



Electronics for Harsh Environments

**FEDERAL COMMUNICATION COMMISSION
445 12TH STREET, SW
WASHINGTON, DC 20554
USA**

Blagnac, on December 12th, 2005

V/Réf. :
N/Réf : 05B68734
P.J. :

ELTA Grantee Code: LYJ

SIÈGE SOCIAL :

14, place Marcel Dassault
B.P. 48
31702 BLAGNAC Cedex
France

ELTA contact : C. CRESP, c.cresp@elta.fr

SUBJECT : Operational Description of our ELT models ADT406 S (Request for Equipment notification)

Dear Sir,

Please find here under some information related to the operational description of our new Emergency Locator Transmitter (ELT) model ADT 406 S. This model is directly derived from the two previous models ADT406 AF/AP and ADT406 AP of the ADT406 family. This is the Survival model.

This ELT equipment is only a simple three frequency distress transmitter without any adjustment controlled by the user.

The operational description is part of the document issued for ETSO & TSO Approval:

- Document 05E67763, "TSO C91a & TSO C126 Qualification Data Package for ELT model ADT 406 S (here after presented without its appendixes)
- Document 05E63754, Declaration of Design and Performances (DDP)

Emission type for 121.5 MHz is 3K20A3X (± 6 KHz allowed bandwidth),
Emission type for 243 MHz is 3K20A3X (± 12 KHz allowed bandwidth),
Emission type for 406.028 MHz is 16K0G1D (± 1 KHz allowed bandwidth).

Antenna radiation patterns requirements are part of the Cospas-Sarsat specification and were tested in the accredited laboratory INTESPACE located in Toulouse, France.

Here under are the documents 05E67763 and 05E63754.

C. CRESP
Product Support Manager

CEIS TM, ENERSYS, CITA
et ELFES ELECTRONIQUES
sont des marques
de ELTA S.A.

S.A. au capital de 2 600 000 €
R.C.S Toulouse 92 B 1746
SIREN 388 919 177
Code A.P.E. 322 A
T.V.A. FR 27 388 919 177



**TSO C91a & C126
QUALIFICATION DATA
PACKAGE for
ELT model ADT 406 S**

Référence 05E67763

Révision : A

ORIGINAL EN ROUGE

<u>Rédigé par :</u> (issued by) E. LABRIFFE <i>E. Labriffe</i>	<u>Vérifié par :</u> (checked by) C. CRESPIER <i>C. Crespier</i>	<u>Approuvé par :</u> (approved by) T. PORTES <i>T. Portes</i>	<u>Emis le :</u> 20 / 10 / 2005
<p>Ce document est un fichier informatique et ne peut être modifié manuellement.</p> <p>Ce document est la propriété d'ELTA et ne peut être reproduit, ou communiqué, sans son autorisation écrite.</p>			
Forme 99 Q 8 0269, Rev. : C		N° archive :	Page : 1 / 3

DOCUMENT REVISION

Révision <i>Issue</i>	Nom de l'émetteur <i>Name</i>	Description de l'évolution <i>Revision description</i>	Date <i>date</i>
A	E.LABRIFFE	Creation (BPE)	oct 20 th ,05

SUMMARY

1. SUBJECT	3
2. APPLICABLE DOCUMENTS.....	3
3. OTHER RELATED DOCUMENTS.....	3
4. BACKGROUND ON EQUIPMENT DEVELOPMENT.....	4
5. APPLICABILITY.....	4
5.1. MINIMUM PERFORMANCE STANDARD	5
5.2. ENVIRONMENTAL STANDARD.....	5
5.3. COMPUTER SOFTWARE	5
6. MARKING.....	5
7. DATA REQUIREMENTS	6
7.1. OPERATING INSTRUCTIONS	6
7.2. EQUIPMENT LIMITATIONS	6
7.3. INSTALLATION PROCEDURES & LIMITATIONS.....	6
7.4. SCHEMATICS DRAWINGS AS APPLICABLE TO THE INSTALLATION PROCEDURES	6
7.5. SPECIFICATIONS.....	6
7.6. MAJOR COMPONENTS P/N LIST.....	6
7.7. ENVIRONMENTAL QUALIFICATION FORM AS PER ED-14D/DO-160D.....	7
7.8. REGISTRATION INFORMATION.....	8
7.9. MANUFACTURER'S TSO QUALIFICATION TEST REPORT	8
7.10. NAME PLATE DRAWINGS.....	8
7.11. ED-12B/DO-178B DOCUMENTATION	8
8. DEVIATION	9
9. STATEMENT OF CONFORMANCE	9
10. ACTUAL APPROVALS	9
11. APPENDIX LIST.....	9

ORIGINAL EN ROUGE

1. SUBJECT

The purpose of this document is to supply the Federal Aviation Administration (FAA) with the relevant data needed to perform the TSO C91a & C126 approval process of the ELT model ADT 406 S manufactured by ELTA, F6614.

It includes equipment description, user documentation, maintenance documentation and results of the test performed (manufacturer QTR).

This model is already ETSO'ed per EASA.210.353 letter dated October 12, 2005.

This model is a "Survival" derived from ELT model ADT406 AF/AP already TSO'ed per FAA letter dated February 24, 2003 and JTSO'ed per F.O 89 letter dated October 3, 2003

Basic electrical and RF tests were performed internally at ELTA premises, Blagnac France.

COSPAS-SARSAT type approval tests and environmental tests were performed in approved laboratory:

- INTESPACE, approved COSPAS-SARSAT test laboratory located in Toulouse France for the Cospas-Sarsat aspects (operation on 406.028 MHz),
- EMITECH, located closed to Paris, for the EMI/RFI,
- ETBS, a military test laboratory located in Bourges, France, for the environmental tests,
- MECANO-ID, located in Toulouse France, for vibration & 50g / 11ms Shocks,.

Detailed laboratory reports are included in appendixes.

2. APPLICABLE DOCUMENTS

- Ref. 1: C/S T.001, Specification for Cospas-Sarsat 406 MHz Distress Beacons, Issue 3 - Revision 5, dated October 2003
- Ref. 2: C/S T.007, Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard, Issue 3 - Revision 11, dated October 2004
- Ref. 3: RTCA DO-183, Issue May 1983
- Ref. 4: RTCA DO-204, Issue September 1989
- Ref. 5: ED-14D/RTCA DO-160D issue July 1997
- Ref. 6: ED-12B/RTCA DO-178B issue December 1992

Note: The TSO C91a & C126 document are calling RTCA DO-183 and RTCA DO-204 as minimum performances standard. These documents incorporate RTCA DO-160 and RTCA DO-178A as applicable documents. During the qualification process we applied the RTCA DO-160D and RTCA DO-178B documents that are the latest applicable one. These new release are improving the required performances for this ELT equipment. Our transmitter frequency 406.028 MHz is in accordance with RTCA DO-204 change 4 specification.

3. OTHER RELATED DOCUMENTS

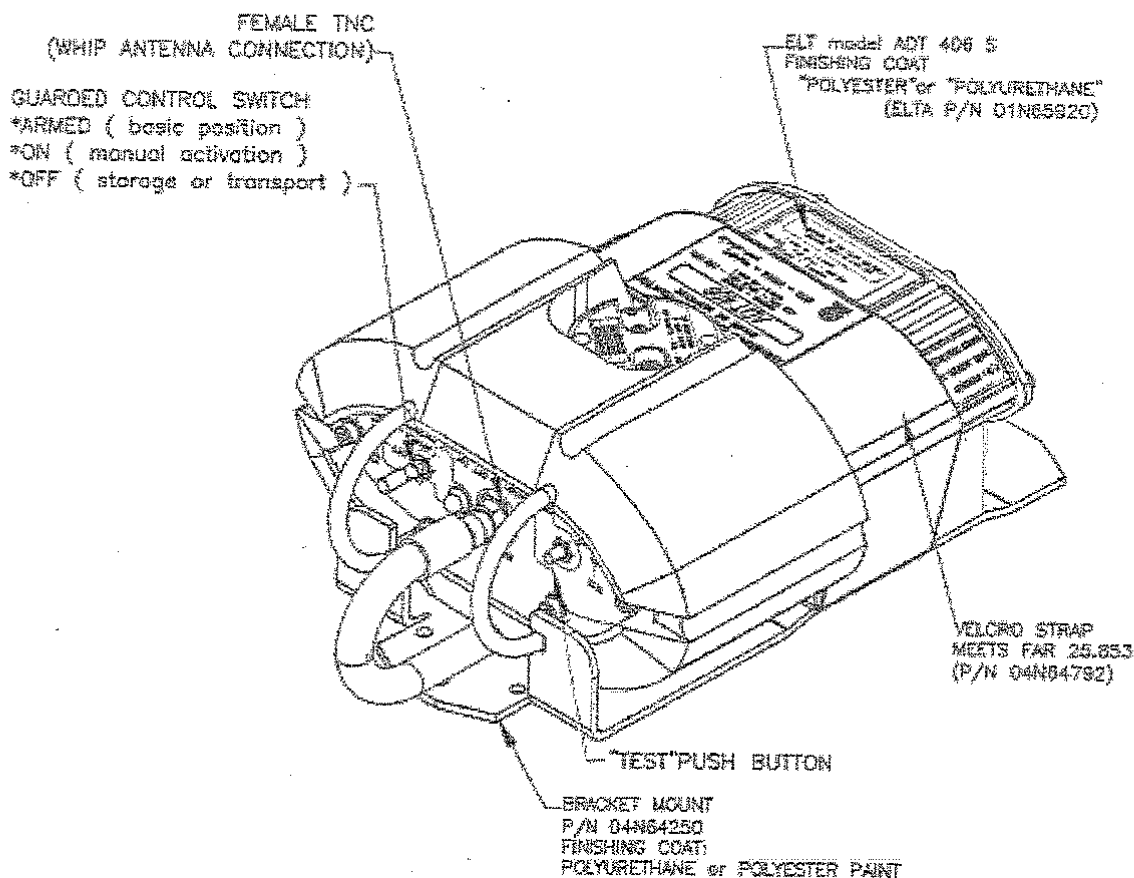
- Ref. 7: EUROCAE ED-62, issue May 1990 for information only.

Note: EUROCAE ED-62 refers to (include) C/S T001 and RTCA DO-160 applicable specification issued in 1990. For this qualification process we apply the latest available issue for these documents.

ORIGINAL EN ROUGE

4. BACKGROUND ON EQUIPMENT DEVELOPMENT

General presentation of the ELT model ADT406 S :



ELTA already manufacturer TSO C91a & C126 approved ELT:

- Model A06T, TSO letter dated January 8, 1996,
- Model S06, TSO letter dated May 14, 1997,
- Model A06V2, TSO letter dated March 30, 1998,
- Model ADT406 AF/AP, TSO letter dated February 24, 2003,
- Model ADT406 AP, TSO letter dated June 12, 2003.

This ELT is the **Survival** model of the ADT406 family.

We propose to use the same qualification process as accepted by FAA on our previous models ADT406 AF/AP & AP and so to use the Qualification and Test document issued for the French DGAC ETSO approval process.

5. APPLICABILITY

This equipment is designed for installation in any aircraft including commercial/General aviation aircraft and helicopters.

It is an **E**mergency **L**ocator **T**ransmitter (ELT)

ORIGINAL EN ROUGE

This ELT meets the latest ICAO requirements (July 2002) i.e. operation on COSPAS-SARSAT 406 MHz.

This ELT model will be produced at ELTA premises located 14 Place Marcel Dassault 31702 Blagnac Cedex France.

PART 21 G agreement is granted to ELTA company and permanent audits are performed by GSAC (quality department of French Airworthiness in charge with PART 21 G Survey). The POE/MOE (Production Organisation Exposition) document reference is 00Q80937 (x).
PART 21 G & PART 145 agreement are presented for information in appendix 8.

5.1. MINIMUM PERFORMANCE STANDARD

The ELT model ADT 406 S is a three (3) frequencies distress transmitter.
It meets both the requirements of:

- TSO-C91a, 121.5 & 243 MHz ELT (RTCA DO-183)
- TSO-C126, 406 MHz COSPAS-SARSAT ELT (RTCA DO-204)

Basically this ELT is a "Class 2, Survival (S)" and has been tested following this class.

5.2. ENVIRONMENTAL STANDARD

The applicable document is the ED-14/RTCA DO-160 included in the RTCA DO-183 & 204.
The latest applicable issue of these documents are "D".

Note: Some of the tests are ruggurised from ED-14D/DO-160D and are described as special.

5.3. COMPUTER SOFTWARE

For the software aspects of the design ED-12B/DO-178B apply.
The level defined for this equipment is D, not critical.

6. MARKING

The ELT marking meets the requirements of PART section 21 (see drawing 04P64741 for location, in appendix 5).

- Name and address of the manufacturer, see drawing 04P64427 (x) in appendix 5,
- Product name, Type, see drawing 04P64427 (x) in appendix 5,
- P/N and Serial number including date of manufacture as follow:
 - Year (YY), Week (WW) and production index on 4-Digit (XXXX).
YY WW XXXX is indicated on the ELT label, upon delivery, in the "Serial Number" field. This label also include ED-14D/DO-160D Env. Cat. and applicable Service Bulletin when required. See drawing 04P64428 (x) in appendix 5.
- Applicable TSO numbers (C91a & C126) are indicated in the "APPROVAL NUMBER" field.

These information are on the "identification label", see drawing 04P64428 (x) in appendix 5.
In addition to these mandatory information three other labels are stuck onto the ELT case:

- Battery Servicing, see drawing 04P64430 (x) in appendix 5,
- Instruction for use, front panel indicators & controls see drawing 04P64426 (x) in appendix 5,
- Cospas-Sarsat identification, see drawing 04P64432 (x) with protective label 04P64425 (x) in appendix 5.

ORIGINAL EN ROUGE

7. DATA REQUIREMENTS

7.1. OPERATING INSTRUCTIONS

A "summary of the operating instructions" label is stuck on the ELT case, see drawing 04P64426 (x) in appendix 5.

Detailed Operating Instructions are described in the "User's Handbook".

A copy of this document is presented in Appendix 3.

7.2. EQUIPMENT LIMITATIONS

There is no equipment limitation applicable to this ELT

It is a ruggedised, stand alone equipment and do not need any connection to the A/C power supply to operate.

It is powered by an internal lithium Manganese Dioxide (LiMNO₂) battery made of 2 packs of 2 "D" cells (not-rechargeable), protected against short circuit, with one connector avoiding wrong connection upon integration. This battery pack is a "solid cathode" type.

7.3. INSTALLATION PROCEDURES & LIMITATIONS

See User's handbook page 21 to 23 in appendix 3.

There is no limitation but the following recommendations should be taken into account:

- Connection to antenna:

The whip antenna is permanently connected to the beacon antenna access (TNC connector).

- Direction of ELT installation

The ELT model ADT 406 S could be installed in any position.

For direct cabin installation we recommend to use our optional transparent protective cover in order to avoid any false activation (that may be done by the passengers)

7.4. SCHEMATICS DRAWINGS AS APPLICABLE TO THE INSTALLATION PROCEDURES

See user's handbook page 22 in appendix 3 and outline drawing 04P64741 (x) in Appendix 5.

7.5. SPECIFICATIONS

Specifications are presented in the "Declaration of Design and Performances (DDP) document P/N 05E63754 (x), see appendix 2.

The ELT is a Three Frequencies distress transmitter. ITU emission type for Radio licence are:

- **16K0G1D** for 406,028 MHz, 5W burst transmitter (Cospas-Sarsat),
- **3K20A3X** for the 121.5 MHz, typical 20 dBm transmitter (Homing),
- **3K20A3X** for the 243 MHz, typical 20 dBm transmitter (Homing).

7.6. MAJOR COMPONENTS P/N LIST

The complete ELT system includes:

ORIGINAL FN ROUGE

- P/N 01N6592() (), ELT model ADT 406 S transmitter with its whip antenna.
Note: Two battery packs are integrated inside the ELT case.
- P/N 04N64250 (), optional Bracket mount for ELT ADT 406 S (wall installation).
- P/N 04N64265 (), Optional protecting cover for ELT ADT 406 S (recommended with the bracket mount).
- P/N 04N64255 (), Optional storage and transportation bag for ELT ADT 406 S (alternative solution to bracket mount).

7.7. ENVIRONMENTAL QUALIFICATION FORM AS PER ED-14D/DO-160D

DO-160D Env. Cat. : *X*A*[F1C1]A[RW]XXXSZXXXZWMXXXX

* Special per ED-62 or DO-183 or DO-204

QUALIFICATION TEST DESIGNATION	ED-14D DO-160D SECTION	ED-14D / DO-160D CATEGORY	REPORT document. METHOD (S)imilarity (T)est
Temperature & altitude	4	Special Eurocae ED-62/DO-183/DO-204	05E63096 (T)
In Flight Loss of Cooling	4.5.4	Equipment identified to category X no test required	None
Temperature variation	5	Special Eurocae ED-62/DO-183/DO-204	05E63096 (T)
Humidity	6	Equipment tested to category A	05E63096 (T)
Operational shocks and crash safety	7	Special : equipment tested to 50g / 11 ms	05E63096 (T)
Vibrations	8	Equipment tested to category F/F1 C/C1	05E63096 (T)
Explosion proofness	9	Equipment tested to category A	93E60001 (S)
Water-proofness	10	Equipment tested to category RW	05E63096 (T)
Fluid susceptibility	11	Equipment identified to category X no test required	None
Sand & Dust	12	Equipment identified to category X no test required	None
Fungus resistance	13	Equipment identified to category X no test required	None
Salt spray	14	Equipment tested to category S	05E63096 (T)
Magnetic effects	15	Equipment tested to category Z	02E66255 (S)
Power input	16	Equipment identified to category X no test required	None
Voltage spike	17	Equipment identified to category X no test required	None
Audio frequency conducted susceptibility-power inputs	18	Equipment identified to category X no test required	None
Induced signal susceptibility	19	Sect. 19.3.1, equipment tested to category Z	05E63096 (T)
Radio frequency susceptibility (radiated & conducted)	20	Sect. 20.5, equipment tested to category W	05E63096 (T)
Emission of radio frequency energy	21	Sect. 21.4, equipment tested to category M in "ARMED" mode (normal stand-by mode), and in transmission.	05E63096 (T)
Lightening induced transient susceptibility	22	Equipment identified to category X no test required	None
Lightening direct effects	23	Equipment identified to category X no test required	None
Icing Test	24	Equipment identified to category X no test required	None
Electrostatic Discharge Test	25	Equipment identified to category X no test required	None
Flame	None	Special Eurocae ED-62/DO-183/DO-204	02E66255 (S)
Autonomy	None	Special Eurocae ED-62/DO-183/DO-204, 24 hours (406.028 MHz) & 60 hours (121.5-243 MHz)	05E63096 (T)

ORIGINAL EN ROUGE

7.8. REGISTRATION INFORMATION

Any ELT shall be encoded uniquely and registered by the final customer/operator.

The US owner of this Cospas-Sarsat ELT shall register it to NOAA.

The NOAA shall be inform of any coding of the ELT.

For other countries, some guidelines are available through Internet on the COSPAS-SARSAT website www.cospas-sarsat.org (select "beacons" and "beacon registration"). The document is S.007 "Handbook of Regulations on 406 MHz and 121.5 MHz Beacons".

Final Operator shall conform to its local regulation issued by its Airworthiness Authority.

7.9. MANUFACTURER'S TSO QUALIFICATION TEST REPORT

The requested test report is:

- **Qualification test procedure & Report : "QTP – QTR for ELT model ADT 406 S"** document P/N 05E63096 (x) presented in appendix 12.

It includes the COSPAS-SARSAT tests covered by the type approval N° 153. Original certificate pending, however the type approval registration is actually published on Cospas-Sarsat website.

7.10. NAME PLATE DRAWINGS

The following name plate drawings are given in appendix 5:

- "Identification" label, drawing 04P64428 (x),
- "Beacon Model" label, drawing 04P64427 (x),
- "Battery servicing" label, drawing 04P64430 (x),
- "Instruction for use", drawing 04P64426 (x),
- Transmitter "Front panel" label 04P64426 (x)
- "C/S Identification" label, drawing 04P64432 (x),

7.11. ED-12B/DO-178B DOCUMENTATION

The software design was conducted in accordance with ED-12B/DO-178B specification.

This ELT equipment is stand alone and will not cause any failure to the A/C flight safety as defined by ED-12B/DO-178B (so normally E level) but we decide to apply the level D as the ELT need to operate in case of distress condition (crash).

ADT406 S software is a simplified version of the ADT406 AF/AP (01N65900) software (unused software components were deleted).

The following documents were issued (in French only):

- "Balise Cospas-Sarsat" ADT 406 Logiciel 04E61856, Spécifications (software specifications), document 04E61857 (x)
- "Balise Cospas-Sarsat" ADT 406 Logiciel 04E61856, Fiche de tests (Tests sheets), document 04E61859 (x)
- Procédure de génération du code exécutable balise ADT 406 logiciel 04E61856 (Procedure for object code génération), document 04E61866 (x)
- Balise ADT 406 Logiciel 04E61856 V1.05, Fiche de version (software configuration), document 04E61860 (x)

ORIGINAL EN ROUGE

The latest document 04E61860 (x) is presented in Appendix 7 for information.
There is no software option. The software is downloaded into a micro-controller during the manufacturing phase of the transmitter board.

8. DEVIATION

None.

9. STATEMENT OF CONFORMANCE

The statement of conformance requested for TSO approval is supplied in Appendix 10.

10. ACTUAL APPROVALS

A copy of the PART 21 G & PART 145 approvals granted to ELTA are presented in Appendix 8.

Copies of the JTSO and TSO approvals already obtained by ELTA on similar ELT equipment under production are given in Appendix 9.

Latest ETSO approval n° EASA.210.353 issued on this ADT406 S model is presented in appendix 9.

11. APPENDIX LIST

APPENDIX 1: CONFIGURATION FILE OF ADT406 S P/N 04P63463(x)
APPENDIX 2: DECLARATION OF DESIGN & PERFORMANCE, P/N 05E63754
APPENDIX 3: USER'S HANBOOK, P/N 04E66260
APPENDIX 4: COMPONENT MAINTENANCE MANUAL, P/N 25-60-11
APPENDIX 5: DRAWINGS (LABELS & WIRING RECOMMENDATIONS)
APPENDIX 6: INSTALLATION PROCEDURES & LIMITATIONS
APPENDIX 7: SOFTWARE CONFIGURATION P/N 04E61860 (x)
APPENDIX 8: PART 21 G – PART 145 APPROVALS
APPENDIX 9: JTSO & TSO APPROVALS
APPENDIX 10: STATEMENT OF CONFORMANCE
APPENDIX 11: not used
APPENDIX 12: QTP – QTR FOR THE ELT MODEL ADT 406 S P/N 05E63096(x)

ORIGINAL EN ROUGE



<p>DECLARATION OF DESIGN AND PERFORMANCES FOR 01N65920(x) ADT406 S ELT</p>
<p>Référence : 05E63754 Révision : B</p>

ORIGINAL EN ROUGE

<p><u>Rédigé par :</u> E.LABRIFFE <i>E. Labriffe</i></p>	<p><u>Vérifié par :</u> C.CRESP <i>C. Cresp</i></p>	<p><u>Approuvé par :</u> A.CAZAL <i>A. Cazal</i></p>	<p><u>Emis le :</u> 20/09/05</p>
<p>Ce document est un fichier informatique et ne peut être modifié manuellement. Ce document est la propriété d'ELTA et ne peut être reproduit, ou communiqué, sans son autorisation écrite.</p>			
<p>Forme 99 Q 8 0269, Rev. : C</p>		<p>N° archive :</p>	<p>Page : 8</p>

REVISION HISTORY

REV	Date	Description
- A B	May. 2005 Sept. 05	CREATION Type Approval number, equipment classification and batteries part number

ORIGINAL EN ROUGE

ATA CHAPTER: 25/60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

TECHNICAL SPECIFICATION : EUROCAE ED62
ISSUE May 1990
EQUIPMENT DESIGNATION : ELT
MODEL/TYPE NUMBER(S) : Model ADT 406 S
VENDOR PART NUMBER(S) : 01N65920 (x)

MANUFACTURER : ELTA F6614

EQUIPMENT CLASSIFICATION :

D

 Non Essential

SOFTWARE CRITICALITY :

D

BRIEF TECHNICAL DESCRIPTION : The ADT 406 S ELT is a three (3) Frequencies ELT operating on 121.5-243-406.028 MHz. It is a Survival (S) type. This ELT have a three (3) frequencies flexible whip antenna permanently connected and an automatic activation by a water sensor. The ADT406 S is supplied with storage and transportation bag (04N64255) or with a dedicated bracket mount (04N64250). With the bracket mount, an optional transparent protective plastic cover is recommended (04N64265).

PERFORMANCE : Performances of these equipment conforms to :
- EUROCAE ED62 with one (1) deviation on the transmitter Frequency set to 406.028MHz in accordance with C/S T.012 specification. It meets ETSO 2C91a & 2C126 requirements.
- And also RTCA DO-204 change 3 (in accordance with C/S T. 012); DO-183 specification. It meets TSO C91a and C126 requirements.

GUARANTEED WEIGHT : Max. 1600 g (beacon with antenna, only).
LIMITATIONS FOR OPERATING : None
LIMITATIONS FOR HANDLING : None
DEVIATION FROM SPECIFICATION : None
SAFETY/FAILURE ANALYSIS : N/A
QUALITY CONTROL PROCEDURE : 02E64013 (x) & 02E63747 (x)
MAINTENANCE AND OPERATION INSTRUCTIONS : CMM 25-60-11 latest Issue

REMARKS : None

ORIGINAL EN ROUGE

ATA CHAPTER: 25/60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

QUALIFICATION JUSTIFICATION / TESTS:

Environment Qualification Form as per ED-14D/DO-160D
for the ELT model ADT406 S, P/N 01N65920(x)

DO-160D Env. Cat. : *X*A*[F1C1]A[RW]XXXSZXXXZWMXXXX

* special per ED-62 or DO-183 or DO-204

QUALIFICATION TEST DESIGNATION	ED-14D DO-160D SECTION	ED-14D / DO-160D CATEGORY	REPORT document. METHOD (S)imilarity (T)est
Temperature & altitude	4	special Eurocae ED 62, tested to 50.000 feet	05E63096 (T)
In Flight Loss of Cooling	4.5.4	equipment identified to category X no test required	N/A
Temperature variation	5	special Eurocae ED 62	05E63096 (T)
Humidity	6	Equipment tested to category A	05E63096 (T)
Operational shocks and crash safety	7	special Eurocae ED 62 equipment tested to 50 g/ 11 ms	05E63096 (T)
Vibrations	8	Equipment tested to category F/F1 C/C1	05E63096 (T)
Explosion proofness	9	equipment tested to category A	93E60001 (S)
Waterproofness	10	equipment tested to category RW	05E63096 (T)
Fluid susceptibility	11	equipment identified to category X no test required	N/A
Sand & Dust	12	equipment identified to category X no test required	N/A
Fungus resistance	13	equipment identified to category X no test required	N/A
Salt spray	14	equipment tested to category S	05E63096 (T)
Magnetic effects	15	equipment tested to category Z	02E66255 (S)
Power input	16	equipment identified to category X no test required	N/A
Voltage spike	17	equipment identified to category X no test required	N/A
Audio frequency conducted susceptibility-power inputs	18	equipment identified to category X no test required	N/A
Induced signal susceptibility	19	equipment tested to category Z	05E63096 (T)
Radio frequency susceptibility (radiated & conducted)	20	equipment tested to category W Note : with this survival ELT, only section 20.5 apply as there is no wiring connection	05E63096 (T)
Emission of radio frequency energy	21	equipment tested to category M in "ARMED" mode (normal stand-by mode) and in transmission "ON"	05E63096 (T)
Lightening induced transient susceptibility	22	equipment identified to category X no test required	N/A
Lightening direct effects	23	equipment identified to category X no test required	N/A

ORIGINAL EN ROUGE

ATA CHAPTER: 25/60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

Icing Test	24	equipment identified to category X no test required	N/A
Electrostatic Discharge Test	25	equipment identified to category X no test required	N/A
Flame	None	special Eurocae ED 62, 20s	02E66255 (S)
Autonomy	None	special Eurocae ED 62, 24 hours at 406.28MHz & 60 hours at 121.5-243MHz	05E63096 (T)

GENERAL PARAMETERS

PARAMETER	SELECTED VALUE	REMARKS
Operating temperature	-20°C; +55°C	Class 2
Storage temperature	-55°C ; +85°C	in accordance with ED62 +80° for battery packs. +20° recommended in order to limit the battery self discharge.
applicable standard	EUROCAE ED 62	for the tests applicable to "S" basic type ELT
Batteries used	2 packs of 2 "D" cells in serie	Solid cathode LiMNO ₂ Per ELTA batteries specification 00E64191 (x).
Batteries compartment	On the sides of the electronics	Removable without acces to the electronics
Manual self-test	Activated by pushing the push button "TEST". Check of the - output power (& related batteries voltage) during a modulated 406 transmission with inverted frame synchronization, and C/S identification. 5s of 121.5 MHz is sent during self test.	Automatic return to "ARMED" position. Correct self test report 10 s "ON" on the ELT red LED Failed self test report 10 s blinking on the ELT red LED (See user's handbook for detail)
Delay prior distress signal transmission	about 50 s from manual activation, about 30s from automatic activation (water detection)	Red LED Display Rate 0.75s active, 0.25s inactive (Waiting condition)
Display on beacon	sound (buzzer) and visual (red LED)	Rate 0.25s active, 0.75s inactive (Transmission contition)

ATA CHAPTER: 25-60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

121.5 MHZ TRANSMITTER (HOMING)

Emission type (per ITU): **3K20A3X**.

"A" double side band; "3" single channel, analog information, "X" other (audio sweep).

PARAMETERS	SELECTED VALUE	REMARKS
Carrier Frequency	121.5 MHz \pm 6 KHz	In accordance with ED 62
Medium term slope	< 0.2 ppm/mn	In accordance with ED 62
Medium term standard deviation	< 0.05 ppm	In accordance with ED 62
PT Beacon output power Antenna acces / 50 Ω).	+ 19 dBm \leq P \leq +24 dBm (80 mW \leq P \leq 250 mW)	Permanent transmission except during 406.028 MHz transmission burst. Typical power = 100 mW
Whip antenna	ELTA P/N 04N62718	Per ELTA antenna specification 04E60733 (x).
Modulation	Amplitude	In accordance with ED 62
Transmission	Permanent	Except during 406 MHz \square transmission burst.
Frequency modulation	Audio sweep	In accordance with ED 62
range	1000 Hz	In accordance with ED 62
repetition rate	3 Hz	In accordance with ED 62
Utilisation coefficient	> 50 Hz	In accordance with ED 62
Component	Symetrical	In accordance with ED 62
Power repartition	> 50 %	In accordance with ED 62
Minimum autonomy @-20°C	\geq 60 H	with a weekly self-test and 5 years old batteries (48 H required in ED-62)

ORIGINAL EN ROUGE

ATA CHAPTER: 25/60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

243 MHZ TRANSMITTER(HOMING)

Emission type (per ITU): **3K20A3X**.

"A" double side band; "3" single channel, analog information, "X" other (audio sweep).

PARAMETERS	SELECTED VALUE	REMARKS
Carrie Frequency	243 MHz \pm 12 KHz	In accordance with ED 62
Medium term slope	< 0.2 ppm/mn	In accordance with ED 62
Medium term standard deviation	< 0.05 ppm	In accordance with ED 62
PT Beacon output power Antenna acces / 50 Ω). 20 or 23 dBm selectable	+ 19 dBm \leq P \leq +24 dBm (80 mW \leq P \leq 250 mW)	Permanent transmission except during 406.028 MHz transmission burst. Typical power = 100 mW
Whip antenna	ELTA P/N 04N62718.	Per ELTA antenna specification 04E60733.
Modulation	Amplitude	In accordance with ED 62
Transmission	Permanent	Except during 406 MHz \square transmission burst.
Frequency modulation	Audio sweep	In accordance with ED 62
range	1000 Hz	In accordance with ED 62
repetition rate	3 Hz	In accordance with ED 62
Utilisation coefficient	> 50 Hz	In accordance with ED 62
Component	Symétrique	In accordance with ED 62
Power repartition	> 50 %	In accordance with ED 62
Minimum autonomy @-20°C	\geq 60 H	with a weekly self-test and 5 years old batteries. (48 H required in ED-62)

ORIGINAL EN ROUGE

ATA CHAPTER: 25-60	D ECLARATION OF D ESIGN AND P ERFORMANCE	DDP No: 05E63754 REV : B DATE : Sept. 05
-----------------------	--	--

406.028 MHZ TRANSMITTER

COSPAS-SARSAT Type Approval Number : **153**.

Emission type (per ITU): **16K0G1D**.

"G" phase modulation; "1" single channel with digital information, "D" Data transmission

PARAMETERS	SELECTED VALUE	REMARKS
Whip antenna	ELTA P/N 04N62718	Per ELTA antenna specification 04E60733.
Warm-up time	5 mn	15 mn required in ED 62
Minimum autonomy at -20°C	24 H	with a weekly self-test and 5 years old batteries (24 hours required in ED62)
PT Beacon output power (Antenna acces / 50 Ω)	+ 37 dBm ± 2 dB	Burst transmission, in accordance with COSPAS-SARSAT latest requirements
Other parameters:		in accordance with COSPAS-SARSAT latest requirements
• Frequency	406.028 ± 1 KHz	
• CW preamble	160 mS ± 1%	
• Repetition rate	50 s ± 2.5	(modified at each burst)
• Burst transmission time	Selectable 440 or 520 mS ± 1%	(short or long)
• First burst delay	50 s ± 2.5	(Manual activation)
• Bit rate	400 Hz ± 1%	
• Modulation	Biphase-L ± 1 rd [± 1 rd]	
• Short term stability	Better than 210 ⁻⁹	
• Medium term stability	Better than ± 10 ⁻⁹	
• Residual freq. Variation	Better than 310 ⁻⁹	
• Country code	Any, Selectable	(In accordance with ICAO/IMO)
• Protocol	Any, Selectable	(Aeronautical only)
C/S Type Approval N°	N° 153	Issued on 15/09/2005

ORIGINAL EN ROUGE

ATA CHAPTER:
25/60

DECARATION OF **D**ESIGN
AND **P**ERFORMANCE

DDP No: 05E63754
REV : B
DATE : Sept. 05

FOR SOFTWARE EQUIPMENT ONLY:

N/A

ACCOMPLISHMENT SUMMARY:

Embeded software in a microcontroler (not modifiable)
N/A


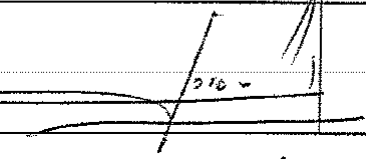
SOFTWARE QUALITY ASSURANCE AND
CONFIGURATION MANAGEMENT PLAN:

N/A

CONFIGURATION INDEX DOCUMENT: 04P63463 (x)

I HEREBY, Emmanuel LABRIFFE, CERTIFY, THAT THE INFORMATION CONTAINED IN THIS DECLARATION OF DESIGN AND PERFORMANCE COMPLIES WITH THE REQUIREMENTS OF THE TECHNICAL SPECIFICATION AND IS MADE UNDER THE AUTHORITY OF ELTA WITHOUT WRITTEN AGREEMENT, I DECLINE ALL RESPONSIBILITY IN THE EVENT OF UNSATISFACTORY OPERATION OF THE EQUIPMENT BEYOND OPERATIONAL CONDITIONS AND LIMITATIONS INDICATED ABOVE.

DDP ACCEPTANCE STATUS:

	NAME	SIGNATURE	DATE
SUPPLIER	E.LABRIFFE Project Manager		Sept. 2005
SUPPLIER (QUALITY ASSURANCE)	B. DROXLER Quality Manager		Sept. 2005

ORIGINAL EN POINCE