

Maritime and Coastguard Agency - Response to Ofcom Consultation on New Spectrum for Audio PMSE

Summary

Maritime and Coastguard Agency (MCA) provides its comments regarding the possible introduction of audio PMSE devices in the band 1525-1559 MHz. The MCA is concerned by this proposal because the MSS in this band supports many different, some critical, maritime services. While maritime use is geographically limited other MSS users are not and it is unclear how they can be protected. There is no consideration of the possible resultant impact on cost and availability of the satellite services as a whole in the short and long term. We also believe that service degradation rather than just loss needs to be considered.

We therefore oppose the introduction of PMSE devices in 1525-1559 MHz band but we support the proposal to allow audio PMSE access to the band 960-1164 MHz as the preferred alternative.

Background

The MCA is an agency of the Department for Transport and is the regulator for maritime industry.

It has been estimated that the value of shipping in UK waters in a 24 hour period is in excess of £200 billion. A 2014 report showed that UK ports handled more than 500 million tonnes of freight in 2014 and 65 million passengers, the value of the maritime sector to the UK economy is in excess of £11 billion pounds per year.

Maritime is an internationally regulated global industry and relies upon a variety of radio services for safety, security, efficiency, environmental protection, welfare and compliance. Interference in those services may result in loss of life, damage to vessels, environmental pollution, delays and other impact.

In June 2014 the International Maritime Organisation (IMO)/International Telecommunications Union (ITU) Joint Expert Group had identified the band 1518-1559 MHz as in use for ship earth stations (SES) on board SOLAS ships, which amongst others applies to vessels over 300grt on international commercial voyages. These ships may also operate in coastal and inland waters. Vessels may carry SES in compliance with national regulations or international agreement on GMDSS carriage requirements, or may rely on SES communications in order to comply with other regulations such as EU Vessel Traffic Management Directive and EU FAL Directive, International Ship and Port Security Code, and so on. Regulated vessels include cargo and passenger vessels, fishing vessels, large yachts and work boats. Any vessel including leisure craft may carry an SES operating in this band on a voluntary basis for GMDSS or other purposes. The proposal to use 1525-1559MHz for purposes other than MSS may therefore cause significant interference to industry use of services in coastal waters, ports and inland waterways.

Where radio equipment is carried to comply with regulation there is normally a mandatory test requirement. For example Merchant Shipping Notice MSN 1690 requires a vessel to confirm it is capable of all distress and safety communications before departure, ie to test; the MSN is part of the Merchant Shipping (Radio Installations) Regulations 1992. This is a two way communication test of the SES.

Compliance with mandatory requirements involves tests performed during maintenance and during surveys of radio equipment for mandatory certificates and in many cases frequent vessel monitoring communications whether in port or at sea. Failures due to interference are a burden to the Maritime Administration and shipowner.

GMDSS

The GMDSS was developed by IMO to ensure common maritime distress and safety communications worldwide and as such are critical safety of life or safety-related communications. Vessels may, but are not limited to its use for routine operational communications.

All the recognised GMDSS satellite services are provided by Inmarsat or by Cospas-Sarsat and they have a downlink in this band. Commercial vessels rely on one or both services to comply with regulations. They are also relied on by many unregulated vessels.

The Inmarsat services use this band for the space to Earth link for broadcast or two-way for ship terminals, SAR stations (2 in UK) as well as monitoring stations (at least 1 in addition to SAR) ashore. The broadcast includes Maritime Safety Information (MSI) to support decision making and voyage planning as well as distress communications. Ideally a vessel will setup its satellite station to receive MSI for the whole voyage and incorporate this into the passage plan before departure. IMO Circular MSC.1/Circ.1364, Revised International SafetyNet Manual, provides further information on shore to ship GMDSS satellite communications. The monitoring facility is required by international agreement

Protection from harmful interference is provided by the Radio Regulations, Appendix 15 which states that *"In addition to its availability for routine non-safety purposes, the band 1 530-1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band (see No. 5.353A)."*

Cospas-Sarsat relays distress alerts to a land-based receiver station in Devon. RR Appendix 15 states *"Use of the band 1 544-1 545 MHz (space-to-Earth) is limited to distress and safety operations (see No. 5.356), including feeder links of satellites needed to relay the emissions of satellite emergency position-indicating radio beacons to earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations."*

The MCA directly uses safety of life and safety-related radio services in the Global Maritime Distress and Safety System (GMDSS) and to provide maritime rescue coordination. The use includes mandatory requirements for monitoring.

PMSE co-existence with incumbent services in the 1525-1559MHz

In addition to the information provided in the background we note that;

- Inmarsat is the only recognised satellite service provider for the GMDSS that provides prioritized two way communication and MSI;
- Cospas-Sarsat is the only global distress alerting service in the GMDSS
- the maritime sector therefore has a large investment in and dependence on Inmarsat compatible terminals;
- Inmarsat services may be viewed as high availability by non-maritime users because of the requirement for 99.9% availability for GMDSS.

In developing a threshold level, our understanding is that there is considerable variability in building and body absorption which would suggest the need for worst case values and the effect of multiple interferers is not considered. We are aware that vessels in ports already suffer from degraded performance of Long Range Identification and Tracking which commonly relies on Inmarsat services in this band. It is believed to be due to physical structures but this suggests that the SES and probably other mobile earth stations (MES) may need to operate in marginal conditions. Given the band is allocated to MSS it is also unclear how the separation between PMSE and MES can be assured on land.

It is our understanding that the Inmarsat service degrades before loss and therefore an assessment of acceptable levels of interference based upon service loss and recovery alone is not sufficient. The impact of such service degradation on the user and on user services as a whole in an environment of multiple degraded users must be addressed as this may in turn affect cost and availability of specific services in the short and long term.

Change in demand for PMSE

The MCA has no view on the future requirement for PMSE, but notes that WRC-15 has agreed upon the addition of digital modulation into an existing 150KHz analogue maritime allocation in the 450-470MHz band for on board communications for ships. These may fulfil a requirement for on board communications for firefighting teams on SOLAS vessels. Such radios operate at low power (max 1W) and far less than existing land based users. We are not aware of any issues to date.