



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

Aviation Safety

**Compliance & Airworthiness Division  
Los Angeles ACO Branch**  
3960 Paramount Boulevard, Suite 100  
Lakewood, CA 90712-4137

July 30, 2019

In reply refer to: 790-19-8383

ACK Technologies Inc.  
Attn: Mr. Mike Akatiff  
3350 Scott Blvd.  
Santa Clara, CA 95054

Dear Mr. Akatiff:

**Subject:** TSO-C91a, C126 and 142a, Technical Standard Order Authorizations (TSOA)  
Re-Issuance Request in pursuant of 14 CFR 21.609 (b) – Location of or change to  
manufacturing facilities.

**References:** 1. FAA TSOA letters (dated Dec. 4, 1987, May 13, 1990, July 1, 2009, and  
February 22, 2013)

This is in reply to your letter dated April 16, 2019 requesting for TSO-C91a, C126 and 142a  
Technical Standard Order Authorizations (TSOA) re-issuance in pursuant of 14 CFR 21.609(b) -  
Location of or change to manufacturing facilities. In accordance with 14 CFR 21.611, we find it  
acceptable to re-issue the TSOA for the facility relocation.

**From:** ACK Technologies Inc.  
440 W. Julian Street  
San Jose, CA 95110

ACK Technologies Inc.  
3350 Scott Blvd.  
Santa Clara, CA 95054

This TSOA re-issuance is applicable for the models below:

<b>TSO</b>	<b>Basic Model</b>	<b>Production Models</b>	<b>Description</b>	<b>Original Date Issued</b>
TSO-C88a	A-30	A-30	Altitude Encoder Model A-30	December 04, 1987
TSO-C91a	E-01	E-01	Emergency Locator Transmitter Model E-01	May 13, 1990

TSO-C91a, TSO-C126b, TSO-C142a	ACK E-04 (Type AF) ACK E-04.8 ACK E-04.0	ACK E-04 (Type AF)  ACK E-04.8  ACK E-04.0	406 MHz ELT Emergency Locator Transmitter 406/121.5 MHz, 406 MHz ELT- Emergency Locator Transmitter Whip Antenna, Lithium Battery Pack (Non- Rechargeable)	July 1, 2009
TSO-C126b	E-04/E-04( )	E-04/E-04( )	406/121.5 Hz ELT Emergency Locator Transmitter Type AF	February 22, 2013

Effective this date of this letter, you are authorized to use TSO procedures as prescribed by Subpart O of Federal Aviation Regulations (FAR) part 21 and to identify those parts listed above with the applicable TSO marking requirements defined in 14 CFR 21.616(d).

We consider your quality system, as defined in your Quality Assurance Manual, Revision 1.6, dated 5/3/2019, or later FAA approved version on file at the Seattle Manufacturing Inspection District Office (MIDO) Section, Washington, satisfactory for production of the articles listed above at your 3350 Scott Blvd., Santa Clara, CA facility. ACK Technologies, Inc. must furnish the following statement to the original owner or installer of each article (or multiple articles if furnished to one source):

“The conditions and tests required for TSO approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the TSO standards which include any accepted integrated non-TSO functions. TSO articles and any accepted integrated non-TSO functions(s) must have separate approval for installation in an aircraft. The articles may be installed only according to 14 CFR part 43 or the applicable airworthiness requirements.”

This TSO authorization, issued pursuant to 14 CFR 21.611 is effective until surrendered, withdrawn or otherwise terminated under the provision of 14 CFR 21.613. With notice, we may withdraw this TSO authorization if articles are not in compliance with the applicable TSO performance standards pursuant to 14 CFR 21.2.

You must provide one copy or online access to data listed as a furnished data requirement in the TSO to the original owner/installer of each article or multiple articles if furnished to one source (e.g., an operator, type certificate holder, or repair station).

You must obtain FAA approval before making any changes to the location of your manufacturing facilities pursuant to 14 CFR 21.609(b).

Without further FAA approval, we do not allow a manufacturer to mark articles after it changes its company name, address, or ownership. You must notify the ACO Branch and MIDO Section of name, address, or proposed ownership changes.

Pursuant to 14 CFR 21.614, a holder of a TSOA may not transfer it to another person or location. If you wish to transfer it, you must request a transfer from the FAA.

Send to the office below any design change(s) for this TSO article as outlined in 14 CFR 21.619(a). You must notify us of minor design changes within six months. Also, as recipient of this authorization, we require you to report any failure, malfunction, or defect relating to articles produced under this authorization in accordance with the provisions of 14 CFR 21.3. The report should be communicated initially by telephone to the Manager, Systems and Equipment Section, AIR-793, (562) 627-5330, within 24 hours after it has been determined the failure has occurred and followed up with a written notice. Federal Aviation Administration Form 8010-4 (Malfunction or Defect Report) or other appropriate format is acceptable in transmitting the required details.

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, please contact Mr. James Allison, Project Manager, by telephone at (562) 627-5315, or by email at [james.allison@faa.gov](mailto:james.allison@faa.gov).

Sincerely,



Mansour Rafat  
Aviation Safety  
Manager, Systems and Equipment Section



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 (3<sup>rd</sup> 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](mailto:paul.swan@tc.gc.ca).

Yours truly,

A handwritten signature in black ink, appearing to read 'Nancy Vachon', written in a cursive style.

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

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



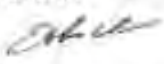
**Bay Area Compliance Laboratories Corp.**  
**INDUSTRY CANADA**  
**CERTIFICATE OF COMPLIANCE**

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

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

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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 - GCPR  
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

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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](mailto: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](http://www.anatel.gov.br)).**

Marcos de Souza Oliveira  
Gerente de Certificação e Numeração





## TYPE APPROVAL CERTIFICATE

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

**Certificate Number: 212**

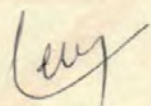
**Manufacturer:** ACK Technologies Inc., USA  
**Beacon Type:** ELT (AF)  
**Beacon Model(s):** E-04  
**Test Laboratory:** EPG, Fort Huachuca, Arizona, USA  
**Dates of Test:** April 2009 – November 2010

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.



<b>Beacon Model(s):</b>	E-04, E-04C (*)
<b>Operating temperature range:</b>	-20°C to +55°C (Class-2)
<b>Operating Lifetime:</b>	24 hours
<b>Transmit Frequency:</b>	406.037 MHz
<b>Battery Details:</b>	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



# TYPE APPROVAL CERTIFICATE

For a 406 Mega-Hertz Distress Beacon for Use with the Cospas-Sarsat Satellite System

**Certificate Number: 328**

**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**  
Second additional TAC 328 issued on: **20 May 2020**

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.
6. This certificate authorizes the use of the registered name mark "Cospas-Sarsat" and of registered trademarks for the Programme's logos, for labelling, instruction materials, and marketing of the 406-MHz beacon model identified, but not for other marketing or sales purposes (i.e., not for general uses beyond this specific beacon model).

**Certificate Number: 328**

**Dated: 20 May 2018**

**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-04.8 (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 RLS Location: EPIRB
No National (Short Format Message)		No RLS Location: ELT
No National (Long Format Message)		No RLS Location: PLB
		No ELT(DT) Location: ELT with Serial Number
		No ELT(DT) Location: ELT with Aircraft Operator and Serial Number
		No ELT(DT) Location: ELT with Aircraft 24-bit Address

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



**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>1002</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](mailto: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

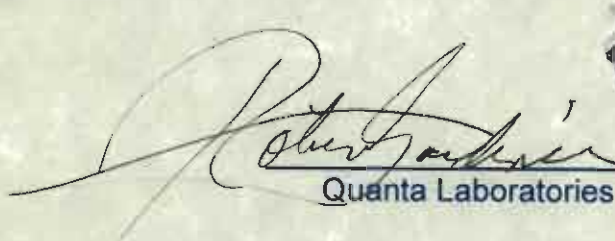
These results apply to the following equipment and are  
available for review upon request.

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

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# 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

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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 TABLE 2 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><b><u>Deviation Request:</u></b> 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 28<sup>th</sup> 2017 from ACK Technologies Inc.</p> <p><b><u>Deviation Justification:</u></b> 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><b><u>Equivalent Level of Safety:</u></b> 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.