

McMurdo Limited

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**Request for Type Acceptance for Class 1 and 2, 406MHz Personal Locator Beacon with
Integral GPS module.**

Model: McMurdo Fastfind Plus.

Dear Mr Leimer,

McMurdo Limited wish to apply for FCC Type Acceptance for the McMurdo Fastfind Plus 406MHz Personal Locator Beacon, manufactured by McMurdo Limited in the United Kingdom. The Personal Locator Beacon, (PLB), features a user replaceable battery pack. Two versions of battery pack will be available from agents allowing the purchaser to choose either a Class 1 (-40°C) product or a Class 2 (-20°C) product. The generic PLB electronics has been tested to and meets Class 1 requirements.

Part Number:	Description	FCC Identifier
85-825	(GPS enabled) Class 2	FCC ID: KLS-PLB-1-GPS
85-845	(GPS enabled) Class 1	FCC ID: KLS-PLB-1-GPS

Please note; the Class 1 product is a RTCM Category 2 PLB, (the unit *does not* float). The Class 2 product is a RTCM Category 1 PLB, (the unit *does* float).

McMurdo Limited wish to submit for Type Acceptance under the proposed rules defined in FCC 02-271(CFR 47 Part 95, subpart K) and CFR 47 Part 2.

(We note that RTCM Paper 76-2002/SC110-STD does not fully define the characteristics of the Morse 'P' transmission. The RTCM have addressed this in RTCM PAPER 23-2003/SC110-274, which is an addendum to RTCM Paper 76-2002/SC110-STD. McMurdo wish to claim compliance with this addendum in support of meeting the requirements of Part 95.

The relevant test of the RTCM requirement is reproduced below for reference.



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**3 Recommended implementation of the letter “P” requirement**

Substitute the following entries for “Modulation” and “Modulation Frequency” in Table 2-2 of (RTCM) Recommended Standards for 406 MHz Satellite Personal Locator Beacons (PLBs), Version 1.1 (RTCM Paper 76-2002/SC110-STD), and add Figure 2-0 as follows (added text indicated by underlining):

TABLE 2-2

**SUMMARY OF TECHNICAL CHARACTERISTICS OF
121.5 MHz AUXILIARY RADIO-LOCATING DEVICE**

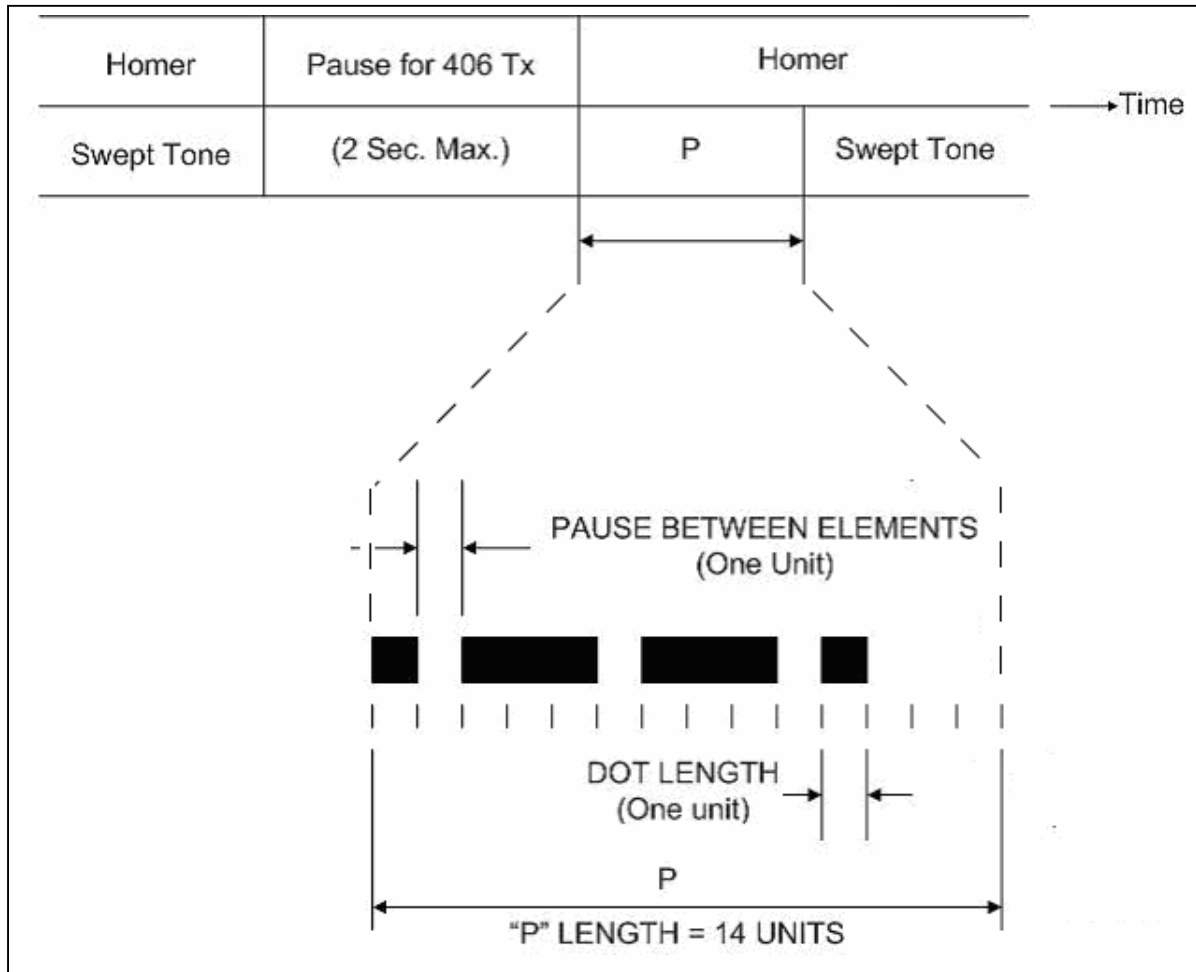
PARAMETER	VALUE
RF Signal	
* * *	
Modulation ²	Amplitude modulated (3K20A3X) <u>except that a Morse P (2K00A2A) shall be inserted immediately following the (2 s maximum) interruption of the homer signal as indicated in the Figure 2-0 with a dot length (one unit) equal to 115 ms ± 5%.</u>
Modulation Frequency	An audio signal swept upward or downward by not less than 700 Hz within the range 300 to 1600 Hz <u>except that during the dot and dash intervals of the Morse P the signal shall be modulated at 1000 ± 50 Hz.</u>
* * *	

² The A3X emission must have a clearly defined carrier frequency distinct from the modulation sideband components. At least 30% of the total power emitted during any transmission cycle with or without modulation should be contained within ± 30 Hz of the carrier frequency. Additionally, if the emission is interrupted by the transmission of the 406 MHz burst, the carrier frequency must not shift more than ± 30 Hz.



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**FIGURE 2-0
 FORMAT OF MORSE CODE "P" IN 121.5 MHz HOMING SIGNAL**

McMurdo Limited originally submitted the Fastfind Plus PLB for test to RTCM 5-97/ SC110-STD in 2001. The FCC referenced RTCM Paper 76-2002/SC110-STD did not exist at that time. The changes between the two specifications mainly reflect the inclusion of the 406.028MHz operating frequency, hence we claim functional equivalence.

McMurdo Limited have consulted with NOAA, Paul Steward at the USCG , and George Dillon and Jim (James) Shaffer at the FCC. They all confirm that USCG approval of PLB's is not required, this is only required for EPIRB's.
 Hence no letter of USCG approval is attached to this application.

Please Note: A further application for a non GPS PLB with a unique FCC ID will be submitted at a later date.



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The table below, details where in the exhibits associated with this application, the relevant RTCM test results can be located.

RTCM TEST REQUIREMENTS

PARA	TEST DESCRIPTION	LOCATION
A3.0	VIBRATION TEST	TEST REPORT SX608213
A4.0	BUMP TEST (TEST TO ETSI EN 300 066 CLAUSE 6.4 SUBSTITUTED, AS PULSE DURATION MORE SEVERE AT 18m/s ²).	TEST REPORT SX608213
A5.0	SALT FOG TEST	TEST REPORT SX609598 Page 7
A6.0	DROP TEST	TEST REPORT SX609598 Page 8
A7.0	LEAKAGE AND IMMERSION TESTS	TEST REPORT SX609598 Page 9
A8.0	SPURIOUS EMISSIONS TEST	TEST REPORT 00608213B
A9.0	COSPAS-SARSAT TYPE APPROVAL TESTS	TEST REPORT RM608213 PLUS SUPPLEMENTARY REPORTS RM608213B and C
A10.0	OPERATIONAL LIFE AND SELF TESTS	TEST REPORT SX609598 Page 10 and RM608623
A11.0	BUOYANCY TEST (Category 1 only)	*
A12.0	121.5 MHz AUXILIARY RADIO-LOCATING DEVICE TRANSMITTER TEST	TEST REPORT RM608213A.

- * Test not formally carried out by a test house. In-house testing successfully carried out in fresh water. Also a Fastfind Plus PLB was used in USCG trials at sea off Key West during March 2003. These tests were witnessed by USCG, NOAA and Cospas-Sarsat personnel.
- Please Note: The attached photograph is by courtesy of Doug Ritter, Equipped to Survive Foundation.



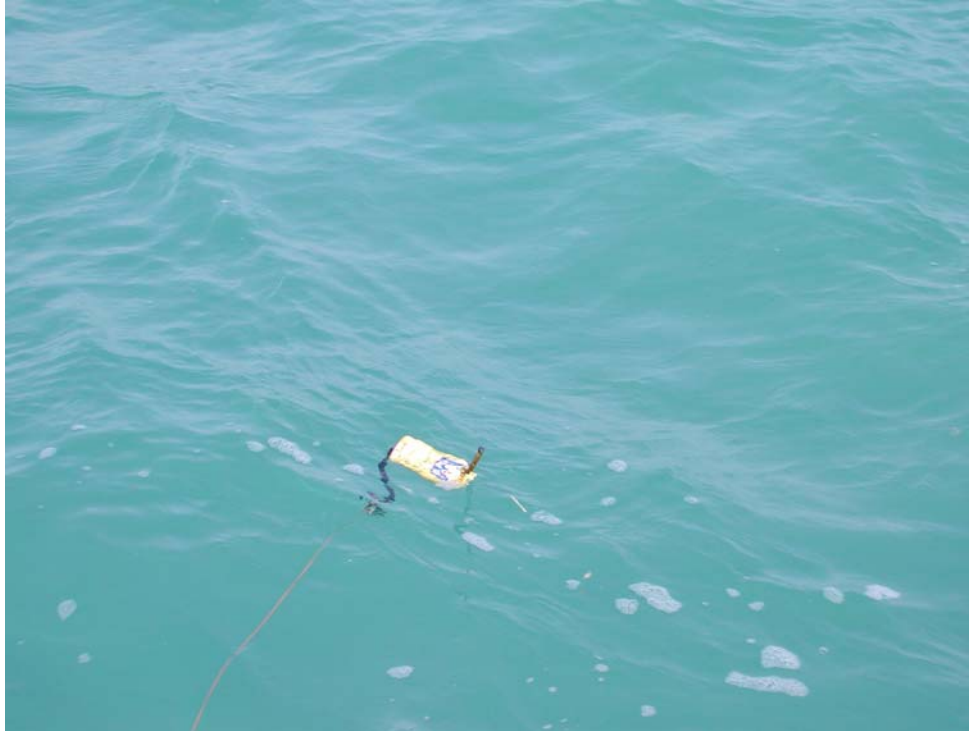
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FASTFIND PLUS PLB (attached to lifejacket lanyard and tether) in Gulf of Mexico
Photo "D. Ritter - Equipped To Survive Foundation"

Test to CFR 47 Parts 2.1046 to 2.1057 and Part 95 Subpart K are contained in separate reports and are identified as such.

Richard Read
Senior Engineer
For McMurdo Limited.

10th of June 2003.

