a RF circuit short.

Switches and Power supply - Power is provided by 2 6-volt lithium battery cells. Q2, Q3, D1, D3, R1, R2, R16, and R5 form an electronic power switch, which along with the microprocess create a resettable latch that keeps the power on when required. R6-9, R12-14, S1-S4, and pins RB0-RB3 form the circuit, which detect button activation. The 4 buttons mean that the transmitter is capable of 4 - channel operation. The yellow LED, D2 and the current limiting resistor R15 provide visual feedback that the transmitter is operational.

1. EXPOSITORY STATEMENT

2. THEORY OF OPERATION

3. SCHEMATIC

4. PHOTOGRAPHS

5. FCC LABEL DRAWING

6. OPERATING INSTRUCTIONS

7. TEST REPORT