


# Appendix 2A

## OPERATIONAL DESCRIPTION

Type Acceptance under Part 95 Subpart K

**ACR ELECTRONICS INC**  
5757 Ravenswood Road  
FT. Lauderdale Fl.  
(954) 981-3333

FCC ID: B66ACR-PLB-100  
Class 1/Category 1  
406MHz Personal Locator Beacon (PLB)  
Model PLB-100

<b>ACR ELECTRONICS INC</b> 5757 Ravenswood Road FT. Lauderdale Fl. (954) 981-3333	DRAWN. Bill Cox	DATE 5/5/2003	<b>PLB-100 Operational Description</b>	
	CHECKED.			
	ENG Bill Cox	5/5/2003		
	APVD			
A	18560	Sheet 1	DRAWING NO <b>PLB-100</b>	REV A
SIZE	CODE IDENT NO	Of 2		

## Operational Description.

(Refer to Schematics ACR Y1-01-0624, Y1-01-0644 and Y1-01-0629 Appendix 1)

Activate the unit by unfolding the antenna from around the unit and move to a vertical position. Lift switch to the: "ON" position by lifting up and sliding over then down to "ON" for activation. ON position is indicated on by a | (Bar) on face of the switch. The Beacon comes with a breakaway tab on the switch to keep from accidental turn on. Push Switch down to break tab in case of an emergency. Once activated the unit will beep and the RED LED will begin to flash one red flash approximately every 20 seconds. Unit will send Rescue Message approx every 50 seconds and will beep and flash the red LED after each message has been transmitted.

The switch activation enables the Microprocessor and the beacon begins to transmit the 406 and 121.5MHz signals as per Cospas Sarsat T.001, RTCM Standard for PLB VER 1.1 76/2002 and PART 95 Subpart K of the FCC rules.

The Beacon generates a unique phase modulated 406 MHz signal for transmission of the distress message. The 406 MHz carrier is frequency synthesized by a PLL, U5-0629. It is locked to an OCXO (U9-0636) to provide the high frequency stability required for the COSPAS-SARSAT system. The VCO is built around Q1-0636 in a common base configuration. The carrier is phase modulated through the phase lock loop filter of the PLL, U4-0635. U1-0644 and Q10-0644 then amplify the phase-modulated signal to provide 5W output signal that is radiated by the antenna creating emission 16K0G1D.

The modulation for the 406 MHz signal passes through a one pole RC filter provided by R11-0636, R12-0636 and C16-0636. The purpose for this filter is to provide the rise and fall times (150  $\mu$ s nominal) for the modulating data. This provides the necessary filtering of the 400 baud data rate to ensure that spectral mask requirements of PART 2 were met.

The Beacon also has a 121.5 MHz homing signal. The 121.5 MHz is generated by a crystal (Y1-0644) controlled oscillator (Q7-0644) for frequency stability of better than  $\pm$  50 PPM over the full operating temperature range. Q5-0644 and Q6-0644 amplify the carrier to provide a nominal power output of 50 mW that is radiated by the antenna. This signal is AM modulated by a microprocessor controlled switch interrupting the regulated supply voltage for Q5-0644. The Microprocessor modulates the carrier in an audio swept tone and controls the Morse P code in the homing signal creating emissions 3K20A3X and 2K00A2A.

The modulation and other controls for the Beacon are generated by a microprocessor (U2-0629). This processor provides digital signals for both the 406 MHz and the 121.5 MHz modulations. Microprocessor (U1-0624) controls the LED's, a buzzer, and other intrinsic timing functions.

The PLB-100 contains a battery pack consisting of three "5/4 C" size cells of Lithium Sulfur Dioxide LiSO<sub>2</sub> chemistry. The battery pack will have a 5-year replacement cycle. The enclosure is made of high impact, corrosion resistant, ultra violet resistant plastic that is in a high vis yellow color.

Bill Cox

<b>ACR ELECTRONICS INC.</b>	CODE IDENT NO 18560	SHEET -2-	TEST PROCEDURE <b>Operational Description</b>	REV A
-----------------------------	---------------------------	--------------	--	----------