

GENERAL SPECIFICATION

TELECOMMUNICATIONS

GS EP TEL 130

Marine and Air/Ground Radio Links

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1. Scope

This General Specification applies to the short and medium range radio links of the maritime and aeronautical mobile service, using HF, VHF and UHF frequency range.

The General Specifications for Tetra network is described in the [GS EP TEL 133](#).

For Marine service, the scope concerns the:

- Links between an onshore production installation and ships
- Links between an offshore production installation or a mobile drilling unit and ships on the one hand and shore stations on the other hand.

It does not concern the radiotelephone installations of rescue vessels attending the offshore production installations or drilling units.

For Aero service, the scope concerns the:

- Links between an offshore or an onshore installation and the helicopters and aircrafts providing the air link with the installation.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
ICAO	The Convention on International Civil Aviation (Annex 10, "Aeronautical Telecommunications"), published by the International Civil Aviation Organization (ICAO)
IMO MODU	The Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code) was adopted by Resolution A.1023(26).
IMO SOLAS	International Convention of 1974 on the Safety of Life at Sea (Incorporated in SOLAS Consolidated Edition, 2001 - IMO)
IMO A.334	Recommendation on operational standards for radiotelephone transmitters and receivers
IMO A.336	Recommendation on the carriage of VHF radiotelephone stations
NF C 93-550	HF coaxial cables with metallic braid

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP TEL 133	Trunked radio networks
GS EP TEL 410	Installation rules
GS EP TEL 700	Telecommunications Engineering services

3. General rules

3.1 Marine radio link

3.1.1 Choice of type of link

The offshore production installations and mobile drilling units shall be equipped with radiotelephone and radiotelegraph stations and auto-alarms as stipulated in the international conventions of the IMO codes.

The Company preferences regarding the choice of link types are as follows:

- Radiotelephone and/or radiotelegraph links with shore stations:
 - INMARSAT satellite link
 - Decametric wave (HF) link
 - Metric wave (VHF) links.
- Radiotelephone links with ships:
 - Metric wave (VHF) links
 - Hectometric wave (MF) links
 - Decametric wave (HF) links
 - Decimetric wave (UHF) links.

3.1.2 Operating rules

Engineering shall take into account in designing the equipment for marine radio links the special rules on operation of the Maritime Mobile Service, particularly those mentioned in the ITU RR and in the IMO recommendation and resolution.

In particular, the location of the operating equipment within the production installation shall be in premises where operators are required to remain on duty, namely the radio operator's room or control room for example.

3.1.3 General rules for hectometric (MF) and decametric wave (HF) links

3.1.3.1 Usable frequency bands and emission classes

3.1.3.1.1 Radiotelephone links

3.1.3.1.1.1 Hectometric (MF) wavebands

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The radio equipment shall enable transmitting/receiving in the appropriate frequency bands between 1,605 kHz and 4,000 kHz allocated to the Maritime Mobile Service by the ITU RR.

3.1.3.1.1.2 Decametric (HF) wavebands

The radio equipment shall enable transmitting/receiving in the appropriate frequency bands between 4 MHz and 23 MHz allocated to the Maritime Mobile Service by the ITU RR.

The emission classes used in the 1,605-4,000 kHz and the 4,000-23,000 kHz bands shall be in accordance with the ITU RR.

3.1.3.1.2 Radiotelegraphy

The frequency bands and emission classes used for radiotelegraphy, if any, shall be in accordance with the ITU RR.

3.1.3.2 Power

The output power of radiotelephone transmitters in the MF and HF bands shall be limited to the values given below.

3.1.3.2.1.1 Hectometric (MF) wavebands (1,605-4,000 kHz band)

The nominal power at peak modulation at any frequency in the 1,605-4,000 kHz band shall not be less than 60 watts nor greater than 400 watts.

3.1.3.2.1.2 Decametric (HF) wavebands (4-23 MHz band)

The nominal power at peak modulation at any frequency between 4 and 23 MHz in the maritime bands in which the transmitter is planned to be operated shall be greater than 60 watts and less than 1.5 kilowatt.

3.1.4 General rules for metric (VHF) and decimetric wave (UHF) links

3.1.4.1 Usable frequency bands

The Maritime Mobile Service shall operate in the bands authorised by the ITU RR i.e.:

- Between 156 MHz and 162 MHz with 25 kHz channels for VHF
- Between 300 and 350 MHz (reception) and between 403 and 470 MHz (Emission / Reception) for UHF.

3.1.4.2 Power

The power of the transmitter in carrier mode shall not exceed 50 watts.

3.1.4.3 Class of emission

The class of emission is Class G3E - Phase modulation.

3.1.4.4 Polarisation

The station's radiation shall be vertically polarised at the source.

3.1.5 General rules relating to maritime satellite links

Engineering shall investigate the possibility for maritime satellite links between the production installation and the shore stations, allowing for the fact that:

- The operation of ship stations in territorial waters and in harbours is subject to the jurisdiction of the relevant countries
- Inmarsat-A, Inmarsat-B, Inmarsat-C, Inmarsat Fleet F77, Inmarsat-E and BGAN ship stations are currently the only ones allowed by the INMARSAT organization.

3.1.6 General requirements concerning offshore mobile drilling units

The offshore mobile drilling units shall be equipped with communications means in accordance with the [IMO MODU](#).

In particular, the offshore drilling unit shall be equipped with the following:

- A hectometric wave (MF) radiotelephone station meeting the requirements of the [IMO SOLAS](#) and [IMO A.334](#)
- A metric wave (VHF) radiotelephone station meeting the requirements of the Resolution of [IMO A.336](#).

3.2 Aero radio link

3.2.1 Usable frequencies

The usable frequencies shall be those allocated by the ITU RR to the Mobile Service and in particular to the Aeronautical Mobile Service:

The frequencies in Band 117.975 MHz to 137 MHz shall be used in accordance with [ICAO](#).

In accordance to General Specification [GS EP TEL 700](#), the frequencies proposed by Engineering shall be consistent with the frequency plans established by the National Posts and Telecommunications Administration.

3.2.2 Power

It shall devolve upon engineering to limit the power planned to be used for link operation in order to make easier the allocation of frequencies.

Moreover, the following power requirements shall be observed:

- In compliance with the requirements of [ICAO](#) in the case of metric wave (VHF) links the effective radiated power shall be sufficient to provide a field intensity of at least 75 microvolts per meter (transmitting function) within the useful range defined for the installation on the assumption of direct propagation. The receiving function shall be such as to provide on a high percentage of occasions an audio output signal with a wanted/unwanted ratio of 15 dB, with a 50 per cent amplitude modulated (A3E) radio signal having a field strength of 20 microvolts per metre (minus 120 dBW/m²) or more
- In compliance with the requirements of [ICAO](#) concerning single-sideband telecommunications systems intended for use in the aeronautical mobile service, the peak

power supplied to the aerial feeder of a ground installation shall not exceed a maximum value of 6 kW

- The Company has sets a value at 30 microvolts per meter, for field intensity limit Pending the ICAO specification of range limit for the value of field intensity, to be taken into account in calculating the range of decimetric waves.

3.2.3 Polarization

Decametric, metric and decimetric wave (HF, VHF and UHF) transmissions of the aeronautical radio links shall operate with vertical polarization.

3.2.4 Equipment certification

The equipment used in decametric, metric and decimetric links serving aeronautical radio links shall be of a type approved by the National Civil Aviation Administration.

4. Link design

4.1 Requirements specification

In the pre-project phase, engineering shall define the marine and aero radio link service requirements.

This study will result in the definition of all of the following aspects:

- The general statement of needs to be met, i.e. the purpose of the links
- The categories and number of potential users:
 - When the links are first commissioned and
 - At the stage of definitive operation of the installation.
- The coverage to be provided
- Specifics of operation, which might set absolute requirements for the equipment to be implemented.

The Company shall issue the requirements specification to engineering, which shall then state whether the data in the document are sufficient to allow it to undertake the basic design work described below in section 4.2 of this General Specification.

In the event that engineering deems the data to be insufficient, it shall promptly notify the Company about the points it feels are inadequately defined.

If the Company is not able to supply the required details, it shall devolve upon engineering to complete the requirements specification according to the state of the art and its own experience with marine and aero radio links and by agreement with the Company.

Engineering shall undertake the basic design work and shall draft the System and Equipment Specifications for the installation's marine and aero radio links based upon a requirements specification approved both by the Company and engineering itself.

Any modification to the requirements specification after the initial document has been approved, whether originated by the Company or by engineering, shall require an addendum.