



International Satellite System for Search and Rescue  
Système international de satellites pour les recherches et le  
sauvetage  
Международная Спутниковая Система Поиска и Спасания

CS14/80/F510 (Breitling)

18 August 2014

Mr Jean-Paul Girardin  
VICE PRESIDENT

BREITLING SA  
P.O. Box 1132  
Schlachthausstrasse 2  
2540 GRENCHEN  
Switzerland

**Subject: Letter of Compatibility for the 406 MHz Beacon Model 'EMERGENCY', TAC-717**

Dear Mr Girardin,

I am pleased to confirm that, with effect from 18 April 2014, the Class-2 406 MHz personal locator beacon (PLB) model 'EMERGENCY' manufactured by Breitling S.A., Switzerland has been declared compatible with, and may be used for operation with, the Cospas-Sarsat 406 MHz system, with the restrictions detailed below. This confirmation is based on the results of testing of the beacon conducted at the TÜV SÜD test facility, Fareham, UK between August 2012 and March 2014.

The beacon was successfully tested and complied with Cospas-Sarsat requirements, as defined in the following Cospas-Sarsat standards:

C/S T.001      Specification for Cospas-Sarsat 406 MHz Distress Beacon  
Issue 3 – Rev. 13, October 2012,

C/S T.007      Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard  
Issue 4 – Rev. 7, October 2012,

C/S IP (TCXO)    Interim Procedure for the Determination of Compliance of 406 MHz Beacons  
Equipped with a TCXO with Cospas-Sarsat Type Approval Requirements  
Revision 5, October 2013, and

C/S IP (LIRB) Interim procedure for Type Approval of 406 MHz Beacons Equipped with Li-Ion Rechargeable Batteries, Revision 3, October 2013.

The EMERGENCY is a wrist-worn 406/121.5 MHz emergency PLB which shares casing with an analog-digital Breitling chronograph. The chronograph and the emergency beacon are fully independent.

The beacon includes the following features:

- Cospas-Sarsat beacon operating frequency: 406.040 MHz;
- Auxiliary 121.5 MHz radio-locating transmitter (output power: 15 dBm, transmitter duty cycle: 33%), operating at temperatures above 0°C and automatically disabled at temperatures below 0°C;
- Integrated deployable 406/121.5MHz transmitting antenna;
- A rechargeable battery which shall be periodically recharged using a specially-designed charger provided with the beacon;
- A self-test capability, which is automatically activated at the end of the full battery recharge;
- Automatic beacon activation upon deployment of integrated antenna.

The beacon is approved for message encoding with the User protocol variant for PLBs with Serial Number.

#### Limitations of Use

The EMERGENCY with the integral antenna was tested in configuration corresponding to the PLB operating while placed above ground, which corresponds to the EMERGENCY manufacturer-declared intended operational scenarios. The watch shall be set for operation in such a manner that neither of the antenna sections make contact with ground or any conductive surface, since this might affect the antenna radiation pattern.

The EMERGENCY was not designed to operate while in water or when the watch is still worn on the wrist. The user manual clearly states that for the antenna deployment and beacon operation the watch must be taken off the wrist.

The EMERGENCY beacon was tested for the operating temperature range of -20° to +55°C, and complied with all Cospas-Sarsat requirements, except for the minimum duration of continuous operation was 18 hours, which is less than the minimum operating lifetime of 24 hours required by Cospas-Sarsat.

The EMERGENCY beacon provides for the operation of an integrated 121.5-MHz radio-locating transmitter only at temperatures above 0°C, whereas at temperatures below 0°C the 121.5 MHz homer is automatically disabled.

The EMERGENCY uses a battery pack comprising one lithium-ion rechargeable battery (Li-Ion NMC/Si, Prollion INP63438) produced by Prollion, France. As indicated in the EMERGENCY user manual, it is recommended that the battery charge be properly maintained by the user by

recharging battery at regular intervals, not exceeding recommended time between charges of 2 months.

In view of the above limitations, the EMERGENCY should only be operated by qualified and properly instructed customers. As indicated in the letter from the Federal Office of Civil Aviation of the Swiss Confederation (Ref. 64-13 of 5 April 2013), requesting a waiver of the non-compliances and the issuance of a Letter of Compatibility in-lieu of a type approval certificate, Breitling will ensure that training on the product is provided to its distribution network and to future owners with the objective of ensuring that users of the product are fully aware of the design features and operational limitations.

#### Disclosure of Limitations of Use

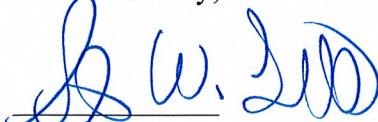
Cospas-Sarsat requests that the beacon manufacturer, Breitling S.A., fully disclose the limitations of the beacon's operation to Administrations when seeking authorisation to market the EMERGENCY within the Administrations' jurisdiction and to users. Please note that this Letter of Compatibility does not authorise the operation or sale of this beacon model which remains the responsibility of competent Administrations.

The EMERGENCY has been assigned the Cospas-Sarsat type reference number 717. Numbers in the 700 series are reserved for special-use beacons which, due to some of their special features, might not satisfy some of the Cospas-Sarsat beacon requirements in all situations.

This confirmation of compatibility is issued on the basis of the manufacturer's commitment that all EMERGENCY devices will be identical to the units provided for testing. Any change to the design or components of the beacon may affect the validity of this Letter of Compatibility and should be reported to the Cospas-Sarsat Secretariat for evaluation.

A copy of the EMERGENCY characteristics summary being published on the Cospas-Sarsat website is attached.

Yours sincerely,



Steven W. Lett,  
Head, Cospas-Sarsat Secretariat

Encl.: Web-report for the EMERGENCY, on 1 page.

CC: The Cospas-Sarsat Parties (Canada, France, Russia and USA);  
TÜV SÜD test facility (Fareham, UK).

TAC Number	717	TAC Date	18-APR-2014	TAC Rev. date	
Beacon Model Name	EMERGENCY				
Additional Names	---				
Manufacturer	Breitling SA				
Tx Frequencies	406.040 MHz				
In Production	in production			Class	2
Type	PLB			Tested Life (hours)	18 hours
Battery	Lithium-Ion LIRB, Li-Ion NMC/Si, PROLLION INP63438 rechargeable battery, manufacturer: Prollion, France				
Battery Legend: Battery cell manufacturer, Cell chemistry, Cell model, No. of cells, Cell size.					
Protocols tested	U - User.				
Self Test	yes	Self Test RF	yes	Self Test RF (Short/Long)	short
Self Test Format Flag	short			Self Test Consistent with 15 Hex ID	yes
Homer Freq	121.5 MHz			Homer Duty Cycle	33%
Homer Power	15 dBm				
Strobe Light	no	Strobe Brightness	---	Strobe Duty Cycle	---
Nav Device	No	Nav Device Model	---		
Separable Antenna	no	Antenna Model	---		
Additional functions	battery charger				
General comments	EMERGENCY is a wrist-worn 406/121.5 MHz emergency PLB which shares casing with a Breitling analog-digital chronograph. The chronograph and the emergency beacon are fully independent. 121.5 MHz homer operates only at temperatures above 0°C, homer is automatically disabled at temperatures below 0°C. Designed for operation only above ground. Not designed to operate while in water or when the watch is still worn on the wrist. The Li-Ion rechargeable battery shall be fully charged, the battery recharging shall be performed at regular, not exceeding 2 months intervals. Minimum duration of operation is 18 hrs. Approved for message encoding with the User protocol variant for PLBs with Serial Number. Designated for use of qualified and properly instructed customers.				
TAC rev history	---				