



U.S. Department
of Transportation

**Federal Aviation
Administration**

**Transport Airplane Directorate
Los Angeles Aircraft
Certification Office**

3960 Paramount Boulevard
Lakewood, California 90712-4137

FEB 22 2013

In reply refer to: 130L-13-44

ACK Technologies Inc.
Attn: Mr. Mike Akatiff
424 West Julian Street
San Jose, CA 95110

Dear Mr. Akatiff:

ACK Technologies Inc.
Technical Standard Order (TSO) C126b

This is in reply to your letter dated January 10, 2013 requesting Technical Standard Order (TSO) authorization for your MHz ELT Emergency Locator Transmitter. The statement of conformance to TSO C126b and the submitted data are accepted. Effective the date of this letter, you are authorized to identify the following MHz ELT Emergency Locator Transmitter with the marking requirements defined in Title 14 Code of Federal Regulations (14 CFR) § 21.616(d)(e) and in TSO C126b.

| <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|---|
| E-04/E-04 () | 406/121.5 MHz ELT Emergency Locator Transmitter Type AF |

Your Quality Control Systems, as defined in your Quality Control Manual, currently on file at the Van Nuys Manufacturing Inspection District Office, is considered satisfactory and complies with 14 CFR § 21.607 for production of this article at your San Jose, CA 95110, facility.

As required by the TSO, the following statement must be furnished with each manufactured unit:

“The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements”.

Any design changes to this TSO article must be forwarded to this office as outlined in 14 CFR §21.619 with minor changes submittal intervals not to exceed six months. Notification of changes should be made prior to shipment.

As a recipient of this TSO authorization you are required to report any failure, malfunction, or defect in any product or part manufactured by you or your contracted suppliers, and which you have determined has resulted or could result in any of the occurrences listed in 14 CFR § 21.3.

Purpose - Aviation Safety Professionalism - Technical Excellence Pride - Highest Quality

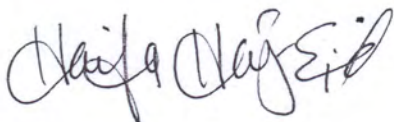
The report should be communicated initially by telephone to the Supervisor, Technical and Administrative Support Staff, ANM-103L, (562) 627-5300, within 24 hours after it has been determined the failure has occurred and followed up with a written notice. FAA Form 8010-4 (Malfunction or Defect Report) or other appropriate format is acceptable in transmitting the required details.

In accordance with 14 CFR § 21.614, this authorization is not transferable to another person or location and is effective until surrendered, withdrawn, or otherwise terminated by the Administrator. This authorization pertains only to manufacturing operations at the above address. This office must be notified at least 30 days in advance of any proposed facility relocation to preclude interruption while awaiting quality control approval of that facility. As required by 14 CFR §21.613(b), you must also notify the FAA when you no longer manufacture a TSO approved article and copies of the data must be sent to the FAA.

Please note that technical data retained by the FAA may be subject to Freedom of Information Act (FOIA) request. As such, this office will notify you of all such requests pertaining to your data and afford you the opportunity to defend the release of the data.

If you have any questions regarding this authorization, please contact Mr. Gilbert Cellabos at telephone number (562) 627-5320, by e-mail at gilbert.cellabos@faa.gov , or by fax at (562) 627-5372.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Haifa Haj-Eid', with a stylized flourish at the end.

Haifa Haj-Eid
Supervisor, Technical and Administrative
Support Staff



U.S. Department
of Transportation

**Federal Aviation
Administration**

JUL - 1 2009

In reply refer to: 130L-09-98

ACK Technologies Inc.
Attn: Mr. Mike Akatiff
440 West Julian Street
San Jose, CA 95110

Dear Mr. Akatiff:

ACK Technologies Inc.
Technical Standard Order (TSO) C91a, C126 and C142a

This is reply to your letter dated June 29, 2009, requesting Technical Standard Order (TSO) authorization for your Emergency Locator Transmitter (ELT). The statement of conformance to TSOs C91A, C126 and C142a, the submitted data are accepted. Effective the date of this letter, you are authorized to identify the following ELT and Battery with the marking requirements defined in Title 14 Code of Federal Regulations (14 CFR) part 21.607 (d) and in TSOs C91a, C126 and C142a.

| <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|--|
| ACK E-04 (Type AF) | 406 MHz ELT Emergency Locator Transmitter, 406/121.5 MHz, |
| ACK E-04.8 | 406 MHz ELT Emergency Locator Transmitter, Whip Antenna |
| ACK E-04.0 | Lithium Battery Pack (Non-Rechargeable) |

Note: This TSO Authorization do not constitute the TSO-C126a Compliance.

Your Quality Control System, as defined in your Quality Control Manual, currently on file at the Van Nuys Manufacturing Inspection District Office, is considered satisfactory for production of this article at your San Jose, California facility.

As required by the TSO, the following statement must be furnished with each manufactured unit:

"The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standard. TSO articles must have separate approval for installation in an aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements."

**Transport Airplane Directorate
Los Angeles Aircraft
Certification Office**

3960 Paramount Boulevard
Lakewood, California 90712-4137

Any design changes to this TSO article must be forwarded to this office as outlined in 14 CFR § 21.611(a) with minor changes submittal intervals not to exceed six months. Notification of changes should be made prior to shipment.

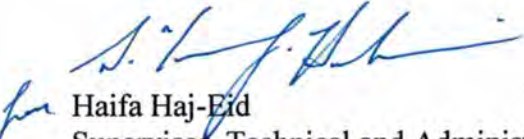
As recipient of this authorization, you are required to report any failure, malfunction, or defect relating to this authorization in accordance with the provisions of 14 CFR § 21.3. The report should be communicated initially by telephone to the Manager, Technical and Administrative Support Staff, ANM-103L, (562) 627-5300; within 24 hours after it has been determined the failure has occurred and followed up with a written notice. FAA Form 8010-4 (Malfunction or Defect Report) or other appropriate format is acceptable in transmitting the required details.

This authorization is not transferable to another person or location and is effective until surrendered, withdrawn, or otherwise terminated by the Administrator. This authorization pertains only to manufacturing operations at the above address. This office must be notified at least 30 days in advance of any proposed facility relocation to preclude interruption while awaiting quality control approval of that facility. As required by 14 CFR § 21.613(b), you must also notify the FAA when you no longer manufacture a TSO approved article.

Please note that technical data retained by the FAA may be subject to Freedom of Information Act (FOIA) request. As such, this office will notify you of all such request pertaining to your data and afford you the opportunity to defend the release of the data.

If you have any questions regarding this authorization, contact Ms. Haifa Haj-Eid, Supervisor, Technical & Administrative Support Staff, at telephone number (562) 627-5300, or by e-mail Haifa.haj-eid@faa.gov, or by fax number (562) 627-5210.

Sincerely,


Haifa Haj-Eid
Supervisor, Technical and Administrative
Support Staff



U.S. Department
of Transportation
**Federal Aviation
Administration**

**NORTHWEST MOUNTAIN REGION
TRANSPORT AIRPLANE DIRECTORATE
AIRCRAFT CERTIFICATION SERVICE
LOS ANGELES AIRCRAFT CERTIFICATION OFFICE
3229 EAST SPRING STREET
LONG BEACH, CA 90806-2425**

MAY 13 1990

ACK Technologies, Inc
424 W. Julian Street
San Jose, California 95110

Gentlemen:

**Technical Standard Orders C91a Authorization
Emergency Locator Transmitter Model E-01**

Your application dated April 30, 1990, requesting the issuance of a Technical Standard Order (TSO) authorization in accordance with the procedural requirements of Federal Aviation Regulation (FAR) Part 21, Subpart O, has been reviewed. Based upon your data and statement of conformance certifying your article has met the requirements of FAR Part 21, Subpart O, and the minimum performance standards of TSO C91a and C115 (Ref. FAR 21.305(b)), authorization is hereby granted for Model E-01.

The following technical data are considered to fulfill the requirements for a TSO authorization and will be retained in our files:

1. Model E-01 ELT Installation Manual Operation Manual
2. Drawing Nos: E-01-MC, dated 4/30/90
E-01-11, dated 4/16/90
3. DO-160B Environmental Qualification Form dated 3/27/90
4. FAA TSO-C91a compliance Testing, dated 4/30/90

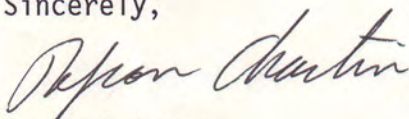
The quality control procedures contained in your quality control manual, currently on file at the Van Nuys Manufacturing Inspection District Office, and your statement that those procedures will be applied to the manufacture of the subject article at the above address, are considered adequate in accordance with FAR 21.143.

Effective this date, your authorization to use TSO procedures is extended to include the subject Emergency Locator Transmitter. You may identify this article with the applicable TSO markings as required by TSO's C91a.

As recipient of this TSO authorization, except as provided in FAR 21.3(d), you are required to report any failure, malfunction, or defect in any product or part manufactured by you or your contracted suppliers, and which you have determined has resulted or could result in any of the occurrences listed in FAR 21.3(c). The report should be communicated initially by telephone to the Manager, Technical and Administrative Branch, ANM-103L, (213) 988-5300, within 24 hours after it has been determined the failure has occurred, and followed up with a written notice. FAA Form 3330-2 (malfunction or defect report) or other appropriate format is acceptable in transmitting the required details. As required by FAR 21.613(b), you must also notify the FAA when you no longer manufacture a TSO approved article.

This authorization pertains only to manufacturing operations at the above address. This office must be notified in advance of any proposed facility relocation to preclude interruption while awaiting quality control approval of that facility.

Sincerely,



for

Frederick Lee
Manager, Los Angeles Aircraft
Certification Office



U.S. Department
of Transportation
**Federal Aviation
Administration**

Northwest Mountain Region
Western Acft. Cert. Office
P. O. Box 92007, ANM-171W
Los Angeles, CA 90009-2007

DEC 04 1987

ACK Technologies, Inc.
Attn: Mr. Mike Akatiff
424 W Julian Street
San Jose, California 95110

Gentlemen:

ACK Technologies, Inc., Altitude Encoder Model A-30
Technical Standard Orders C88a

Your application for authorization to use the Technical Standard Order (TSO) procedures, reference your letters dated September 25, 1987, and October 8, 1987, has been reviewed. The certification of conformance with the requirements of the Federal Aviation Regulations Part 21, Subpart O, and TSO C88a is acceptable.

Your request to deviate from TSO C88a as provided in the Federal Aviation Regulations 21.609, and use the environmental procedures of RTCA Document DO-160B, is approved.

The following technical data are considered to fulfill the requirements for TSO authorization and are being retained in our files:

1. ACK A-30 Altitude Encoder Operation Manual Installation Manual, dated 1/07/87
2. ACK A-30 Encoder Correspondence Test, dated 10/07/87
3. Quanta Lab. Sinusoidal Vibration Test Data Report, dated 10/8/87
4. ACK Nameplate Drawing A-30 M, dated 6/22/87
5. ACK DO-160B Environmental Qualification Form, no date

The quality control procedures contained in your quality control manual, entitled ACK Technologies, Inc., Quality Control Manual, dated November 10, 1987, is currently on file at the Manufacturing Inspection District Office in Van Nuys, California, and your statement that those procedures will be applied to the manufacture of the subject article at the above address, are considered adequate in accordance with FAR 21.143.

Effective this date, you are authorized to use TSO procedures for the subject altitude encoder unit and you may identify this article with the applicable TSO markings as required by TSOs C88a.

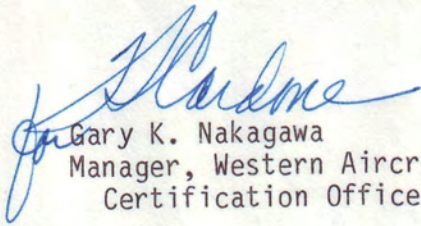
DEC 04 1987

2.

As a TSO manufacturer, you are required to report to the FAA any failure, malfunction, or defect related to your TSO authorization in accordance with the provisions of FAR 21.3. You must also notify the FAA when you no longer manufacture a TSO approved article as required by FAR 21.613(b).

This authorization pertains only to manufacturing operations at the above address and this office must be notified in advance of any proposed relocation to preclude interruption while awaiting quality control approval of your new facility.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gary K. Nakagawa", is written over the typed name.

Gary K. Nakagawa
Manager, Western Aircraft
Certification Office



U.S. Department
of Transportation
**Federal Aviation
Administration**

**Transport Airplane Directorate
Los Angeles Manufacturing
Inspection District Office**
3960 Paramount Blvd., Suite 100
Lakewood, Ca 90712

April 14, 2011

ACK Technologies Inc.
440 W. Julian St.
San Jose, CA. 95110

Dear Mr. Greg Akatiff:

We have completed our review of your quality manual, and found that it meets the new requirements of Title 14, Code of Federal Regulations, part 21, subpart O. The FAA approves the submitted manual with an effective date of **04/16/2011** (18-month compliance date or later). The FAA reserves the right to require changes, additions, or clarifications that may become necessary as a result of subsequent inspections and/or evaluations.

The FAA will validate the submitted quality manual for compliance to the new requirements at your facility's next scheduled certificate management activity.

Please retain this notification on file as evidence of FAA's approval of your quality manual.

Document Name: ACK Technology Quality Manual

Document Number: N/A

Revision: 1.4

Date: 4/12/2011

Comments:

John Granados
Aviation Safety Inspector, Los Angeles
Manufacturing Inspection District Office



European Aviation Safety Agency

EUROPEAN TECHNICAL STANDARD ORDER (ETSO) AUTHORISATION

EASA.IM.210.10028407

This European Technical Standard Order (ETSO) Authorisation is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation, subject to conditions specified below, to

**ACK TECHNOLOGIES INC
440 W Julian Street
SAN JOSE CA 95110
USA**

in accordance with Commission Regulation (EC) No. 1702/2003, Part 21, Section A, Subpart O and ETSO C142a, 2C91a, 2C126 for

**E-04 Emergency Locator Transmitter
P/N E-04(), E-04.0, E-04.8
DDP No. ACK E-04, ISSUE 1 or Subsequent Revisions**

Deviations:

For Deviations see DDP section 7

Conditions:

1. The above ETSO Authorisation holder is only authorised to identify an Article with this ETSO marking whilst remaining in compliance with the conditions retained for the Issue of this Authorisation.
 2. This ETSO Authorisation does not constitute an installation approval. It is the responsibility of those installing this article to determine that the aircraft installation conditions are within the ETSO standards.
- This ETSO Authorisation shall remain valid until surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 05.01.2010


Markus GOERNEMANN
Certification Manager
Parts & Appliances





Transport
Canada

Transports
Canada

Ottawa, Ontario
K1A 0N5

Your file Votre référence

Our file Notre référence

November 13, 2009

5012-E3-11 (5372607)

ACK Technologies Inc.
440 West Julian Street
San Jose, CA 95110

Attention: Mr. Mike Akatiff, President ACK Technologies Inc.

Subject: Approval of ACK Technologies Inc. Emergency Locator Transmitter (ELT)
Model E-04

Reference: ACK Technologies Inc. Letter to Transport Canada Civil Aviation (TCCA)
Dated July 28, 2009 (RDIMS 5141898)

Dear Mr. Akatiff:

This correspondence is in response to the referenced letter whereby ACK Technologies Inc. requested TCCA approval of the Emergency Locator Transmitter (ELT) model E-04.

This letter confirms acceptance by Transport Canada of the ELT model description indicated below that is eligible for installation on Canadian registered aircraft.

Model Number
E-04

Reference
TSO-C126
TSO-C91a
TSO-C142a

In order for this ELT to be installed in an aircraft, the requirements of CAR 551.104 must be met and the appropriate installation approval received from Transport Canada.

It is noted that ELTs require a Radio Equipment (RE) approval by Industry Canada (IC) in order to qualify for use in Canada. Accordingly, ACK Technologies Inc. is requested to apply directly to Industry Canada to obtain this RE approval. Please forward proof of the approval by IC to Mr. J.M.J. Levesque at the address shown immediately below. Upon receipt of this evidence, Transport Canada will then include the subject ELT model on the "Approved Emergency Locator Transmitter" list showing the only equipment eligible for installation on Canadian registered aircraft. This list is available at (<http://www.tc.gc.ca/CivilAviation/certification/elt.htm>).

Mr. J.M.J. Levesque
Senior Project Manager
National Aircraft Certification Branch (AARDE)
Civil Aviation, Transport Canada
Tower C, Place de Ville (3rd Floor)
330 Sparks Street
Ottawa, Ontario
K1A 0N5

Should you require further information, please do not hesitate to contact Paul Swan by telephone at 613-952-4439, by facsimile at 613-996-9178, or by email at paul.swan@tc.gc.ca.

Yours truly,

A handwritten signature in black ink, appearing to read 'Nancy Vachon', with a large, sweeping flourish at the end.

Mrs. Nancy Vachon
A/Chief, Project Management
National Aircraft Certification
Civil Aviation

cc: Industry Canada, (by email – certification.bureau@ic.gc.ca)

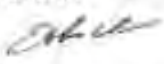
Bay Area Compliance Laboratories Corp.
INDUSTRY CANADA
CERTIFICATE OF COMPLIANCE

Bay Area Compliance Laboratories Corp. certifies that the apparatus detailed below complies with all applicable requirements of the stated specifications

| | |
|------------------------------|---|
| Certificate Number: | R0912163 |
| Certification Number: | 1863A-E04 |
| Certificate Holder: | ACK Technologies Inc. 440 W. Julian Street, San Jose, CA 95110, USA |
| Model Name/Number: | E-04 |
| Type of Equipment: | Emergency Locator Transmitter (ELT) |
| Specifications: | RSS-287, Issue 2, February 2007 |
| Test Laboratory: | Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave., Sunnyvale, CA 94089, USA Phone: (408) 732-9162, Fax: (408) 732-9164 www.baclicorp.com |
| IC Test Lab O.A.T.S.: | 3062A |
| Frequency Range: | 121.5 MHz & 406.037 MHz 121.5 MHz: 0.2 Watt |
| RF Output Power: | 406.037 MHz: 13.8 Watt |
| Antenna Information: | Whip Antenna 121.5 MHz: 3K20A3N |
| Emission Designation: | 406.037 MHz: 16K0G1D |

Certification of equipment means only that the equipment has met the requirements of the above noted specification. License applications, where applicable to use certified equipment, are acted on accordingly by the issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by Industry Canada / La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'Industrie Canada.

Date of Issue: 2010-03-01

Authorized by: 

John Chan, Certification Manager

Bay Area Compliance Laboratories Corp.
1274 Anvilwood Avenue
Sunnyvale, CA 94089, USA





ANAC AGÊNCIA NACIONAL
DE AVIAÇÃO CIVIL

1

Of. 485/2012/GGCP/SAR-ANAC

São José dos Campos, 15 May 2012.

Mr. Mike Akatiff
President
ACK Technologies Inc.
440 W Julian St.
San Jose – CA 95110.
USA

Subject: Design Approval Letter – DAL.
ANAC Project Number H.11-1132-0001.

Ref: ACK Technologies Application Form F-300-11E Dated 20 October 2011.
Los Angeles ACO letter dated 27 April 2012 (130-12-91).

Dear Sir,

1. After reviewing the data you submitted to comply with Brazilian requirements set forth in the ANAC RBAC 21.617, the ANAC grants to ACK Technologies Inc. this Design Approval Letter (DAL) for the:

| Model Number | Part Number | Description |
|--------------|-------------|--|
| E-04() | E-04 | Emergency Locator Transmitter – ELT 406/121.5 MHz, Type AF |
| E.04.0() | E-04.0 | Lithium Battery Pack |
| E.04.8 () | E-04.8 | Whip Antenna |

TSO's C91a, C126, C142a


2. There are no deviations.

3. Please be advised that major modifications defined in RBAC 21.611(b) of the current approved design should be submitted to ANAC after FAA approval.

4. As a design approval holder, you are required to report to the ANAC any failure, malfunction or defect related to the products identified herein in accordance with the provisions of RBAC 21.3.

5. You must also notify the ANAC when you discontinue the production of these articles.

Superintendência de Aeronavegabilidade - SAR
Gerência-Geral de Certificação de Produto Aeronáutico - GGCP
Gerência de Programas - GCPA
Telefone: 55 (12) 3797-2525


Avenida Cassiano Ricardo, 521
Bloco B/2º andar - Parque Residencial Aquarius
São José dos Campos - SP - Brasil - CEP 12.246-870
www.anac.gov.br/certificacao



ANAC AGÊNCIA NACIONAL
DE AVIAÇÃO CIVIL

2

6. Please note that TSO articles must have a separated approval for installation in an aircraft.

7. Mr. Marcelo Ramsdorf is the project officer assigned for this program. For additional information on this subject, he may be contacted directly by telephone at 55 (12) 3797-2606, by fax at 55 (12) 3797-2330 or by e-mail at marcelo.ramsdorf@anac.gov.br.

Yours sincerely,

Helio Tarquinio Junior

General Manager

Aeronautical Product Certification Branch

MAR/mar

Copies:

FAA 1

LSE 1

PPI 1

PROTOCOLO ANAC

00066.020408/2012-85



REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE TELECOMUNICAÇÕES

Certificado de Homologação
(Intransferível)

Nº **1992-13-3528**

Validade: **19/06/2015**

Emissão: **19/06/2013**

Solicitante:

MSD SERVIÇOS AERONAUTICOS LTDA
ALAMEDA CLÁUDIA 597 CONDOMÍNIO TERRAS DE SÃO JOSÉ
13306-420 - ITU - SP

Fabricante:

ACK TECHNOLOGIES
WEST JULIAN ST 440 CA 95110
SAN JOSE - USA

Este documento homologa, nos termos do Regulamento para Certificação e Homologação de Produtos para Telecomunicações, aprovado pela Resolução Anatel nº 242, de 30 de novembro de 2000, a Declaração de Conformidade emitida pelo solicitante. Esta homologação é expedida em nome do solicitante aqui identificado e é válida somente para o produto a seguir discriminado, cuja utilização deve observar as condições estabelecidas na regulamentação do serviço ou aplicação a que se destina.

Tipo:

Transmissor de Radiobaliza - Categoria II

Modelo(s):

ACK E-04

Serviço/Aplicação:

Radiodeterminação

Características técnicas básicas:

| Frequência de Operação (MHz) | Potência Máxima de Saída (W) | Designação de Emissões |
|---------------------------------|---------------------------------|------------------------|
| 406.037 | 7,94 | 16KOG1D |

Observações:

Constitui obrigação do fabricante do produto no Brasil providenciar a identificação do produto homologado, nos termos do art. 39 do Regulamento anexo à Resolução Anatel nº 242, em todas as unidades comercializadas, antes de sua efetiva distribuição ao mercado, assim como observar e manter as características técnicas que fundamentaram a certificação original.

As informações constantes deste certificado de homologação podem ser confirmadas no SGCH - Sistema de Gestão de Certificação e Homologação, disponível no portal da Anatel. (www.anatel.gov.br).

Marcos de Souza Oliveira
Gerente de Certificação e Numeração



ADSS Project No. 2009-DT-EPG-NOFED-D9044

COSPAS-SARSAT Certification for ACK Technologies INC. Model E04 ELT

Submitted by Michael Lin, Test Director
Laboratory Division
US Army Electronic Proving Ground, Fort Huachuca, Arizona 85613-7063
520-533-8148

Date of Issue: February 19, 2010
Version: 4.0 DRAFT

Dates of Test: 28 April – 5 February, 2010

Prepared for:

ACK Technologies Inc.
President: Mike Akatiff
440 W. Julian Street
San Jose, Ca 95110
408-287-8021

Beacon Under Test (BUT) during measurements. Testing was performed at ambient temperature; and

- (3) Navigational and Satellite Qualitative testing occurred at the Global Positioning System (GPS) Facility.

INSTRUMENTATION

Instrumentation and calibration are contained in Enclosure 3.

TEST OBJECTIVE

Determine whether the ELT meets the requirements specified in COSPAS-SARSAT specification C/S T.001 and COSPAS-SARSAT approval standard C/S T.007.

DETAILS OF TEST

All testing was performed with the Lithium Battery Pack, Remote Cable, Cockpit Remote, Audio Alert Cable and Audio Alert attached to the beacon. The beacon does not have a Global Navigation Satellite System (GNSS); the external navigational input device was connected during navigational testing.

TEST DATA

Test data are presented in Enclosure 2.

SUMMARY OF RESULTS

ACK's E-04 ELT met all COSPAS-SARSAT requirements. Test personnel conducted the following certification tests per C/S T.007 with the beacon transmitting 406MHz and one 121.5 MHz homing beacon with Standard Location Protocols.

a. ***Electrical and Functional Tests at Constant Temperature.*** Test personnel tested the ELT's transmitter power output, digital message, digital message generator, modulation, transmitted frequency, spurious output, and self-test mode at the specified minimum [-20 degrees Celsius (°C)], maximum (55 °C), and ambient (25 °C) temperatures. Following the firmware update, the ELT's transmitter power output, digital message, digital message generator, modulation, transmitted frequency and self-test mode were re-tested. The Lithium Battery Pack, Remote Cable, Cockpit Remote, Audio Alert Cable, Audio Alert and navigation data emulator were operational and attached to the beacon during Current Measurements. The ELT met the requirements (Encl 2, Ref 2).



TYPE APPROVAL CERTIFICATE

For a 406 Megahertz Distress Beacon for use with the Cospas-Sarsat Satellite System

Certificate Number: 212

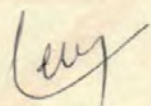
Manufacturer: ACK Technologies Inc., USA
Beacon Type: ELT (AF)
Beacon Model(s): E-04
Test Laboratory: EPG, Fort Huachuca, Arizona, USA
Dates of Test: April 2009 – November 2010

Details of the beacon features and battery type are provided overleaf.

The Cospas-Sarsat Council hereby certifies that the 406 MHz Distress Beacon Model identified above is compatible with the Cospas-Sarsat System as defined in documents:

C/S T.001 Specification for Cospas-Sarsat 406 MHz Distress Beacon
Issue 3 – Rev. 10, October 2009
C/S T.007 Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard
Issue 4 – Rev. 4, October 2009

TAC 212 originally issued on: **26 January 2011**


D. Levesque
Head of Cospas-Sarsat Secretariat

NOTE, HOWEVER:

1. This certificate does not authorize the operation or sale of any 406 MHz distress beacon. Such authorization may require type acceptance by national administrations in countries where the beacon will be distributed, and may also be subject to national licensing requirements.
2. This certificate is intended only as a formal notification to the above identified manufacturer that the Cospas-Sarsat Council has determined, on the basis of test data of a beacon submitted by the manufacturer, that 406 MHz distress beacons of the type identified herein meet the standards for use with the Cospas-Sarsat System.
3. Although the manufacturer has formally stated that all beacons identified with the above model name(s) will meet the Cospas-Sarsat specification referenced above, this certificate is not a warranty and Cospas-Sarsat hereby expressly disclaims any and all liability arising out of or in connection with the issuance, use or misuse of the certificate.
4. This certificate is subject to revocation by the Cospas-Sarsat Council should the beacon type for which it is issued cease to meet the Cospas-Sarsat specification. A new certificate may be issued after satisfactory corrective action has been taken and correct performance demonstrated in accordance with the Cospas-Sarsat Type Approval Standard.
5. Cospas-Sarsat type approval testing requirements only address the electrical performance of the beacon at 406 MHz. Conformance of the beacon to operational and environmental requirements is the responsibility of national administrations.

Beacon Model(s): E-04

Operating temperature range: -20°C to +55°C (Class-2)

Operating Lifetime: 24 hours

Transmit Frequency: 406.037 MHz

Battery Details: battery pack of 4 (four) Lithium-Sulphur Dioxide, D-type cells, cell model: SAFT LO 26 SX

Beacon Model Features:

- 121.5 MHz auxiliary radio locating device (20.7 dBm, duty cycle 50%);
- Automatic activation via G-switch;
- Self-test mode (one burst of 520 ms);
- Remote control panel (ACK P/N E-04.5);
- External audio alert indicator (ACK P/N E-04.7);
- Approved for use with external aircraft antennas: whip antenna (ACK P/N E-04.8); and blade antenna (Sensor Systems P/N S65-1231-1).

Approved Beacon Message Protocols: Beacon is approved for encoding with the message protocols indicated with "Yes" and black text below:

USER PROTOCOLS

No Maritime with MMSI

No Maritime with Radio Call Sign

No EPIRB Float Free with Serial Number

No EPIRB Non Float Free with Serial Number

No Radio Call Sign

No Aviation

No ELT with Serial Number

No ELT with Aircraft Operator and Serial Number

No ELT with Aircraft 24-bit Address

No PLB with Serial Number

No National (Short Format Message)

No National (Long Format Message)

USER-LOCATION PROTOCOLS

No Maritime with MMSI

No Maritime with Radio Call Sign

No EPIRB Float Free with Serial Number

No EPIRB Non Float Free with Serial Number

No Radio Call Sign

No Aviation

No ELT with Serial Number

No ELT with Aircraft Operator and Serial Number

No ELT with Aircraft 24-bit Address

No PLB with Serial Number

LOCATION PROTOCOLS

No Standard Location: EPIRB with MMSI

No Standard Location: EPIRB with Serial Number

Yes Standard Location: ELT with 24-bit Address

Yes Standard Location: ELT with Aircraft Operator Designator

Yes Standard Location: ELT with Serial Number

No Standard Location: PLB with Serial Number

No National Location: EPIRB

No National Location: ELT

No National Location: PLB



TYPE APPROVAL CERTIFICATE

For a 406 Megahertz Distress Beacon for use with the Cospas-Sarsat Satellite System

Certificate Number: 277

Manufacturer: ACK Technologies Inc., USA
Beacon Type: ELT (AF)
Beacon Model(s): E-04, E-04C
Test Laboratory: EPG, Fort Huachuca, Arizona, USA
Dates of Test: April 2009 – November 2010

Details of the beacon features and battery type are provided overleaf.

The Cospas-Sarsat Council hereby certifies that the 406 MHz Distress Beacon Model identified above is compatible with the Cospas-Sarsat System as defined in documents:

C/S T.001 Specification for Cospas-Sarsat 406 MHz Distress Beacon
Issue 3 – Rev. 10, October 2009
C/S T.007 Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard
Issue 4 – Rev. 4, October 2009

TAC 212 originally issued on: **26 January 2011**
First additional TAC 277 issued on: **25 May 2016**

Steven W. Lett
Head of Cospas-Sarsat Secretariat

NOTE, HOWEVER:

1. This certificate does not authorize the operation or sale of any 406 MHz distress beacon. Such authorization may require type acceptance by national administrations in countries where the beacon will be distributed, and may also be subject to national licensing requirements.
2. This certificate is intended only as a formal notification to the above identified manufacturer that the Cospas-Sarsat Council has determined, on the basis of test data of a beacon submitted by the manufacturer, that 406 MHz distress beacons of the type identified herein meet the standards for use with the Cospas-Sarsat System.
3. Although the manufacturer has formally stated that all beacons identified with the above model name(s) will meet the Cospas-Sarsat specification referenced above, this certificate is not a warranty and Cospas-Sarsat hereby expressly disclaims any and all liability arising out of or in connection with the issuance, use or misuse of the certificate.
4. This certificate is subject to revocation by the Cospas-Sarsat Council should the beacon type for which it is issued cease to meet the Cospas-Sarsat specification. A new certificate may be issued after satisfactory corrective action has been taken and correct performance demonstrated in accordance with the Cospas-Sarsat Type Approval Standard.
5. Cospas-Sarsat type approval testing requirements only address the electrical performance of the beacon at 406 MHz. Conformance of the beacon to operational and environmental requirements is the responsibility of national administrations.

| | |
|-------------------------------------|--|
| Beacon Model(s): | E-04, E-04C (*) |
| Operating temperature range: | -20°C to +55°C (Class-2) |
| Operating Lifetime: | 24 hours |
| Transmit Frequency: | 406.037 MHz |
| Battery Details: | battery pack of 4 (four) serially-connected Lithium-Sulphur Dioxide, D-type cells, cell model: SAFT LO 26 SX |

Beacon Model Features:

- 121.5 MHz auxiliary radio locating device (20.7 dBm, duty cycle 50%);
- Automatic activation via G-switch;
- Self-test mode (one burst of 520 ms);
- Remote control panel, ACK P/N E-04.5 (model "E-04" only);
- Remote control panel, ACK P/N E-04.5.1 (model "E-04C" only);
- External audio alert indicator (ACK P/N E-04.7);
- Interface to external navigation device;
- Approved for use with external aircraft antennas: whip antenna (ACK P/N E-04.8);
blade antenna (Sensor Systems P/N S65-1231-1), rod antenna (RAMI AV-300), and
blade antenna (Comant CI 319-1).

Approved Beacon Message Protocols: Beacon is approved for encoding with the message protocols indicated with "Yes" and black text below:

| USER PROTOCOLS | USER-LOCATION PROTOCOLS | LOCATION PROTOCOLS |
|---|---|--|
| No Maritime with MMSI | No Maritime with MMSI | No Standard Location: EPIRB with MMSI |
| No Maritime with Radio Call Sign | No Maritime with Radio Call Sign | No Standard Location: EPIRB with Serial Number |
| No EPIRB Float Free with Serial Number | No EPIRB Float Free with Serial Number | Yes Standard Location: ELT with 24-bit Address |
| No EPIRB Non Float Free with Serial Number | No EPIRB Non Float Free with Serial Number | Yes Standard Location: ELT with Aircraft Operator Designator |
| No Radio Call Sign | No Radio Call Sign | Yes Standard Location: ELT with Serial Number |
| No Aviation | No Aviation | No Standard Location: PLB with Serial Number |
| No ELT with Serial Number | No ELT with Serial Number | No National Location: EPIRB |
| No ELT with Aircraft Operator and Serial Number | No ELT with Aircraft Operator and Serial Number | No National Location: ELT |
| No ELT with Aircraft 24-bit Address | No ELT with Aircraft 24-bit Address | No National Location: PLB |
| No PLB with Serial Number | No PLB with Serial Number | |
| No National (Short Format Message) | | |
| No National (Long Format Message) | | |

NOTE: (*) Model "E-04C" is a variant of the base model "E-04" equipped with the alternative remote control panel P/N E-04.5.1 and the alternative control cable & connector

Database ID: 212-2

TAC Number: 212 TAC Date: 26-Jan-11 TAC Rev Date:

Beacon Model Name: E-04

Additional Names:

Manufacturer: ACK Technologies Inc.

Tx Frequencies: 406.037 MHz In Production: Yes Class: 2

Type: ELT (Automatic Fixed) Tested Life: 24
FF=Float Free (24 / 48 hrs)Battery: Lithium-Sulfur Dioxide (Li-SO₂), SAFT LO26SX, 4 serially connected D-size cells
Manufacturer (Model, No of Cells)Protocols Tested: SL Protocol Notes: U=User; UL=User-Location;
Self Test: Yes SL=Standard Location; NL=National Location

Self Test RF: Yes Self Test RF (Short/Long):

Self Test Format Flag: Long Self Test Consistent with 15 Hex ID: Yes

Homer Freq: 121.5 MHz Homer Duty Cycle: 50%

Homer Power: 20.7 dBm

Strobe Light: No Strobe Brightness: N/A

Strobe Duty Cycle: N/A

Nav Device: Ext

Nav Device Model: Types of interfaces to external navigation device: NMEA 0183, Bendix-King, Garmin

Separable Antenna: No

Antenna Model: External antennas: ACK E-04.8 (whip) and Sensor Systems S65-1231-1 (blade)

Additional Functions: automatic activation via G-switch; remote control panel P/N E-04.5.1; external audio alert indicator P/N E-04.10.1.5

Comments General: Model "E-04C" is a variant of the base model "E-04" equipped with the alternative remote control panel P/N E-04.5.1 and the alternative control cable & connector. E-04C doesn't support position update feature, but capable to accept position from external device prior to beacon activation. Approved for message encoding with Standard Location protocols : ELT with 24-bit address, ELT with Serial Number, ELT with Aircraft Operator Designator. Tested as ELT (AF) with external fixed antenna.

TAC Rev History: 1) 26-Jan-11: E-04 type approval and TAC 212 issue; 2) 24-May-13: "E-04" variant, model "E-04C" added to TA 212

Database ID: 212-2

ACK TECHNOLOGIES INC.
AVIONICS FOR GENERAL AND COMMERCIAL AVIATION
440 W. JULIAN STREET SAN JOSE, CA 95110
408 287-3021 Fax 408 971-6879



Control No.: 1302/2465/12

Date Due: 8/12/13

RTCA
MEMBER

June 12, 2013

Federal Aviation Administration
Northwest Mountain Region ANM100L
Los Angeles Aircraft Certification Office
3960 Paramount Blvd. Suite 100
Lakewood, CA 90712-4137

RECEIVED
Los Angeles Aircraft
Certification Office

JUN 14 2013

Action: _____
Date Ans: _____
File Code: _____

Attn: Manager of Technical and Administration Support

RE: Minor modification of the model E-04() 121.5/406 MHz ELT certified under TSO-C126, TSO-C126b, TSO-C91a and TSO-C142a per FAR Part 21.619 (a)

We have made the following minor changes to the model E-04 ELT.

We have changed the size of the remote control housing to accommodate the standard cutout used on many corporate and commercial aircraft.

We have replaced the two 4 pin remote interface cables with a single 8 pin circular connector.

This model will be marked as Model E-04C.

Also enclosed are:

Drawing E-04.12C TSO Label and Markings

Drawing E-04.12C MP Major Parts

Photos of old and new interface

COSPAS/SARSAT approval of Model E-04C

The undersigned certifies that the upcoming changes to the Model E-04 121.5/406 MHz ELT have been tested and comply with all requirements of TSO C-126b.

ACK Technologies, Inc.

Mike Akatiff, President
DMIR602368NM

| FAA ACTION | | |
|---|--|---------------------------------|
| Los Angeles Aircraft Certification Office | | |
| <input type="checkbox"/> Approve | <input type="checkbox"/> EASA CS | <input type="checkbox"/> JAR's |
| <input type="checkbox"/> Reject | <input type="checkbox"/> CAR's | |
| <input type="checkbox"/> Acknowledge | <input checked="" type="checkbox"/> Concur | <input type="checkbox"/> Accept |
| TSO/Project #s <u>E-126b</u> | | |
| Comments: _____ | | |
| Branch# <u>1001</u> | Concurrence <u>GC</u> | Date <u>6/28/13</u> |
| FAA Staff Spec. <u>[Signature]</u> | Phone _____ | Date _____ |



**QUANTA
LABORATORIES**

3199 De La Cruz Boulevard • Santa Clara, CA 95054-2483

TEL: (408) 988-0770

FAX: (408) 988-0762

E-MAIL: test@quantalabs.com

Certificate of Conformance

This is to certify that the results from the test(s) requested by

ACK Technologies are on file under

Quanta Laboratories Job No. QL-14-0413 and conform

to the specification(s) stated in P.O. No. 153

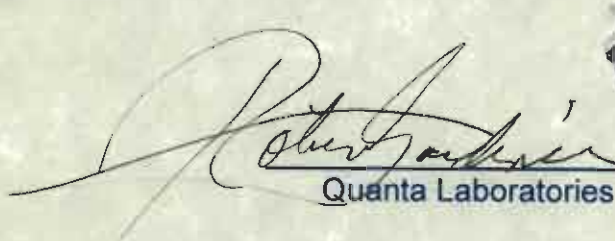
These results apply to the following equipment and are
available for review upon request.

Model No.: E-04.0 Lithium Battery

S/N: (SEE REPORT)

*** Swept Sine Vibration and Shock Test ***
*** Temp. Altitude, Temp. Cycling and Short Circuit Tests ***

(UN38.3 T1, T2, T3, T4, T5)


Quanta Laboratories

5/9/14
Date



Federal Aviation Administration

Memorandum

Date: SEP 18 2017

To: Mansour Rafat, Manager, Systems and Equipment Branch, AIR-790

From: Louis R. Volchansky, Manager, Systems and Equipment Standards Branch, AIR-6B0

Prepared by: Dara Gibson, Aerospace Engineer, Systems Integration Section, AIR-6B4

CC: James Allison, Aerospace Engineer, Systems & Equipment Section, AIR-793

Subject: Response to ACK Technologies' deviation request to TSO-C142a for their ELT battery pack P/N E-04.0

Memo: AIR-6B0-17-6B0-DM267

This is in response to your memorandum (130L-17-194), dated July 20, 2017, requesting approval for ACK Technologies to deviate from TSO-C142a, *Non-Rechargeable Lithium Cells and Batteries*.

This office concurs with this request as indicated in the attached Table 1. If you have any questions regarding this memorandum, please contact Norman Pereira at (202) 267-1639.

Table 1 - Deviation Response

| Index # | TSO/ Standard | Requirement | Deviation Request/ELOS | Request Granted/ Denied | Comments to Request |
|---------|---------------|---|---|-------------------------|---|
| 1 | TSO-C142a | <p>APPENDIX 1</p> <p>TABLE 2</p> <p>FIRE TEST</p> <p>Test equipment unit with battery in place for fire penetration by igniting a single unit. SoC of a cell : 100%</p> | <p><u>Deviation Request:</u></p> <p>Perform the same test without the external battery casing, to allow for the flame to be applied directly to the "D" cell batteries. Reference "Request for deviation TSO-C142a" dated March 28th 2017 from ACK Technologies Inc.</p> <p><u>Deviation Justification:</u></p> <p>The procedure is to test the equipment unit with battery in place for fire penetration by igniting a single unit with the cell at 100% charge. This test was designed to ensure that the unit contains the fragments/debris from explosion but not gases/vapors/smoke and the fire within the unit must self-extinguish. The ELT unit has plastic casing so fire was applied directly to the 4 "D" cell batteries, a worst case scenario. In this test, the "D" cell battery casing itself contained all the fragments and debris resulting from the thermal runaway and therefore the fragments and debris were contained within the unit as per the intent of the requirement.</p> <p><u>Equivalent Level of Safety:</u></p> <p>The deviation provides for the testing of the cells to the same requirements as the original intent of the standard. The cells and battery pack meet all requirements of the test.</p> | Granted | Deviation is granted based on providing an Equivalent Level of Safety for the FIRE Test requirement. Refer to the ACK Technologies Inc., deviation request letter dated July 13, 2017 and ACK E-04.0.T2 Test report dated March 28, 2017. |