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Thrane & Thrane A/S  
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Denmark

Fax: 0045 39 55 8888

26<sup>th</sup> November 2003

Dear Mr Heinsdorf

**Type Approval: Inmarsat-Mini-C Mobile Earth Stations  
Model: TT-3000SSA  
Certificate No: 4TT091**

We have now completed our review of the submissions made by you in support of your Application for an Inmarsat Type Approval of your Mobile Earth Station Model TT3000SSA.

Based on the test results certified by you to have been successfully completed using test procedures approved by Inmarsat, the above mentioned MES model is hereby Type Approved, as complying with the mandatory specifications of the associated System Definition Manuals.

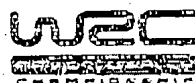
Type Approval is granted in accordance with the attached Type Approval Particulars, and confirmed by your test programme when operating within the environmental conditions you have specified.

This Type Approval by Inmarsat should not be construed to constitute or imply any representation or warranty by Inmarsat in relation to the MES model, including but not limited to:

- (i) the quality, reliability, durability, adequacy or fitness for purpose of the said MES model, or
- (ii) whether any or all units of the said MES are free from defects in design, workmanship or materials,

nor does it apply to any capabilities or features not specified by Inmarsat. Any and all warranties or representations, whether express or implied by statute, common law or otherwise are hereby excluded to the extent permitted by English Law.

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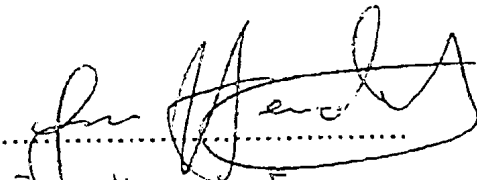
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Re: Inmarsat Mini-C Mobile Earth Station, Model TT-3000SSA

Inmarsat shall not be liable for any loss (other than personal injury or death) or any kind, including indirect or consequential loss, whether in contract, tort (including, without limitation, negligence) or otherwise at law or equity arising from use by third parties of the product model. By signing and returning a copy of this letter, you irrevocably confirm that you waive any and all claims however arising in connection with the Inmarsat Type Approval and further that you will defend, indemnify and hold Inmarsat harmless from and against any such claims as may be made by third parties relating to your product model but not for personal injury or death. Your signature below also confirms that you will carry out the directives of the Inmarsat document "Forward and Return Link Pair (FRLP) Common Security Framework for Type-Approved Manufacturers" to safeguard the integrity of the FRLPs provided to you.

Provided you return a signed copy of this Agreement we will issue you a Type Approval certificate; licence you to use the trademark "Inmarsat<sup>TM</sup>" in connection with your terminal and descriptive literature and the service mark "Inmarsat<sup>SM</sup>" (Inmarsat<sup>TM</sup> approved or Inmarsat<sup>SM</sup> system) in your literature; and authorize the issue of FRLPS for your production run.

Signed:   
Name: Jens Heinsdorf For: .....  
Dated: 1<sup>st</sup> of December 2003

Yours sincerely,

  
Ian Cooper  
Manager, Land Mobile & Leasing  
Product Portfolio Management

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## Type Approval Particulars Inmarsat Mini-C MES

MES Model: Mini-C TT-3000SSA  
 Manufacturer: Thrane & Thrane  
 TAP Number: 01  
 Certificate Number: 4TT091  
 Issue Date: 26th November 2003

DCE Software Version Number: 2.09  
 DTE: Not Approved

CATEGORY	ELEMENTS	STATUS
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This MES includes an integrated GPS receiver. The Inmarsat Type Approval certifies that the MES meets all Inmarsat-C technical requirements whilst the GPS receiver is in operation. The operation and performance of the GPS receiver is not included in Inmarsat's Type Approval tests and these Type Approval Particulars do not imply any approval of the GPS receiver.

1 MES TYPE		
1a	Pre CN114 GMDSS Maritime MES Category 1	
1b	SOLAS SES with Distress calling *	
1c	SOLAS SES without Distress calling	
1d	NON-SOLAS SES with Distress calling *	
1e	NON-SOLAS SES without Distress calling	✓
1f	Land Mobile Earth Station (for installation on vehicle)	
1g	Land Portable Earth Station	
1h	Aero-C	
1i	Others	

\*Not allowed for SCADA applications.

2 MES CLASS		
2a	Class 0 (stand-alone EGC or add-on to Inmarsat-A, -B, -M, etc.)	
2b	Class 1 (no EGC capability)	✓
2c	Class 2 (Inmarsat-C and EGC)	
2d	Class 3 (simultaneous Inmarsat-C and EGC)	

3 ANTENNA TYPE		
3a	Omnidirectional	✓
3b	Optimised (usable elevation angles) G/T	
3c	Directional G/T	
3d	Others	

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4 UNIT CONFIGURATION		
4a	Separate antenna, combined DCE and DTE	
4b	Separate antenna, DCE, DTE	Note 1
4c	Combined antenna and DCE, separate DTE	
4d	Combined antenna, DCE and DTE	✓
4e	Integrated GPS	
4f	Maximum cable length between antenna and DCE	
4g	Remote distress button	
4h	Remote audible alarm	
4i	Character display (CRT, LCD, etc.)	
4j	Others	

5 MESSAGE PROTOCOL		
5a	Store-and-forward	
5b	Prefixed store-and-forward	
5c	Multi-addressing	
5d	Network access: Telex	
5e	PSDN	
5f	PSTN	
5g	MHS (X.400)	
5h	Closed network	
5i	Special access code, 2 digits	
5j	Special access code, more than 2 digits	
5k	Presentation code: IAS	
5l	TA2	
5m	Data	
5n	Maximum transmit message length	
5o	Message storage capability	

6 DISTRESS ALERTING PROTOCOL		
6a	Maritime Distress	
6b	Land Mobile Distress	
6c	Ship Security Alert	✓

7 DATA REPORTING PROTOCOL		
7a	DCE configuration I (sub-address □ physical port) (no. of ports)	
7b	DCE configuration II (sub-address □ logical port)	
7c	DCE configuration I and II (no. of ports)	
7d	Unreserved	✓
7e	Program reserved	
7f	Program unreserved	✓
7g	Macro Encoded Messages	✓
7h	Data	✓
7i	Download/delete DNID	✓
7j	Position reporting	✓
7k	Sub-addressing	✓
7l	Support VMS	✓

8 POLLING PROTOCOL		
8a	Individual poll	✓
8b	Group poll	✓
8c	Area poll	✓
8d	Unreserved	✓
8e	Program reserved	
8f	Program unreserved	✓
8g	Macro Encoded Messages	✓
8h	Data	✓
8i	Download/delete ONID	✓
8j	Maximum no. of ONIDs stored/no. of characters	64/25

9 EGC PROTOCOL		
9a	System EGC	
9b	SafetyNET	
9c	FleetNET	
9d	Presentation code: IA5	
9e	ITA2	
9f	Data	
9g	Message storage capacity on EGC reception	
9h	Maximum number of ENIDs stored/no. of characters	
9i	FleetNET reception in restoration mode	
9j	Automatic identification of NAVAREA code from position	
9k	Automatic identification of WMO/HO chart area from position	
9l	Simultaneous entry of NAVAREA codes	
9m	Simultaneous entry of NAVTEX codes	
9n	Simultaneous reception of EGC messages	

10 INTERFACES		
10a	DCE-DTE Interface: RS232-C	Note 1
10b	RS-449	
10c	Others	
10d	Inmarsat recommended DCE-DTE interface control codes	
10e	Navigational interface: NMEA0183	
10f	Others	
10g	Printer interface (RS232/Centronix/others)	

11 POSITION UPDATING		
11a	Automatic	✓
11b	Manual	

12 SCANNING		
12a	NCS scanning on BBER: Automatic (Pre-CN114 Maritime only)	✓
12b	Manual	
12c	Others	

13 AS REQUIRED FOR SOLAS (GMOSS) COMPLIANCE. Not applicable for Land Mobile Earth Stations**		
13a	DCE	
13b	DTE	
13c	Printer	
13d	Others	

13 PRE-CHANGE NOTE 114 GMDSS COMPLIANCE. Not applicable for Land Mobile Earth Stations		
13i	DCE	
13ii	DTE	
13iii	Printer	
13iv	Others	

14 POWER SUPPLY		
14a	AC	
14b	DC	✓
14c	Built-in battery	

15 ENVIRONMENTAL CONDITIONS**		
15a	As required for SOLAS (GMDSS)	
15b	PRE-CN114 SOLAS (GMDSS)	
15c	for Inmarsat-C LMES	
15d	for Inmarsat-C LPES	✓
15e	for Inmarsat-C SES	
15f	for Aeronautical MES	
15g	Ice	
15h	Rain	
15i	Wind	
15j	Solar radiation	
15k	Mechanical shock	

16 EMC COMPLIANCE**		
16a	Details attached IEC60945, EN300339, EN3001426	

17 DTE		
17a	Models name and number DTE is not Approved	

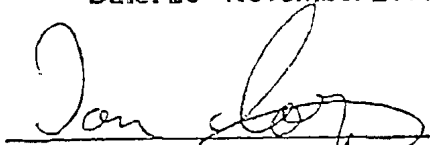
18 OEM		
18a	Models name and number	

19 COMMENTS		
19a	Note 1: DTE is not Approved	
19b	TT-3029M is the baseline model for TT-3000SSA	

\*\* Note: any national / international regulatory type authority documentation used for compliance.

Date: 26<sup>th</sup> November 2003

Agreed on behalf of Inmarsat:

  
 Ian Cooper  
 Manager, Land Mobile & Leasing  
 Product Portfolio Management