

SUBMITTAL FOR CERTIFICATION

B8Q WKF99

A GARAGE DOOR TRANSMITTER

FROM

The Genie Company / GMI Holdings Inc.
22790 Lake Park Blvd.
Alliance, Ohio 44601

a wholly owned subsidiary of
Overhead Door Corporation

By

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Date: Sept 15, 1999

Guidelines for this document were derived from the following sections:

2.1033	Application for certification
15.19	Labeling requirements
15.31	Measurement standards
15.33	Frequency range for radiated measurements
15.35	Emission Limits
Subpart C - Intentional Radiators	
15.205	Restricted bands of operation
15.209	Radiated emission limits, general requirements
15.231	Periodic operation within the band
	40.66 - 40.70 Mhz and above 70 Mhz

I certify:

- 1) That the enclosed data is an accurate and truthful representation of the product as tested using ANSI 63.4-1992.
- 2) That the device meets all the requirements of 15.205, 15.209, and 15.231.

Note: Use View Page Layout and Zoom to view pictures and tables.

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TEST EQUIPMENT LIST

<u>DEVICE</u>	<u>MODEL</u>	<u>SERIAL</u>
Signal Generator	HP 8644A	2933A00424
Spectrum Analyzer	HP 8566B	2847A04964
Display		2816A15853
Quasi-Peak Adapter	HP 85650A	2524A00802
Amplifier	HP 8447D	2443A03986
Dipole Set	CD "Robert's" Set	351
Horn Antenna	Emco 3115	2268
Coax (100')	Belden 8214	N/A
Amplifier	HP8449B	3008A00576

All above equipment verified to be within manufactures specifications Sept 15,1999.

Site Description

Located at 22790 Lake Park Blvd. Alliance, Ohio. A complete description of the site is on file with the FCC.

B8Q WKF99
TECHNICAL REPORT

MANUFACTURER

The Genie Company / GMI Holdings Inc.
22790 Lake Park Blvd.
Alliance, Ohio 44601

MULTIPLE LISTINGS OF TRANSMITTERS

The Genie Company conducts business under the following trade names:

The Genie Company
The Alliance Manufacturing Company
GMI Professional Access Systems
Overhead Door Corporation

MODEL

TRADE NAME

GWKIC-BL
GWKIC-12
OWK-CD

GMI Professional Access Systems
GMI Professional Access Systems
Overhead Door Corporation

WIRELESS KEYPAD ENTRY SYSTEM

INSTALLATION AND PROGRAMMING INSTRUCTIONS

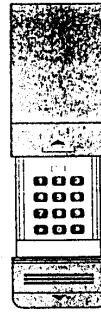
IMPORTANT PROGRAMMING INFORMATION

To insure proper programming and installation you will need to do the following:

- 1 **INSTALL THE KEYPAD**
- 2 **DETERMINE YOUR DOOR CODE**
- 3 **SELECT YOUR PERSONAL IDENTIFICATION NUMBER (PIN)**
- 4 **PROGRAM THE KEYPAD**
- 5 **TEST OPERATION**

OPERATING FEATURES

- **Quick, Easy, Wireless Installation.** Mounts with only two screws, and powered by a standard 9 volt battery (included).



NOTE: This Keypad must be programmed before use.

CAUTION

There are NO Security Code Switches inside Keypad.
DO NOT open Keypad case.

- **Power Saver.** Slide up Keypad Cover to automatically turn on unit. If cover is left up, the unit will shut off approximately one minute after the last button is pressed.
- **Low-Power Warning.** When LED does not flash, battery needs to be replaced. The unit will continue to function for a limited period of time.
- **No Memory Loss** When battery dies or is replaced.

SAFETY / SECURITY FEATURES

- **Unique Slide-Up Keypad Cover** provides maximum security and helps protect Keypad from the elements.
- **Two-step Programmability** for maximum security and user convenience.
- **Any Key Operation.** After correct code is entered and door activated, depress any key within 30 seconds to control door.
- **Security Lock-Out.** After three incorrect Personal Identification Numbers (PIN) are entered, the unit will shut off for one minute.

1 INSTALLATION INSTRUCTIONS

NOTE: Read WARNING below before starting.

- Step 1-1** Mount Wireless Keypad on a flat vertical surface with enough room above to slide cover up. Pick location out of path of moving garage door and supporting hardware. **Fig. 1**
- Step 1-2** Slide Keypad Cover up and pull off Wireless Keypad. Slide off battery cover and remove battery. **Fig. 2**
- Step 1-3** Mark two holes by tapping a small nail through screwholes on Keypad. Drill 1/16" pilot holes then fasten with #6 screws enclosed. Replace Keypad Cover.
- Step 1-4** Replace battery and slide battery cover back into place.

WARNING

MOVING DOORS CAN INJURE PEOPLE OR PETS

MOUNT WIRELESS KEYPAD:

- Where door can be seen.
- Out of reach of children.
- Where user cannot stand under or near moving door.

FOR MAXIMUM SAFETY:

- Show everyone who will use Door Operator how to do it safely.
- Operate door only when it's fully visible.
- Do not operate door when anyone is in the door area.
- Do not allow anyone to run under moving door.
- Do not allow children or pets to play under door.
- Do not let children play with controls.

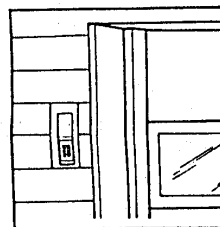


Fig. 1

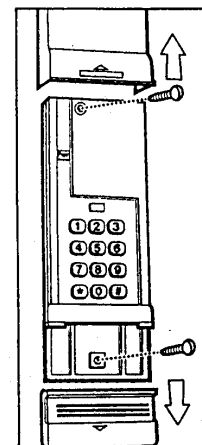


Fig. 2

2

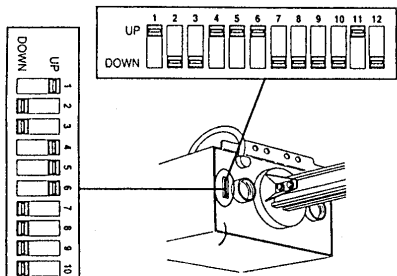
DETERMINING YOUR DOOR CODE

The DOOR CODE is a 3 or 4 digit number created from the switch settings on your Door Operator.

- Step 2-1** Locate Operator Code Switches on Door Operator. **Fig. 3**
- Step 2-2** Mark down your Operator Switch Settings by circling U (Up) or D (Down) for each switch setting. **Fig. 4**
- Step 2-3** Convert each group of three switch settings to a group number shown in **CHART A**.
- Step 2-4** Fill in 3 DOOR CODE numbers for 9 Code Switches and 4 DOOR CODE numbers for 12 Code Switches. **Fig. 4**

NOTE: On new operator installation you MUST set Operator Code on Door Operator and Remote Control Transmitters before you begin programming this Wireless Keypad. Refer to the Owner's Manual for setting these switches. If you have not done this on your existing Door Operator, DO SO NOW!

If your Door Code is 7, 7, 7 or 7, 7, 7, 7 DO NOT CONTINUE. Refer to your Owner's Manual for setting of Door Operator and Remote Controller Security Code Switches. DO NOT LEAVE AT FACTORY SETTINGS!



DOOR OPERATOR CODE SWITCH SETTINGS											
1	2	3	4	5	6	7	8	9	10	11	12
U	U	U	U	U	U	U	U	U	U	U	U
D	D	D	D	D	D	D	D	D	D	D	D
Group 1			Group 2			Group 3			Group 4		

Fig. 4

CHART A

Switch Settings			Group Number
UP	UP	UP	7
UP	UP	DOWN	6
UP	DOWN	UP	5
UP	DOWN	DOWN	4
DOWN	UP	UP	3

EXAMPLE:

The Door Operator Code Switches are set as shown. On the figure below these settings have been circled. The first 3 switches (Group 1) are set UP DOWN DOWN. The switch pattern is matched to the one shown on **CHART A**. The pattern group number is 4. In the space under Group 1 write 4. Repeat this step in each of the 3 groups of settings, writing the matching numbers in the space below. The 4 digit code for the Door Operator example is 4702.

DOOR OPERATOR CODE SWITCHES											
1	2	3	4	5	6	7	8	9	10	11	12
UP											
DOWN											
U	U	U	U	U	U	U	U	U	U	U	U
D	D	D	D	D	D	D	D	D	D	D	D
Group 1			Group 2			Group 3			Group 4		
4			7			0			2		

3

SELECTING YOUR PERSONAL IDENTIFICATION NUMBER (PIN)

Your PIN number can be created from any group of numbers up to 8 digits of your choice. (Do NOT use # or *.)

NOTE: It is NOT good security to use your address, phone number, birthdate, etc.



PROGRAMMING THE KEYPAD

For easy reference write your Door Operator Code Switch Settings from **Fig. 4** here.

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Follow the steps and red light signals listed below:

TO PROGRAM:	ACTION	RED LIGHT
Step 4-1	RESET KEYPAD – Slide Keypad Cover half way up. While pressing the # and 8 buttons simultaneously, slide the Keypad Cover up until it latches. Release # and 8 buttons.	Stays lit. Goes out.
Step 4-2	Press 3, 5, 7, and # buttons.	Flashes 1 time per second.
Step 4-3	Enter PIN and press # button.	Flashes 2 times per second.
Step 4-4	Enter Door Code from Fig. 4 and press * button.	Goes out.
Step 4-5	Slide Keypad Cover down.	
Step 4-6	Test Keypad – Go to Section 5 OPERATE.	
TO CHANGE PIN ONLY	Slide Keypad Cover up until it latches. Enter OLD PIN and press # button. Enter NEW PIN and press # button. Press * button. Slide Keypad Cover down. Test Keypad – Slide Keypad Cover up until it latches. Enter PIN and press * button. (Door should operate.) Slide Keypad Cover down.	Flashes once. Flashes 1 time per second. Flashes 2 times per second. Goes out.
TO RESET KEYPAD MEMORY TO FACTORY SETTINGS	Slide Keypad Cover half way up. While pressing the # and 8 buttons simultaneously, slide the Keypad Cover up until it latches. Release # button and 8 button. To begin programming, go to 4 PROGRAMMING – Step 4-2	Stays lit. Goes out.
TO CHANGE DOOR CODE ONLY	Any time you wish to change the DOOR CODE, you MUST first change the Security Code Switch settings on the Door Operator and all Remote Control Transmitters then go to 2 DETERMINING YOUR DOOR CODE. Enter PIN and press # button. Press # button again. Enter NEW DOOR CODE and press * button. Test Keypad – Slide Keypad Cover up until it latches. Enter PIN and press * button. Slide Keypad Cover down.	Flashes 1 time per second. Flashes 2 times per second. Goes out.

IF YOU HAVE ANY PROBLEMS, REFER TO THE TROUBLESHOOTING SECTION.



TO OPERATE KEYPAD

Step 5-1 Slide Keypad Cover up until it latches. Enter PIN and press * button. Slide Keypad Cover down.

6**TROUBLESHOOTING**

PROBLEM	CAUSE	ACTION
Keypad does not light.	1. Keypad Cover not fully open. 2. Dead battery.	1. Pull Keypad Cover up until it catches open. 2. Replace battery.
Door does not open. Red light blinking.	1. Wrong PIN entered.	1. Reenter PIN. 2. (See 4 PROGRAMMING).
Door does not open.	1. Door Code does not match Door Operator.	1. Reenter Door Code. 2. (See 4 PROGRAMMING).

NOTES:

- Battery strength is shown by brightness of red LED light. Open sliding Keypad Cover completely. NO or DIM light indicates weak battery. Replace as soon as possible.
- Programmed memory is not lost while replacing battery.
- For security, occasionally press other buttons or change PIN so all buttons get worn and dirty.
- A blinking red light indicates a wrong PIN was entered. A wrong PIN entered 3 times causes Keypad to shut down temporarily as a security measure.
- While the door is moving, you can control it by pressing any numbered button on the Wireless Keypad. If door begins closing and you need to stop it, press any numbered button on the Keypad and the door will stop operating.

THIS DEVICE SHOULD NOT BE OPENED. THERE ARE NO USER SERVICEABLE PARTS OR OPERATOR CODE SWITCHES INSIDE OF UNIT.

Check your Door Operator System Owner's Manual for more information. If you have questions or need parts, call 1-800-654-3643.

2804223834

EXPOSITORY STATEMENT

TRANSMITTER DESCRIPTION

The transmitter is a keypad garage door entry system for use with receivers designed by The Genie Company / GMI Holdings Inc., a wholly owned subsidiary of Overhead Door Corporation. The transmitter data transmission is a fixed code 10 and 20 KHz data stream with a 50% duty cycle that is decoded by the receiver. Tables are included to detail data structure.

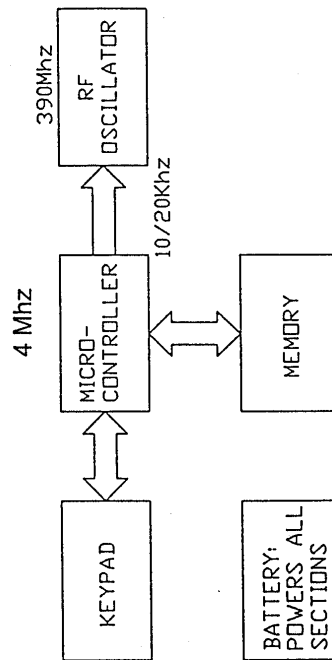
The circuit consists of the following:

- keypad
- micro-controller with resonator controlled oscillator at 4 MHz
- encoder
- RF oscillator (antenna is integral part of the oscillator tank circuit)
- 9 volt battery

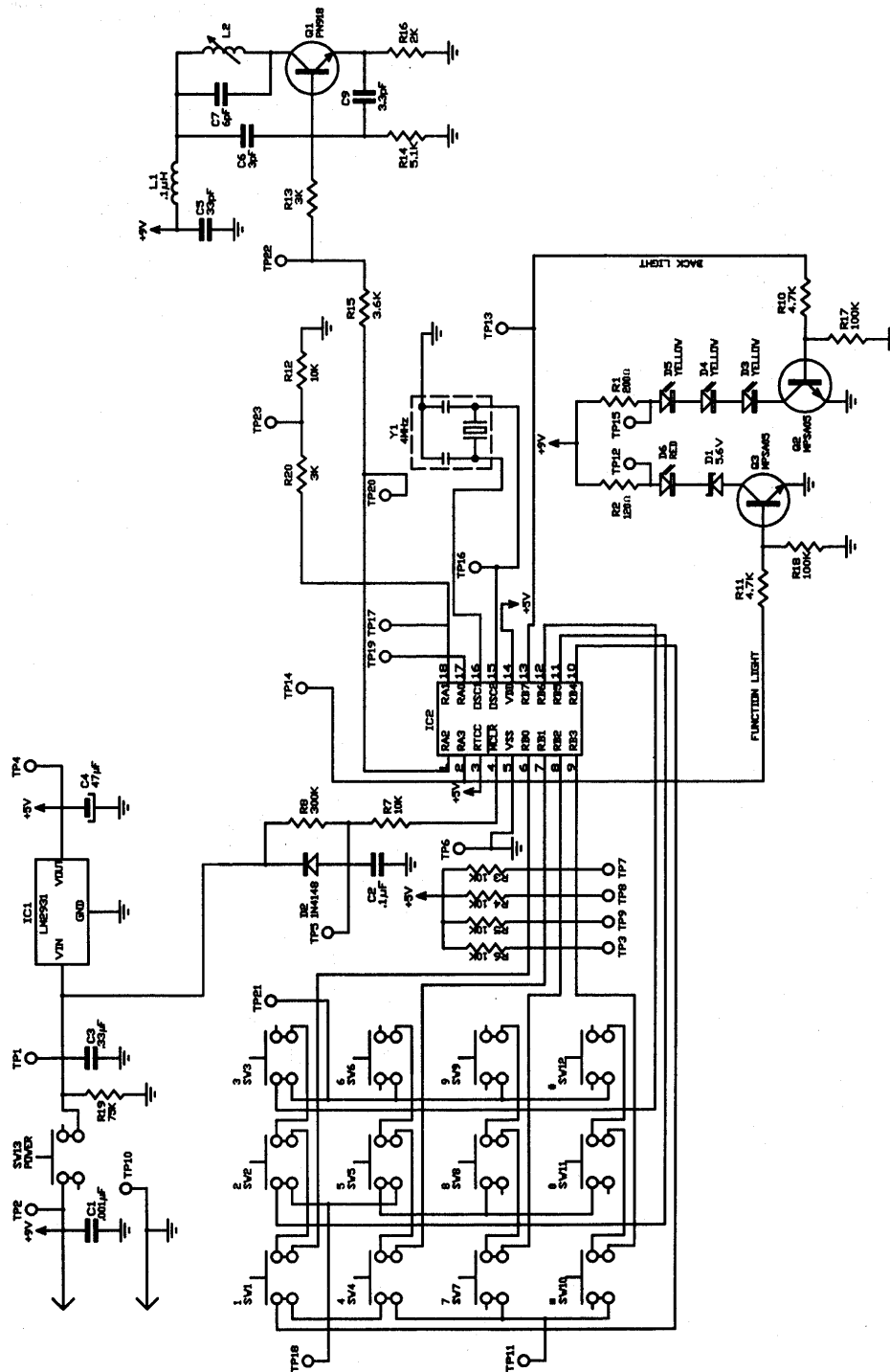
When the user enters the proper code sequence, the encoder modulates an RF carrier which is tuned to a frequency of 390 MHz. See the accompanying schematic and block diagrams.

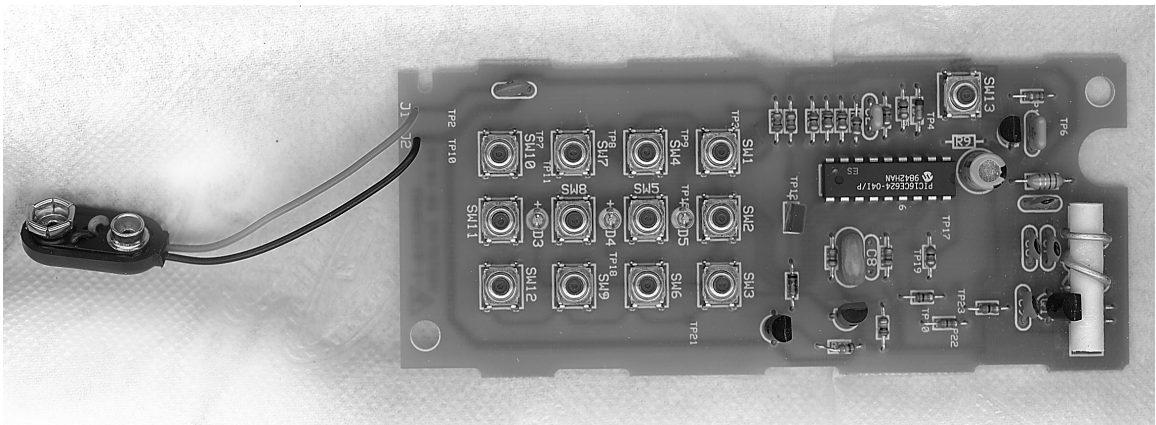
The back of the transmitter has a label with the required FCC text, along with the FCC identifier, B8Q WKF99, and the model number. An accompanying drawing example detailing the label is provided. The position of the label is shown in the accompanying photograph.

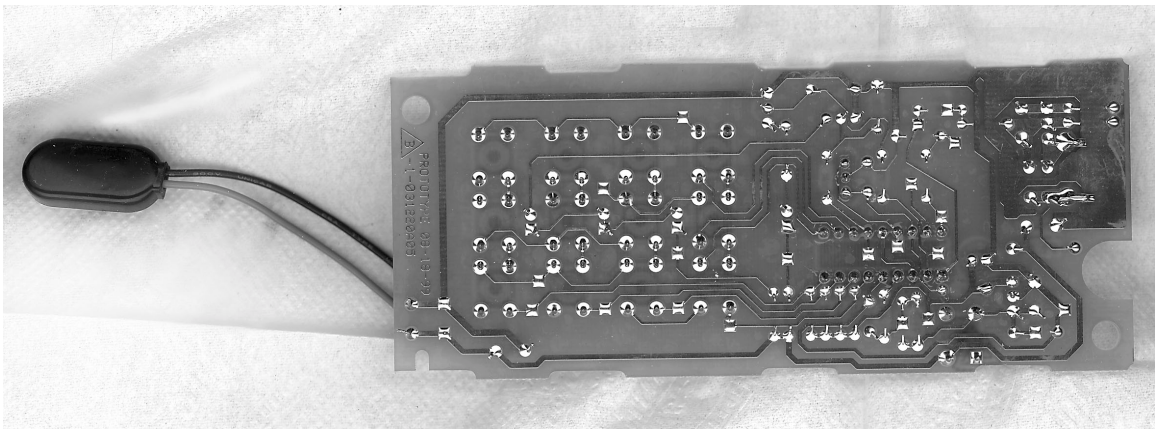
B8Q WKF99



BLOCK DIAGRAM













FCC ID: B8Q WKF99

MODEL GWK

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION OF THIS DEVICE IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE ANY HARMFUL INTERFERENCE. (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE THAT MAY BE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

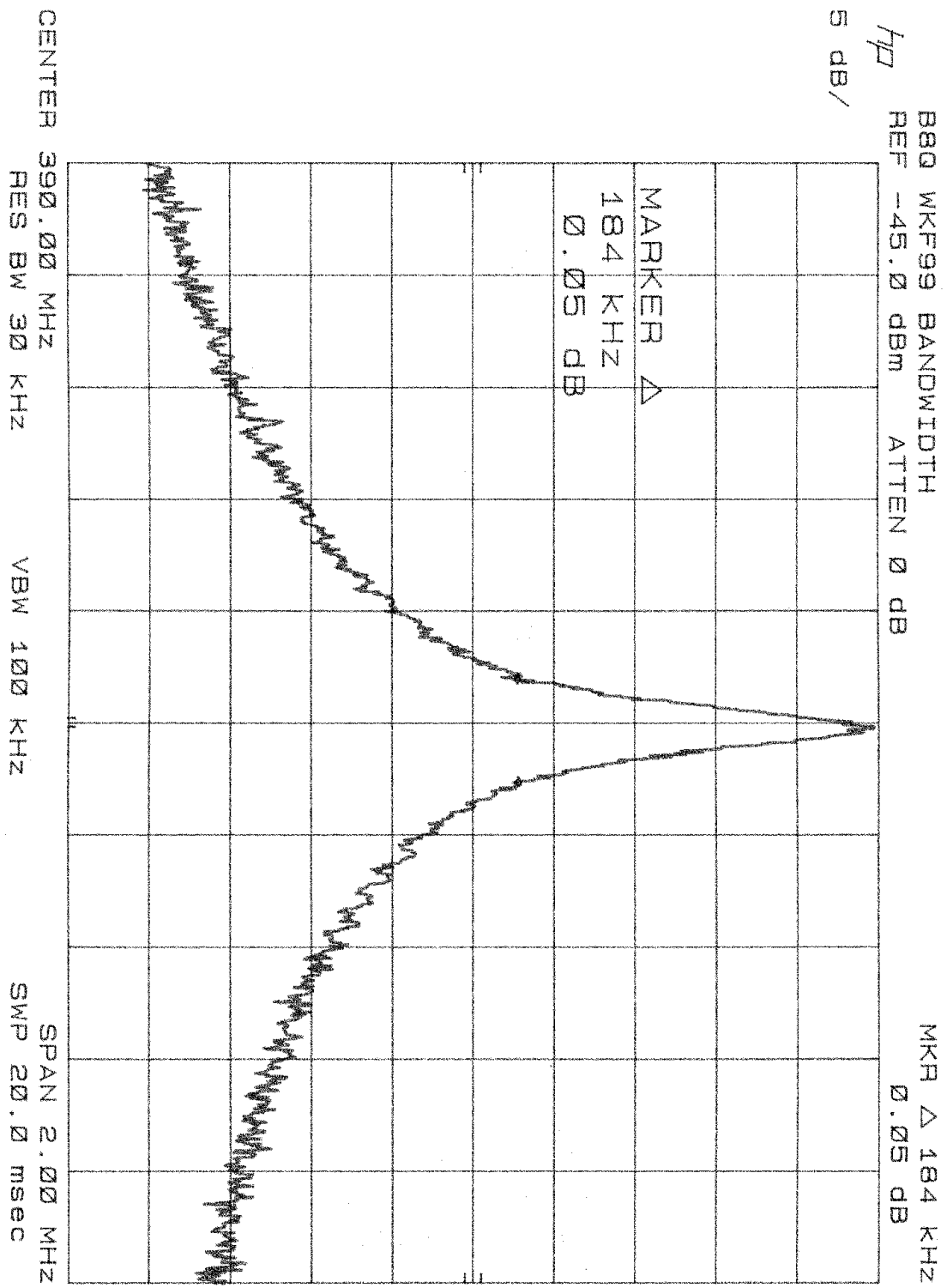
**REPORT ON
CERTIFICATION MEASUREMENTS
OF
B8Q WKF99 DOOR OPERATOR TRANSMITTER**

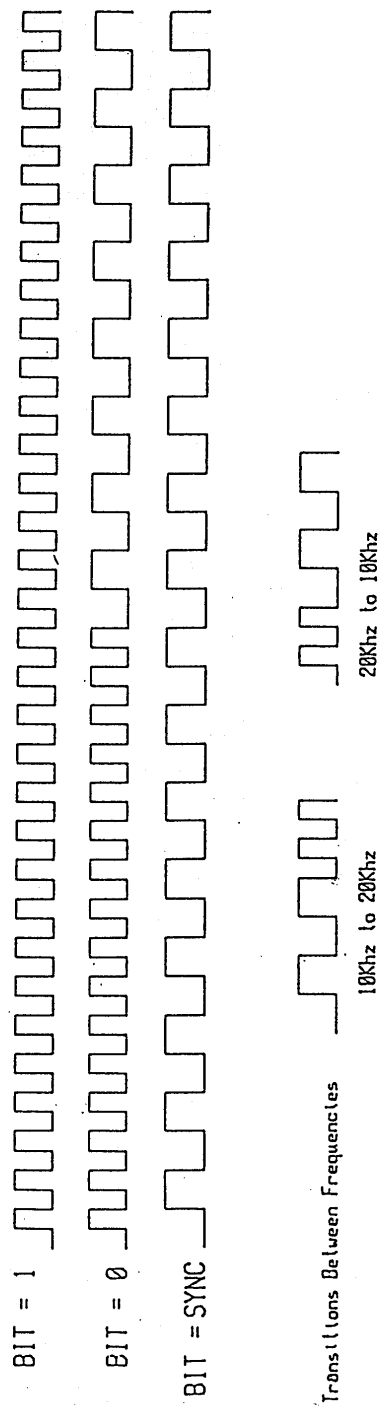
PREPARED BY:

L.Chop Kramer
Engineering Technician
THE GENIE COMPANY
22790 Lake Park Blvd.
Alliance, Ohio 44601

B8Q WKF99

Scan /Div Mhz	Res. Bandwidth KHz	DUT Frequency (Mhz)	Meter Frequency (Mhz)	Meter Reading (dBm)	Antenna Factor (dB)	Coax Factor (dB)	Amplifier Gain (dB)	Measurement Distance (Meters)	Duty Cycle Correction (dB)	3 Meter Limit (uV/M)	Field Strength (uV/M)	Delta Limit (dB)
0.5	100	390	390	-21.6	20.8	4.2	26.78	3	-6	10083	7,603.26	-2.45
0.5	100	390	780	-66.9	25.9	6.3	25.48	3	-6	1008	109.90	-19.25
0.5	1000	390	1170	-55.6	25.4	8	35.14	3	-6	500	152.41	-10.32
0.5	1000	390	1560	-52.1	27.3	9.6	34.79	3	-6	500	355.22	-2.97
0.5	1000	390	1950	-61.7	29.2	10.9	34.44	3	-6	1008	177.01	-15.11
0.5	1000	390	2340	-65	29.4	12.1	35.4	3	-6	1008	127.35	-17.97
0.5	1000	390	2730	-65	30.6	13.4	35.5	3	-6	500	167.88	-9.48
0.5	1000	390	3120	-65	31.6	14.5	36.6	3	-6	1008	188.36	-14.57
0.5	1000	390	3510	-65	33.1	15.5	35.6	3	-6	500	281.84	-4.98
0.5	1000	390	3900	-65	34.7	16.5	35.3	3	-6	500	393.55	-2.08





DATA WORD STRUCTURE

Figure **1**.

DATA WORD STRUCTURE

The data word format consists of a series of digital pulses. Referring to Figure 1, a binary '1' consists of 32 pulses at 20 kilohertz. A binary '0' consists of 16 pulses at 20 kilohertz followed by 8 pulses at 10 kilohertz. A 'sync' bit precedes the data word and consists of 16 pulses at a frequency of 10 kilohertz. A duty cycle of 50% is achieved throughout the entire data word transmission. The transition between frequencies is also shown at the bottom of Figure 1.

For compatibility with door openers that utilize a 9 position dip switch to set the door code, the transmitted data word is 16 bits long and is formatted as shown below:

SYNC 11110 XXX XXX XXX 1

The Xs would be the binary representation of the three bit octal code set to match the associated door opener's code setting.

For compatibility with door openers that utilize a 12 position dip switch to set the door code, the transmitted data word is also 16 bits long and is formatted as shown below:

SYNC 10 XXX XXX XXX XXX 1

Again the Xs would be the binary representation of the three bit octal code set to match the associated door openers code setting.

Once the transmission is initiated, the data word will be continuously repeated as long as the customer continues to press the appropriate button(s). The transition between data words maintains a format as depicted in Figure 1, "Transitions Between Frequencies".

NOTES ON RADIATED EMISSIONS

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Sept 15,1999

1) The reported meter readings are the highest levels observed of six positions of the DUT and the antenna for each frequency.

2) The Measurements up to 1Ghz were taken using the HP8447D amplifier. The measurements above 1Gnhz were taken using the HP 8449B amplifier.

3) The reading of -65 dBm is the lowest measurement possible with the equipment available. This level is below the allowed limit in each case.

4) Sample calculation: $\text{uV/m} = 10^{(107 + M + AF + CF - G - DC) / 20}$

M = -28.0

AF = 2.0 uV/m = 316

CF = 2.0

G = 27.0

DC = 9.0

5) The actual duty cycle is a function of the transmitted code. The transmitted data has a worst case duty cycle of 50%. This gives the -6dB correction factor in the above equation and in the Radiated Emissions calculations. Using the data times shown in the expository, the correction factor calculation is as follows:

$$\text{correction} = 20 * \log (25\text{usec}/50\text{usec}) = -6 \text{ dB}$$

6) The transmitters were modified to allow continuous transmission.

7) The transmitter was surveyed for emissions resulting from the local oscillators. No measurable emissions were present.

8) A chart of the data word structure is included figure 1.

9) All measurements were made using ANSI 63.4-1992.