



DECLARATION OF DESIGN AND PERFORMANCES(DDP)

FOR

ELITE ELT IN AUTOMATIC FIXED CONFIGURATION

Composed of
One ELITE TRANSMITTER
One ELITE AF-BRACKET
One ELITE Coding Tag

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1 Revision History

REV	Date	Description	
A draft 1	July, 2016	Creation (Preliminary)	
A draft 2	Nov, 28, 2016	Incorporation of first EASA remarks	
A Preliminary	Jan 10, 2017	Incorporation of Customers remarks	
B Preliminary	Mar 03, 2017	Incorporation of Customers and EASA remarks: Limitations and list of non ETSO functions added	
C Preliminary	Mar 16, 2017	Incorporation of Clients and EASA remarks: - New template	
D	June 14, 2017	Add OPR list	
Е	July 20, 2017	Incorporation of EASA remarks	

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2 Purpose

This document is the declaration of design and performance (DDP) of the ELTA ELITE ELT in Automatic Fixed configuration.

2.1. Relevant ETSO numbers

ETSO-C126b ETSO-C142a

2.2. Applicable technical specifications

EUROCAE ED-62A RTCA DO-204A RTCA DO-227

3 Manufacturer information

Manufacturer:

ELTA F6614

Manufacturer address:

15, Avenue du Docteur Maurice GrynfogelZAC de BASSO CAMBO31035 TOULOUSE CEDEX 1FRANCE

Equipment designation: ELT

Model: ELiTe ELT, AUTOMATIC FIXED CONFIGURATION (AF Type)

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3.1. Vendor part number(s)

The ELiTe ELT in Automatic Fixed configuration is composed of the following part numbers:

P/N 12N67880 Rev (X) ELITE TRANSMITTER

P/N 12N67900 Rev (X) ELITE AF-BRACKET

P/N 12N67890 Rev (X) ELiTe Coding Tag

Note: Rev (X) corresponds to Minor Engineering change order management (amendment). It keeps fit-form – function. It keeps full interchangeability.

P/N	Designation	ETSO-C142a	ETSO-C126b
12N67880 Rev (X)	ELiTe TRANSMITTER	X	X (Class 2)
12N67890 Rev (X)	ELiTe Coding Tag	-	X (Class 2)
12N67900 Rev (X)	ELiTe AF BRACKET	-	X (Class 2)
15N63626 Rev (X)	ELiTe Battery pack	Х	-
(ELiTe Battery servicing kit			
17N20439 Rev (X))			

Note 1: 15N63626 is a subpart of 12N67880.

Note 2: 17N20439 is a servicing kit composed of the following items: 15N63626 and Label Battery Servicing 14P60437.

3.2. Manufacturer specifications

Transmitter Specification 12E68376 issue R
Automatic Fixed Bracket Specification 12E68377 issue G
Technical Specification for C/S Identification Tag
User Interface Beacon Specification 13E65598 issue P

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4 Technical description

4.1. Brief technical description

The ELiTe ELT in Automatic Fixed configuration is a dual (2) frequencies ELT operating on 121.5 & 406.040 MHz

It is an Automatic Fixed (AF) basic type. It can be connected to an external antenna, A/C 28 Vdc Power Supply, A/C Data Bus (ARINC 429 high speed) and can be remotely controlled from a cockpit Remote Control Panel.

The ELITe ELT in Automatic Fixed configuration embeds provision (one discrete) for "inflight activation" capability.

It incorporates embedded secondary antenna that can transmit on 121.5 & 406.040 MHz when primary external antenna failure is detected (backup antenna).

Automatic activation direction is selectable (4 directions 90° step).

The ELITe ELT in Automatic Fixed configuration can transmit A/C location information inside COSPAS/SARSAT (C/S) long message in User Location or Standard Location Protocols.

Location data transmitted in C/S long messages are issued from ARINC 429 A/C data bus (Ext. Nav. Data, primary)or internal GNSS Receiver (backup).

The ELITE TRANSMITTER frequencies are licensed by ITU.

4.2. General parameters

PARAMETER	SELECTED VALUE	REMARKS
Operating	-20°C; +55°C	Class 2
temperature		
Storage	-55°C; +85°C	in accordance with
temperature		ED-62A/DO-204A
		+80°C for battery packs,
		20°C recommended for uninstalled ELT
		in order to limit the battery self
		discharge
Applicable standard	EUROCAE ED-62A/DO-204A	for the tests applicable to "AF" basic
		type ELT
Batteries used	2 "D" cells in serie	Solid cathode L _i MnO ₂
Battery pack	ETSO-C142a marking:	
	Lithium battery non rechargeable, battery	
	voltage and capacity, positive terminal	
	polarity, amount of lithium, class,	
	warnings, date of manufacture	

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Batteries	On the bottom of	Removable without acces to the
compartment	the electronics	electronics
Manual self-test	Activated by pushing the push button	
	"TEST or RESET" on Remote Control Panel	Automatic return to ARMED.
	(RCP) or "TEST or RESET" on ELiTe	Correct self test display:10 s "ON" on
	TRANSMITTER.	the RCP LED and 3s green ELT LED,
	Check of the - output power (& related	display message "selftest OK"
	batteries voltage & capacity), 406 MHz	Failed self test display: 10 s blinking on
	Frequency during a modulated 406	the RCP LED and 3s red ELT LED,
	transmission with inverted frame	display message "selftest KO"
	synchronization (self test pattern),	In case of ARINC 429 self test failure,
	external antenna connection, C/S	additional 10 s blinking condition is
	identification, ARINC 429 connection-	added. After the ELT selftest report
	Operation and +28Vdc.	display
	0.75s of 121.5 MHz is sent during self test.	
Delay prior first	50 s after the self test report	
distress signal		
transmission		
Display on beacon	Visual (Light strobe and display message)	ELT distress transmission,
		light strobe 1ms active every 15s

4.3. 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 ± 6 KHz	In accordance with
		ED-62A/DO-204A
Medium term slope	< 0.2 ppm/mn	In accordance with
		ED-62A/DO-204A
Medium term standard	< 0.05 ppm	In accordance with
deviation		ED-62A/DO-204A
PT Beacon output power	P = +22 dBm	In accordance with
(Primary external Antenna		ED-62A/DO-204A
acces / 50 Ω).		
Primary external antenna	COBHAM (formely CHELTON)	Could be supplied by ELTA under P/N
(Blade)	Model 2632-82	31908.

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Alt. external Primary Antenna (Rod)	Chelton antenna Model 1327-82	Could be supplied by ELTA under P/N 11243.
Modulation	Amplitude	In accordance with ED-62A/DO-204A
Transmission	Duty Cycle 33% 0.75s ON, 1.5s OFF	In accordance with ED-62A/DO-204A
Frequency modulation	Audio	In accordance with ED-62A/DO-204A
Excursion	Between 350 and 1250 Hz	In accordance with ED-62A/DO-204A
Repetition rate	3 Hz	In accordance with ED-62A/DO-204A
Utilisation coefficient	> 50 Hz	In accordance with ED-62A/DO-204A
Component	Symetrical	In accordance with ED-62A/DO-204A
Power repartition	> 50 %	In accordance with ED-62A/DO-204A
Warm-up time	5 mn	In accordance with ED-62A/DO-204A
Minimum operating life duration at -20°C	>= 60 H	Taking into account 1 self-test every 6 months and 5 years old batteries (48 hours required in ED-62A/DO-204A)

4.4. 406.040 MHz Transmitter

COSPAS-SARSAT Type Approval Number: 291.

Emission type (per ITU): 16K0G1D.

"G" phase modulation; "1" single channel with digital inormation, "D" Data transmission).

PARAMETERS	SELECTED VALUE	REMARKS	
Primary external antenna	COBHAM (formely CHELTON)	Could be supplied by ELTA under P/N	
(Blade)	antenna	31908.	
	Model 2632-82		
Alt. Primary external	Chelton antenna	Could be supplied by ELTA under P/N	
Antenna (Rod)	Model 1327-82	11243.	
Warm-up time	5 mn	15 mn required in ED-62A/RTCA DO-204A	

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Minimum operating life ime	24 H and 30 mn	Taking into account 1 self-test every 6
		,
at -20°C		months and 5 years old batteries (24 hours
		required in C/S T.001)
PT Beacon output power	$+$ 37 dBm \pm 2 dB	Burst transmission, in accordance with
(external Antenna acces / 50		COSPAS-SARSAT latest requirements
Ω)		
Other parameters:		in accordance with COSPAS-SARSAT latest
		requirements
 Frequency 	406.040 MHz \pm 1 KHz	
CW preamble	160 mS ± 1%	
Repetition rate	50 s ± 2.5s	modified at each burst
 Burst transmission 	440 or 520 ms ± 1%	short or long message, Selectable
duration		
 First Burst delay 	50 s ± 2.5s.	
Bit rate	400 Hz ± 1%	
 Modulation 	Biphase-L \pm 1 rd [\pm 1 rd]	
 Short term stability 	Better than 2.10 ⁻⁹	
 Medium term stability 	Better than \pm 10 ⁻⁹	
Residual freq. Variation	Better than 3.10 ⁻⁹	_
Country code	Any, Selectable	In accordance with ICAO/IMO
	-	Aeronautical only
Protocol	Any User, User Location,	
	Standard Location, Selectable	
C/S Type Approval N°	291	

4.5. Performance

The performances of the ELiTe ELT equipment in automatic fixed configuration conforms with EUROCAE ED-62A & RTCA DO-204A specifications (ELT) and RTCA DO-227 (internal battery).

The ELiTe ELT, in Automatic Fixed Configuration, complies with ETSO C126b, ETSO C142a requirements and is type approved by C/S.

4.6. Guaranteed weight

Max. 1600 g. For one ELiTe TRANSMITTER + one ELiTe AF-BRACKET + one ELiTe Coding Tag

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4.7. Overall dimensions

249.5 mm x 145.4 mm x 74.6 mm

4.8. Limitations for operating

- Susceptibility limitation for Cat.R in PM mode eight discrete frequencies between 981 MHz and 1,35 GHz, with worst case 93V/m instead of 150V/m:
 - 981.884 MHz / 123.1V/m
 - 1 GHz / 115.3V/m
 - 1.25893 GHz / 126.3 V/m
 - 1.28825 GHz / 99.1 V/m
 - 1.31826 GHz / 93.2 V/m
 - 1.34896 GHz / 96.2 V/m
 - 1.25893 GHz / 121V/m
 - 1.28825 GHz / 125.4 V/m
- Emission of Radio Frequency Energy 150KHz 200MHz Conducted RF Emissions for Cat.H very low exceeding of 4 dB at 2.8MHz

4.9. Limitations for handling

None

4.10. Non ETSO functions

The list of non ETSO functions implemented in the ELiTe ELT in Automatic fixed configurationare:

- Actual location from internal GNSS receiver (internal navigation device) no safety effect
- Actual location from A/C ARINC 429 High spedd data bus (external navigation device) no safety effect
- Provision Activation by discret input "Pre-alert"
- Internal dual frequency (121.5 MHZ -406.040 MHz) antenna
- External internal antenna switching
- External internal navigation device switching
- Strobe light
- LCD Display
- Embedded maintenance follow up functions (log)
- C/S identification RFID Tag
- Auto Armament function
- Embedded battery pack follow up (date of manufacture, expiry date, remaining capacity, number of self-test, cumulative distress transmission time)

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- ATA Spec 2000 RFID tag (Part identification)

4.11. Deviation from specification

None

4.12. Open problem report with user impact

Open Problem Report with user impact :

Antenna commutation:

Root cause :

Test strategy and error in the software implementation

- Justification:

Case of multiple failures (external antenna failure with false distress during 4 minutes then distress stop and real distress after that). This is not an operational case.

Software OPR raised at system level because a system test is necessary to validate the modification.

- Modification Date :Next software version
- Criticity: OPR type 1B

4.13. Minor changes

The items listed here under are to be considered as minor changes if implemented for the ELiTe ELT in Automatic Fixed configuration:

- Additional new external antenna model
- New RCP with different behaviour or current consumption.
- Components obsolescence management

5 Documentation

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5.1. Safety/Failure analysis

FMEA (and Appendix) 13E66065 version G
Safety memorandum focusing on non rechargeable Lithium Battery 14E64027 version B

5.2. Quality control procedure

ELITE ATS	13E65797 version J
ELITE TRANSMITTER ATP	14E64621 version E
ELiTe TRANSMITTER upper part (Transmitting Pack) ATP	14E64623 version D
ELITE AF-BRACKET ATP	14E64625 version D
ELiTe Battery Pack ATP	15E65612 version B

5.3. Maintenance and operation instructions

ACMM 25-60-15 ELITE TRANSMITTER ACMM 25-60-16 ELITE AF-BRACKET CMM 25-60-17 ELITE Coding Tag

5.4. Instruction manual

User handbook 15E64259 issue A

5.5. Quality Configuration documentation

Configuration Index Documentation 13Q67047 version K (CID)
Including Master drawing records, safety procedure analysis and quality control procedure

5.6. Software documentation

Software criticality: D per ED-12C / DO-178C except GNSS software whose failure are not affecting the minor failure conditions defined in ETSO-C126b.

Software accomplishment summary 13E64430 version E (SAS)
Software quality assurance plan 13E61849 version G (SQAP)
Software configuration management plan 13E61848 version G (SCMP)
Software configuration index 13E64428 version R (SCI)

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Plan for Software Aspects of Certification 13E61842 version J (PSAC)

5.7. Hardware documentation

Hardware criticality: D per ED-80 / DO-254

Hardware accomplishment summary 16E29031 version B (HAS)
Configuration management plan 14E60755 version D (CMP)
Plan for Hardware Aspects of Certification 13E60397 version D (PHAC)

5.8. Remarks

None

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6 Statement of compliance

Refer to ETSO qualification and qualification test report 16E27775 Rev B for details.

During the qualification test campaign, the following requirements have been applied:

- The circuits of the equipment under test were aligned and adjusted and no other adjustments were performed on the ELT after initiation of the tests.
- Connection of test instruments to the equipment under test was checked.
- All tests were performed with the proper impedance load values.

6.1. Environment Qualification Form as per ED-14G/DO-160G

* special per EUROCAE ED-62A or RTCA DO-204A

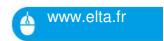
QUALIFICATION TEST DESIGNATION	ED-14G DO- 160G SECTION	ED-14G / DO-160G CATEGORY	REPORT document. METHOD (S) Similarity (T) Test (A) Analysis
Temperature, altitude & decompression	4	special Eurocae ED-62A/DO-204A	(T) 16E27775 Rev B, § 5.1.1, 5.1.2 & 5.1.3
Ground Survival Low Temperature	4.5.1	equipment identified to category D2	(A) 16E27775 Rev AB, §5.1.1.5
Operating Low Temperature	4.5.2	equipment identified to category D2	(A) 16E27775 Rev B, §5.1.1.3
Ground Survival High Temperature	4.5.3	equipment identified to category D2	(A) 16E27775 Rev B, §5.1.1.6
Operating High Temperature	4.5.4	equipment identified to category D2	(A) 16E27775 Rev B, §5.1.1.4
Temperature variation	5	special Eurocae ED-62A/DO-204A	(T) 16E27775 Rev B, §5.3.3
Temperature variation	5.3.1	Equipment Tested to category B (ELT Op. Temp. +55°C; -20°C)	(T) 16E27775 Rev B, §5.4.8
Humidity	6	Equipment tested to category A	(T) 16E27775 Rev B, §5.2.1
Operational shocks and crash safety	7	special Eurocae ED-62A/DO-204A equipment tested to 500 g/4 ms and 100 g/23 ms	(T) 16E27775 Rev B, §5.2.7.2
Low Frequency Crash Safety	7.3	Equipment tested to Category E	(T) 16E27775 Rev B §5.4.7.2

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QUALIFICATION TEST DESIGNATION	ED-14G DO- 160G SECTION		REPORT document. METHOD (S) Similarity (T) Test (A) Analysis
Constant acceleration (sustained)	7.3.3	Equipment tested to A/C Type 5, Test type R	(T) 16E27775 Rev B, §5.4.4
Vibrations	8	Equipment tested to category R curves	(T) 16E27775
VIDIALIONS	8	C/C1, category U2 curves F/F1 and category H per analysis (for fan blade loss)	Rev B, §5.1.5
Explosion proofness	9	equipment tested to category A, A/C	(T) 16E27775
		zone II	Rev B, §5.1.15
Waterproofness	10	equipment tested to category RW	(T) 16E27775
			Rev B, §5.2.2.2
Fluid susceptibility	11	N/A	-
Sand & Dust	12	N/A	-
Fungus resistance	13	N/A	-
Salt spray	14	equipment tested to category T	(T) 16E27775
			Rev B, §5.2.6
Magnetic effects	15	equipment tested to category A	(T) 16E27775
			Rev B, §5.1.6
Power input	16	equipment tested to category ZXX	(T) 16E27775
			Rev B, §5.1.7
Voltage spike	17	equipment tested to category A	(T) 16E27775
A dia fine and a second stand	4.0		Rev B, §5.1.8
Audio frequency conducted	18	equipment tested to category R	(T) 16E27775
susceptibility-power inputs	4.0	- in the state of	Rev B, §5.1.9
Induced signal susceptibility	19	equipment tested to category CW	(T) 16E27775
De die Communication	20		Rev B, §5.1.10
Radio frequency susceptibility (radiated & conducted)	20	equipment tested to category R (with eight discrete limitations of operation limitation) Note: ED-62A is category T (lower than R)	(T) 16E27775 Rev B, §5.1.11
Emission of radio frequency	21	equipment tested to category H (with	(T) 16E27775
energy		Very low exceeding of 4 dB at 2.8MHz cf operation limitation)	Rev B, §5.1.1.4
Lightening induced transient susceptibility	22	equipment tested to category A4C4	(T) 16E27775 Rev B, §5.1.1.2
Lightening direct effects	23	N/A	-
Icing Test	24	N/A	-

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QUALIFICATION TEST DESIGNATION	ED-14G DO- 160G SECTION	ED-14G / DO-160G CATEGORY	REPORT document. METHOD (S) Similarity (T) Test (A) Analysis
Electrostatic Discharge Test	25	equipment tested to category A	(T) 16E27775 Rev B, §5.4.6
Flammability	26.9	Equipment tested to category C	(T) 16E27775 Rev B, §5.4.1
Flame	None	special Eurocae ED-62A/DO-204A	(T) 16E27775 Rev B, §5.2.10
Operating Life Duration	None	special Eurocae ED-62A/DO-204A	(T) 16E27775 Rev B, §5.3.1

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6.2. Approval

I, Pierre PIPARD, HEREBY CERTIFY, THAT THE INFORMATION CONTAINED IN THIS DECLARATION OF DESIGN AND PERFORMANCE COMPLIES WITH THE REQUIREMENTS OF THE TECHNICAL SPECIFICATIONS CALLED TO MEET ETSO C126b, ETSO C142a REQUIREMENTS AND IS MADE UNDER THE AUTHORITY OF ELTA. DEVIATIONS TO THE REQUIREMENTS IF ANY, ARE DECLARED HEREIN. WITHOUT WRITTEN AGREEMENT, I DECLINE ALL RESPONSIBILITY IN THE EVENT OF UNSATISFACTORY OPERATION OF THE EQUIPMENT BEYOND OPERATIONAL CONDITIONS AND LIMITATIONS INDICATED ABOVE.

	NAME	SIGNATURE	DATE
SUPPLIER	Pierre PIPARD		October 06 th , 2017
SUPPLIER (QUALITY ASSURANCE)	T. JEAN PART 21, PART 145, FAR 145 Quality Manager	His	October 06 th , 2017

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