

MEASUREMENT/TECHNICAL REPORT

PRASTEL

FCC ID: ON3MPSTP2EB

October 13th, 1999

This report concerns (check one): Original grant Class II change

Equipment type: RADIO TRANSMITTER (ex.: computer, printer, modem, etc.)

Deferred grant request per 47 CFR 0.457(d)(1)(ii)? yes no

If yes, defer until: _____
date

Company Name agrees to notify the Commission by _____
date
of the intended date of announcement of the product so that the grant can be issued
on that date.

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1 GENERAL INFORMATION

1.1 Product Description

EUT is a radio transmitter that operate at 433.920 MHz; it is used in garage door opener applications with radio receivers of the Multipass and Roll series. It has two pushbuttons being capable of activating to different channels on a radio receiver working with the same code and the same operating frequency. It works on 433.920 MHz frequency regulated by a saw oscillator. It is provided with a built in antenna and it does not permit a continuous transmission (operation is limited to about two seconds).

1.2 Related Submittal(s)/Grant(s)

None

1.3 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

| Model & Serial No. | FCC ID | Description | Cable Descriptions |
|---|--------------------|--------------------|----------------------------|
| MPSTP2EB (1) s/n EMC-99-0283 | ON3MPSTP2EB | Transmitter | No cables connected |

(1) EUT submitted for grant.

1.4 Test Methodology

Radiated testing was performed according to the ANSI C63.4-1992 test procedures . Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

TÜV QSL test site No. 2

The open area test site and conducted measurement facility used to collect the radiated data are located at Via Montalenghe 8, Scarmagno, Italy. This site has been fully described in a report dated March 25, 1997 submitted to your office, and accepted in a letter dated June 13, 1997 (31040/SIT-1300F2).

1.6 Test equipment list:

| | | |
|----------------------|----------------------|----------------|
| Test receiver | Rohde & Schwarz ESVP | s/n 879783/029 |
| Biconical antenna | EMCO 3110 | s/n 1735 |
| Log-periodic antenna | EMCO 3146 | s/n 3678 |
| Spectrum analyzer | HP 8562A | s/n 3043A05627 |
| Horn antenna | EMCO 3115 | s/n 3572 |

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2 PRODUCT LABELING

Figure 2.1 FCC ID Label



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Figure 2.2 Location of the Label on EUT



3 SYSTEM TEST CONFIGURATION

3.1 Justification

The EUT was configured for testing in a typical fashion (as a customer would normally use it).

It has been tested in stand alone mode; EUT was forced to transmit by pushing alternatively one of the two pushbuttons provided: the continuous light on a led indicate normal operation, flashing light (after two seconds of operation) indicate stop of transmission.

Test conditions:

- a new battery has been installed
- modulation was fixed (no regulation are permitted by the operator or factory settings)
- during tests EUT has been rotate through the three orthogonal axes to determine which condition produces the highest emission with reference to the limits.

3.2 EUT Exercise Software

The EUT exercise program used during radiated testing was designed to exercise the various system components in a manner similar to a typical use.

EUT was forced to transmit by pushing alternatively one of the two pushbuttons provided: the continuous light on a led indicate normal operation, flashing light (after two seconds of operation) indicate stop of transmission.

3.3 Special Accessories

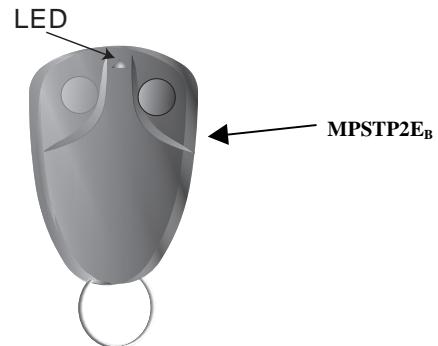
None. EUT is housed in a plastic box.

3.4 Equipment Modifications

To achieve compliance to requested levels, no changes were made during compliance testing.

3.5 Configuration of the Tested System

Figure 3.1 Configuration of the Tested System



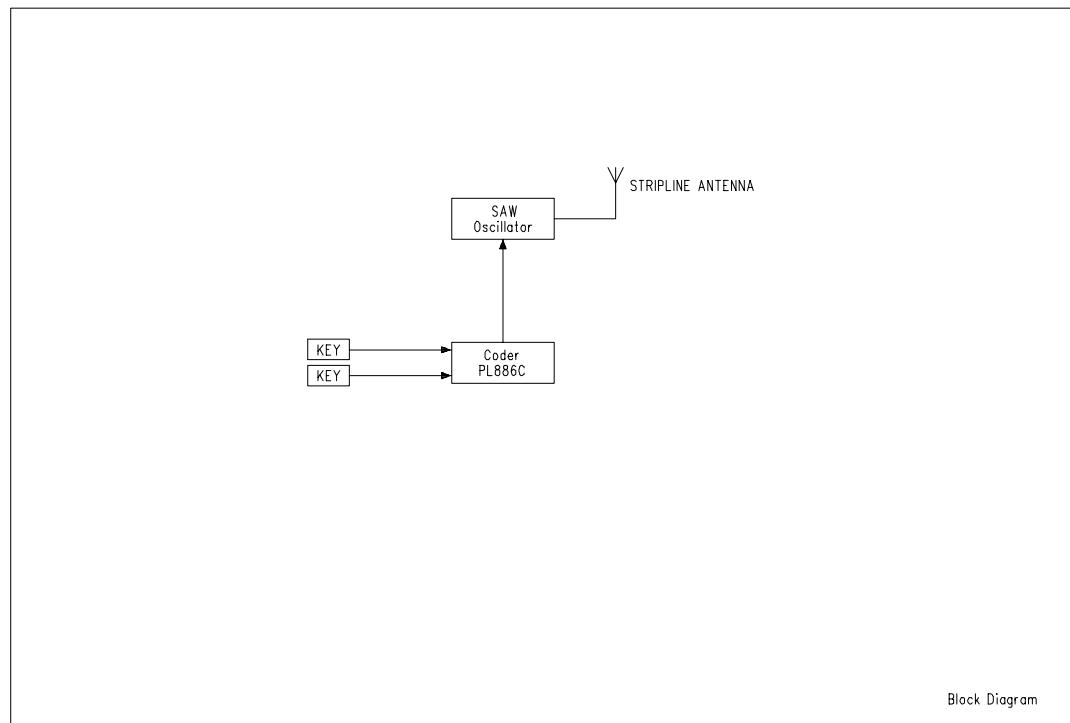
4 BLOCK DIAGRAM(S) OF THE EUT

4.1 Block Diagram Description

The Controller Board of the EUT is provided with:

SAW oscillator SAW1= 433.920 MHz

Fig. 4.1 - Block Diagram of the EUT



5 RADIATED MEASUREMENT PHOTOS



7 RADIATED EMISSION DATA (according to 15.231)

Frequency range: from the lowest frequency generated in the device to the 10th harmonic.

7.1 Tests of the worst case configuration

The following data list the significant emission frequencies, measured levels, correction factors (including cable and antenna corrections), the corrected reading, plus the limit. Field strength calculation is given in paragraph 7.2.

Judgement: Passed by 0.8 dB

| Frequency (MHz) | Polarity (V/H) | Receiver* Reading (dB μ V) | Correction Factor (dB/m) | Corrected Reading (dB μ V/m) | 3 Meter Limit (dB μ V/m) |
|-----------------|----------------|--------------------------------|--------------------------|----------------------------------|------------------------------|
| 433.9 | V | 59 | 21 | 80 | 80.8 |
| 867.8 | V | 21.5 | 29.5 | 51 | 61.9 |
| 1301.7 | H | 31.3 | 24.4 | 55.7 | 61.9 |
| 1735.6 | V | 26.2 | 25.6 | 51.8 | 61.9 |
| 2603.4 | H | 15.7 | 28.2 | 43.9 | 61.9 |
| 3037.3 | H | 15.2 | 30.2 | 45.4 | 61.9 |

* below 1 GHz readings are quasi-peak, with an IF bandwidth of 120 kHz, above 1 GHz are peak with an IF bandwidth of 1 MHz.

Bandwidth of emission: requested 0.25% of 433.92 MHz = 1.085 MHz
measured 0.400 MHz

Test Personnel:

Tester Signature _____ Date October 01, 1999

Typed/Printed Name Giuseppe MECCHIA.

7.2 Field Strength Calculation

7.2.1 The field strength is calculated by adding the Antenna and Cable Factor to the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

where

FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 59 dB μ V is obtained. The Antenna and Cable Factor of 21 is added, giving a field strength of 80 dB μ V/m. The 80 dB μ V/m value was mathematically converted to its corresponding level in μ V/m.

$$FS = 59 + 21 = 80 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(80 \text{ dB}\mu\text{V/m})/20] = 10000 \mu\text{V/m}$$

8 PHOTOS OF TESTED EUT

- Fig. 8.1 Overall front view**
- Fig. 8.2 Overall rear view**
- Fig. 8.3 Rear view with cover removed**
- Fig. 8.4 Unit partially disassembled**
- Fig. 8.5 Controller Board - Components side**
- Fig. 8.6 Controller Board - Foil side**

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Fig. 8.1 Overall front view



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Fig. 8.2 Overall rear view



Fig. 8.3 Rear view with cover removed

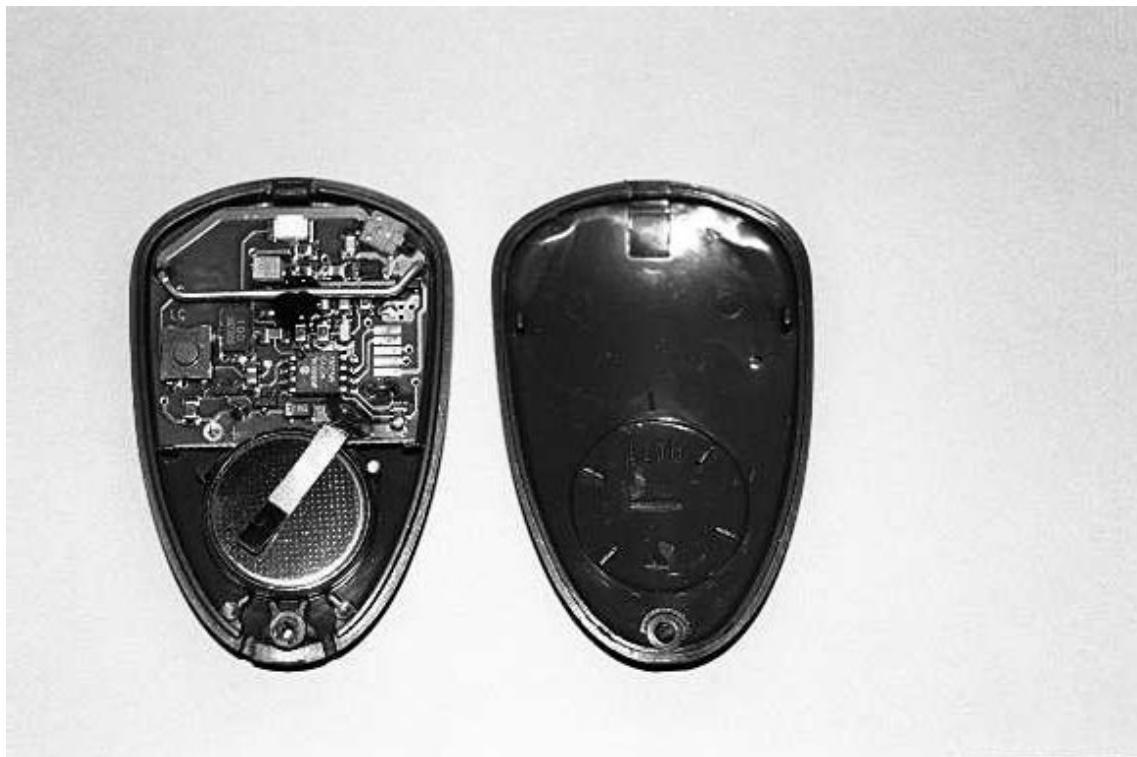
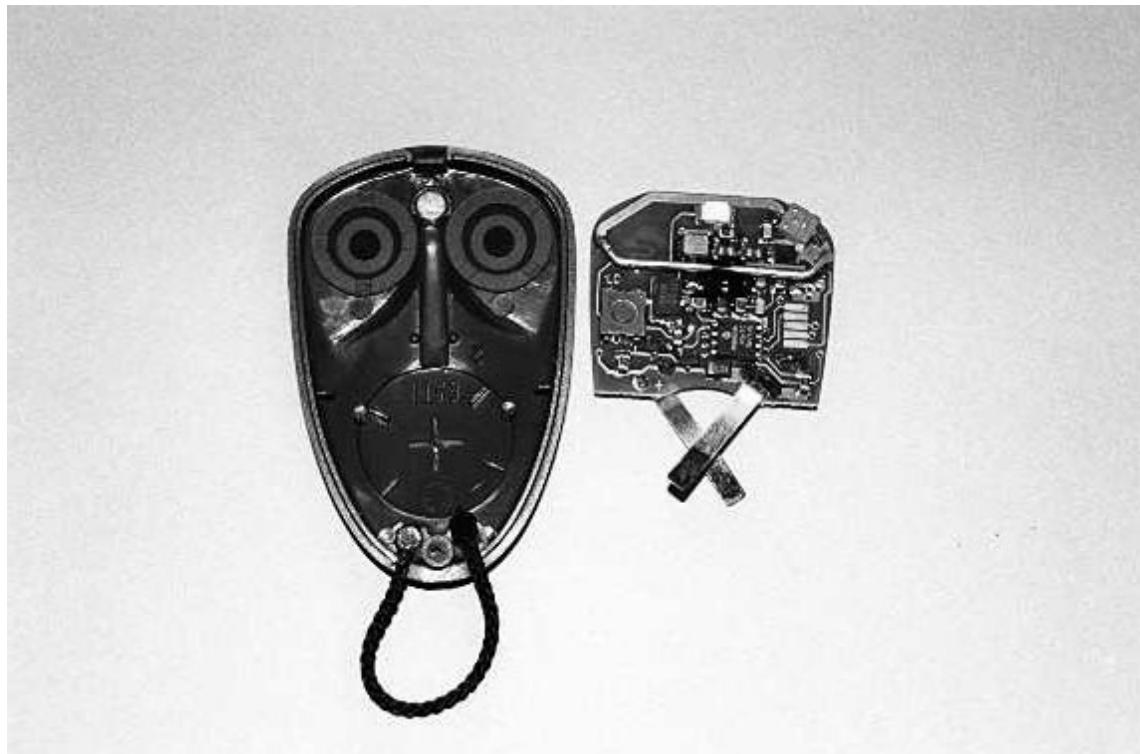


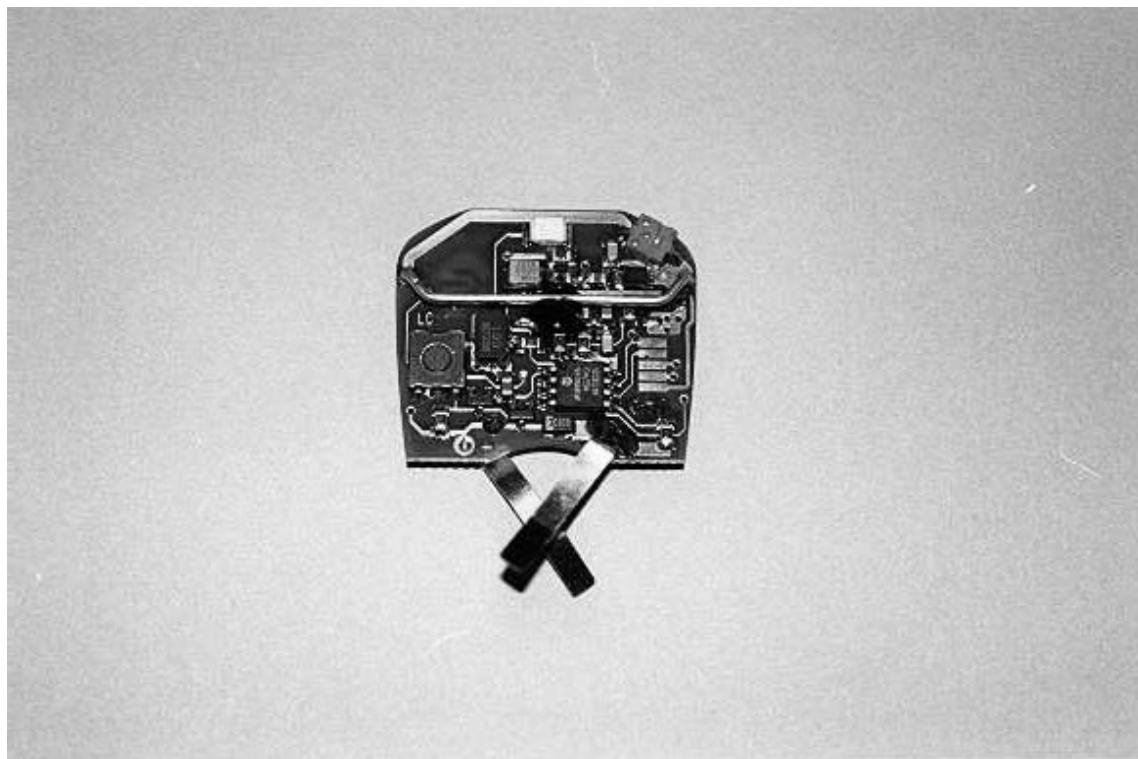
Fig. 8.4 Unit partially disassembled



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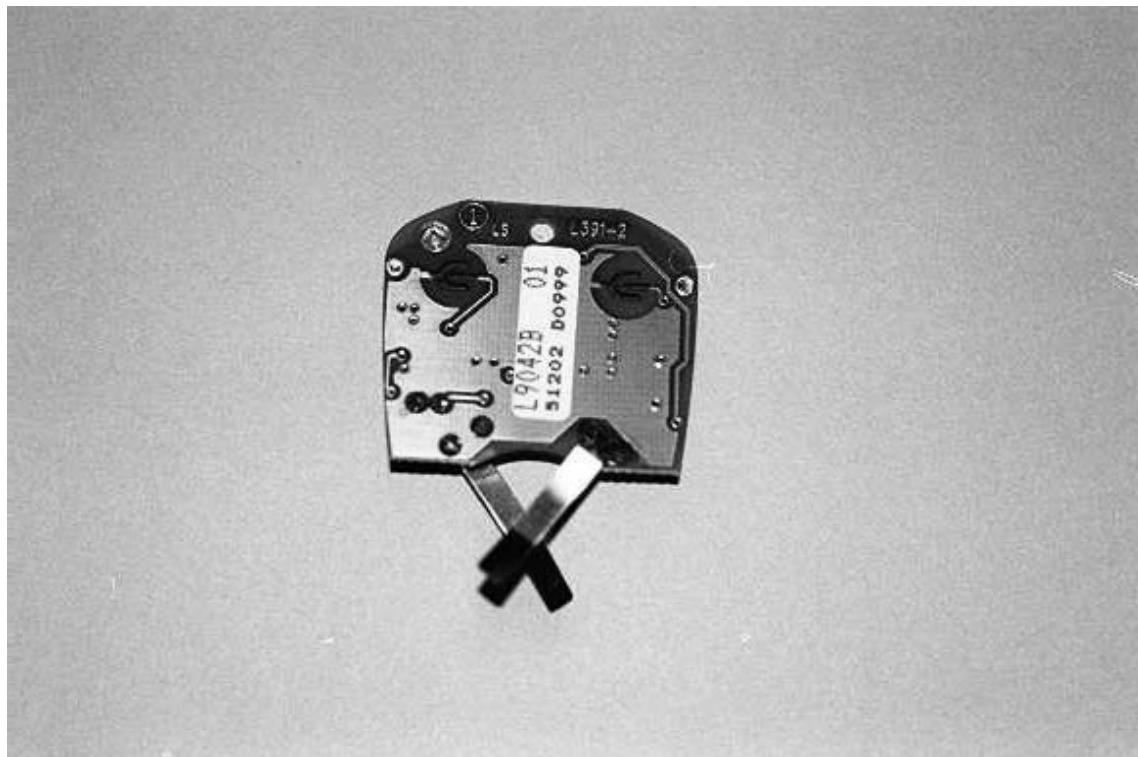
Fig. 8.5 Controller Board - Components side



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Fig. 8.6 Controller Board - Foil side



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User Manual

CAUTION FOR THE USER

Any change or modification of the product is forbidden if not expressly approved by the manufacturer

0. DESCRIPTION

MPSTP2EB is a radio transmitter used with radio receivers of the Multipass and Roll series. It has two pushbuttons being capable to activate two different output channels on a radio receiver working with the same code and the same operating frequency.

It works on 433.920 MHz frequency regulated by a SAW oscillator. It is provided with an integral antenna. It is not possible to transmit continuously with MPSTP2EB.

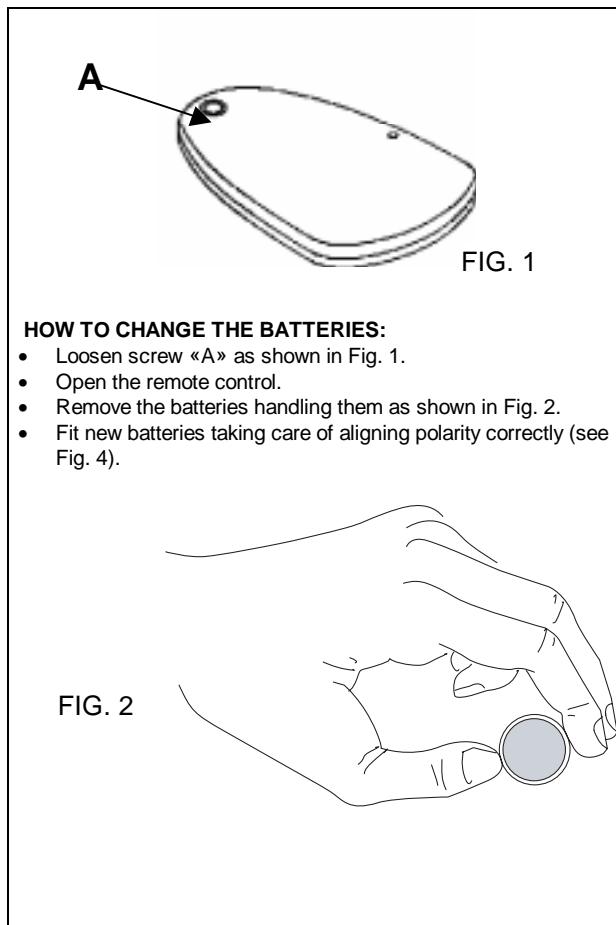
1. APPLICATIONS

It can be used in remote control applications as door opener and in control access applications.

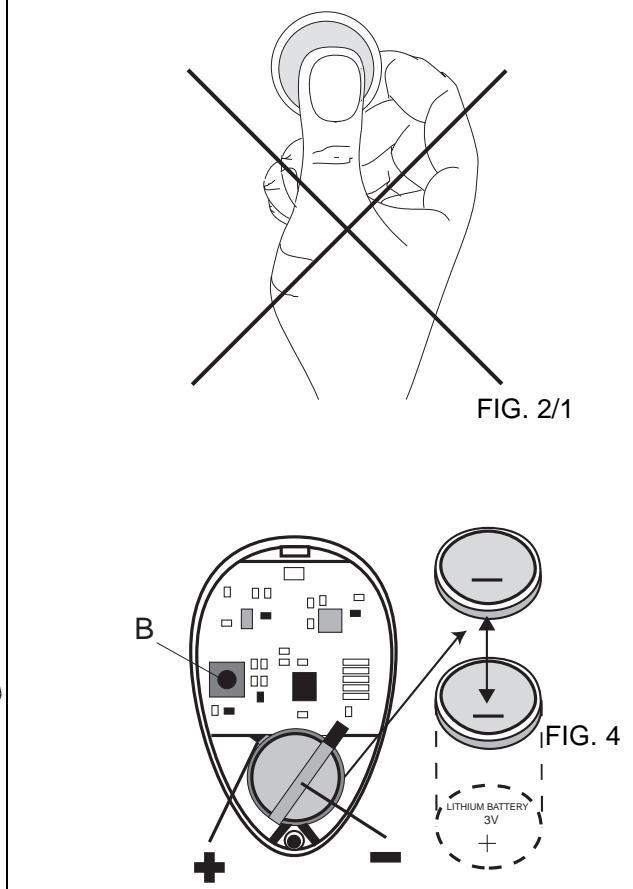
2. TECHNICAL FEATURES

| | |
|--------------------------|--|
| Transmission frequency | 433.92 MHz (radio section) – 125 kHz (transponder section) |
| Type of code | rolling code |
| No. Of channels | 2 (radio) + 1 (transponder) |
| Power supply | 6V (two 3 V lithium battery) |
| Power consumption | Negligible when not operating, 15mA for transmission |
| Duration of transmission | 2 sec (radio transmission) |
| Signalling devices | red LED |

3. HOW TO PROCEED WHEN CHANGING THE BATTERY

**HOW TO CHANGE THE BATTERIES:**

- Loosen screw «A» as shown in Fig. 1.
- Open the remote control.
- Remove the batteries handling them as shown in Fig. 2.
- Fit new batteries taking care of aligning polarity correctly (see Fig. 4).

**FCC ID: ON3MPSDT2**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.