

Thrane & Thrane
TT-3020B Capsat Transceiver
Installation Manual

EXHIBIT 1

2.2 Technical specifications

Model	TT-3020B
General Specifications	Meets or exceeds all INMARSAT specifications for the Inmarsat-C Network and GMDSS requirements.
Transmit Frequency	1626.5 to 1646.5 MHz.
Receive Frequency	1530.0 to 1548.0 MHz.
Channel Spacing	8 kHz.
Modulation	1200 symbols/sec BPSK.
Ambiguity Resolution	Unique word.
Coding	R 1/2 K=7 convolutional code, (interleaved code symbols RX).
DataRate	600 bit/sec.
RX Frame Length	8.64 seconds.
TX Signalling Access Mode	Slotted ALOHA.
TX Message Channel	TDMA & FDMA, interleaved code symbol.
Antenna Interface	Standard 50 Ohm female N-connector, max 100 meter cable.
GPS Interface	50 dB antenna amplification, 50 Ohm female SMA-connector output for GPS antenna
Terminal Interface	CCITT Rec.V.24/28, 100-9600 Baud LA-S code, DB-9F connector.
Printer Interface	Standard parallel Centronics, DB-25F connector.
Navigator and Alarm Interface	CCITT Rec. V.10 Special with NMEA-0183 interface and multidrop addressing, female BNC-connector, max.100 meter cable.
System Setup	EEPROM programming from operator terminal
DC Power Source	10.5 to 32 V floating DC RX: 9.5 W TX: 80 W
Ambient Temperature	-25°C to 55°C operating -40°C to 80°C storage.
Electronic Unit Mounting	Flange mounting with optional 19" rack bracket.
Dimensions H x W x D	62mm x 214mm x 279mm.
Weight	3.2 Kg

Maritime Antenna TT-3001B Opt. 001	Inmarsat-C/GPS omnidirectional antenna, RHC polarized. G/T: -23 dB/K EIRP: 14 dBW $\pm$ 2dB at 5° elevation. Temperature: -35°C to 55°C operating, -40°C to 80°C storage. Dimensions (H x G): 237 mm x 150 mm conical ex. mounting. Weight 2.2 Kg.
Solar Radiation	Infra-red radiation 500W/m ² (EME).
Relative Humidity	98% non-condensing at 40°C.
Precipitation	Up to 80 mm/hour, droplet size 0.5 to 4.5 mm (EME).
Ice	Up to 25 mm (EME).
Wind	Up to 200 km/hour (maritime antenna).
Vibration Operational	Random 5-20 Hz: 0.02 g ² /Hz 20-150 Hz: -3dB/oct. (1.0g RMS).
Vibration Survival	Random 5-20 Hz: 0.05 g ² /Hz 20-150 Hz: -3dB/oct. (1.7g RMS).
Shock	Half sine 20g/11ms
Antenna Mounting (Maritime)	Standard 1.5" tube mounting.
Other Antennas	Please refer to dedicated brochures.
Inmarsat-C Protocol support	Message transmission and reception with IA-S, ITA-2 and binary transfer to/from the following destinations: Telex PSTN (telephone modems and fax modems) PSDN (X.25 network) EGC message reception with automatic geographical area selection Polling and data reporting with automatic transmission of position reports down to 1 per minute. Special Access Codes Basic X.400 DNID Messaging Program Unreserved Data reporting Pre-assigned Data reporting GMDSS facilities. Transmit message size: Max 32Kbyte Receive storage: 128 Kbyte

Table 2: Technical specifications.

As our products are under continuous research and development, any information may change without prior notice.

**EXHIBIT 2
OSG SHIP MANAGEMENT
LICENSE APPLICATION**

To: Federal Communications Commission

From: William G. Weisheit, Manager US Electronics, Overseas Shipholders Group (OSG) Ship Management Inc

Subject: Amplifying information for our request for space segment capacity to operate INMARSAT terminals in the United States.

OSG ship Management Inc operates 35 International flag vessels, and 11 US Flag vessels. With the advent of GMDSS, there is a great need to be able to do training on operational equipment for our officers. We would also intend to use these terminals for emergency communications. In the event, we are unable to contact our assets (vessels) via any other method these units would be employed.

Our company will be setting up a command center that will not require landline communications to our vessels around the world. In order to accomplish this we intend to operate Inmarsat standard "C" terminals, and MINI "M" terminals from our offices in Houston and New York, in the event that we cannot communicate any other way with our vessels.

OSG intends to use TELEX to contact our vessels, AMSC does not provide this service. In addition, all of our vessels are outfitted with Inmarsat Standard "C", and standard "A" terminals.

OSG intends to use the MINI "M" telephones as a means to keep in contact with our vessels if there is a loss of land line communications. The MINI "M" system would allow our management personnel to contact the vessels in such an emergency without using any outside communications link.