Your response

Question	Your response
Do you agree with our proposal to take steps to mitigate risks related to EMF and be in a position to hold licensees, installers and users to account if issues are identified? Please explain the reasons for your response.	As a safety organization, MCA agrees in principle with proposals to improve safety and supports adherence to ICNIRP guidelines. However, for marine vessels, improvements in overall safety require a balanced approach. A measure should not be introduced that reduces safety overall through changes in behaviour or operational capability. Most radio transmitters installed on marine vessels improve safety of navigation/life, ie radar and Automatic Identification System (AIS), Global Maritime Distress and Safety System (GMDSS) communications. The SOLAS Convention requires such installations for international sea-going commercial vessels and the International Maritime Organisation has provided guidance on GMDSS installations and requires antenna safe distance marking for such vessels. Other UK flagged vessel are mandated by UK regulation carry such installations or carry them voluntarily, eg pleasure vessels. The greater the burden of compliance and enforcement on vessels, the more resources may be diverted away from other safety elements. The risk is much greater for non-commercial pleasure craft which fall largely outside UK regulations and which are in greater number. The emphasis on obligations on installers appears to significantly increase installation costs and there is no consideration of the availability of that resource. Given the lack of evidence stated for breaches of the ICNIRP guidelines, (paragraph 4.11 of the consultation document) it is difficult to show a balanced approach to safety. Without evidence, how is the benefit of the regulation demonstrated and the compliance burden not becoming a barrier to the expansion of the UK Ship Register which is Government policy. For pleasure craft, small craft and land vehicles with an installed radio it is not clear what thresholds are applied to differentiate an 'occupational-exposed individual' from the 'general public' noting that in such instances they can be crewed by non-paid volunteers e.g HM Coastguard and RNLI. Vessels are controlled environments and as such a responsibility may also lie with the chain

	of command of the vessel. This is equally true of land–based installations We propose that a 'light touch' approach is adopted relying upon guidance until evidence can be collected that better makes a case for regulation.
Do you agree with our proposal (a) to include a condition in spectrum authorisations requiring compliance with the basic restrictions for general public exposure identified in the ICNIRP Guidelines; and (b) that this condition should apply to equipment operating at powers greater than 10 Watts?	a) In principle yes, but only where the compliance and enforcement regime is balanced and does not reduce overall vessel safety. ICNIRP defines the general public as "individuals of all ages and of differing health statuses, which includes more vulnerable groups or individuals, and who may have no knowledge of or control over their exposure to EMFs". Most of the consultation discussion seems more appropriate to continuous transmission from fixed sites where the general public may have free access up to some sort of boundary in ignorance of the presence of a transmitter. Vessel and public safety radio transmit intermittently with a corresponding low duty cycle and the proposal does not consider how an appropriate duty cycle should be derived over the specified time period. Also, marine vessels having radio installations are effectively mobile radio sites subject to internal controls but where physical boundaries may be contrary to safety. The options for antenna installation on marine vessels is limited: Compliance with the basic restrictions cannot always be achieved through minimum safe distance based on continuous maximum transmission It should be noted that none of the radar and Automatic Identification System (AIS), Global Maritime Distress and Safety System(GMDSS) communications operate in that way. Where necessary control measures can be applied to comply with ICNIRP guidelines in the same way that they could be inside a land radio site boundary. Given that GMDSS transceivers are intended for both routine and emergency communications that such emergency use addresses a greater risk than that posed by exceeding ICNIRP exposure guidelines. SOLAS requirements for emergency power for sources GMDSS equipment are based on a 10% transmitter duty cycle. We have no information that the duty cycle for such GMDSS equipment exceeds this at any time.

	B) All the following equipment exceed 10W and installed on vessels for safety of navigation/life. They are a mandated installation or carried voluntarily. Radar – This equipment is operated continuously but it is a pulsed transmission and scans 360 degree with a narrow beam. Whilst peak powers are 10's kW for a magnetron radar it is a low duty cycle transmission, the WHO website states "*the average power for marine radar is 1W to 25W and the directional transmission is rotating. Under normal operating conditions, with the antenna rotating, the average power density of the higher power systems within a metre of the antenna is usually less than 10 W/m2. In accessible areas on most watercraft, these levels would fall to a few percent of present public RF exposure standards.*" Radar is mainly a line of sight device and to be most effective it is placed high up on a vessel and ideally with an unobstructed view. AIS – this equipment is operated continuously, Class A devices are nominally 12.5W transmitter power, Class B the most common are 5W. By design, the transmitter duty cycle is <1%, so the average transmitter power is <0.12W for Class A. Operational effectiveness improves with antenna height above sea level and is optimized for all round horizontal transmission. The following equipment transmits intermittently under control of the operator with the exception of some limited data communications at HF or via satellite. MF/HF radiotelephone/telegraphy – these SSB transmitters operate over the 1.6-30MHz band with transmitter power outputs of 150W upwards. Technical considerations limit the options on antenna installations and already represents a high voltage hazard. At 500W, one manufacturer indicates a 4m horizontal separation for ICNIRP compliance. VHF radiotelephone – These are switchable between a nominal 1W and 25W transmitter power. The use is primarily line of sight communications and the antenna is designed for all round horizontal performance. Therefore, the higher above sea level the better the range. Distress calls are at 25W, but the expectation is non-emergency traffic will use 25W only when necessary. Manufacturer's safe distance information is approximately

	1.5m. Prudent owners of smaller vessels often equip with emergency back-up VHF antenna installations at deck level because it has greater survivability. VHF is the most common installation and a preferred 2-way emergency communications solution for most vessels which operate only in UK coastal waters. Most single transmissions are brief (<30 seconds) and, since the channels are public and shared, communications are rarely more than a few minutes. GMDSS Satellite Ship Earth Station (SES) There are 2 satellite service providers for GMDSS SES operating in L-band. We do not have figures for power, but published antenna safe distance information varies from 0.3m to 1.2m. Given the improved operational performance from antennas placed high up and unobstructed, and the low duty cycle of transmitters, it seems reasonable to expect exposure in excess of guidelines to be unlikely. Fishing vessel – Vessel monitoring systems These are based on satellite technology using the same satellite service providers as the GMDSS SES. These devices will have similar peak power, but a duty cycle well below 1%. We see no need to disagree with the 10W limit other than the lack of evidence that exposure levels are being exceeded. It also excludes emergency beacons, their transmitter power is generally 5W or less and are low duty cycle. However handheld VHF units have a peak power of 6W and would fall out of scope whereas fixed VHF would be in scope. There is a risk that compliance burdens may encourage greater use of handhelds in the voluntary sector; the antenna height may reduce the range (perhaps by 90%) with maritime safety reduced and user exposure increased. The cost of handheld and fixed VHF equipment is similar, but compliance costs might exceed the purchase price and would likely need a professional installer.
Do you agree with our proposed guidance on EMF compliance and enforcement? Please explain the reasons for your response.	No. As mobile units, vessels should only be considered in isolation, ie no other transmitters in close proximity in relation to a safe distance. As a controlled environment it is reasonable in our view to rely upon operational procedures to satisfy the guidelines. Vessels are limited in

	choice of antenna location for operational, technical and other reasons. In some cases, it is not practical to provide permanent safe distance separation and operate the vessel. Modification to vessels to achieve permanent antenna safe distances could be costly, create other hazards or be impractical (concerns include high g mechanical impulses, vessel stability & construction material). Transmitters for installations associated with GMDSS, radar or AIS installations are presently placed on the market in compliance with the Radio Equipment Regulations and, for equipment excluded in Schedule 1 of the regulations, under the Marine Equipment Regulations. Installations on vessels may be up to 20 years old and as such safe distance information may not be available from the manufacturer for the specific equipment nor manuals. Demonstrating compliance with the proposed approach may be prohibitively expensive. The installations are highly standardised in terms of power, modulation and antenna characteristics in order to fulfil common propagation and compatibility requirements. We would prefer to see industry guidelines on safe distances and any necessary operational controls to achieve safe exposure in lieu of continuous transmission safe distances. This would minimize burden on; • individual manufacturers in determining minimum safe distances for some equipment and standardise the methodology; • need to measure the radiation environment. (Affected parties might require professional services to assure compliance, but we see no consideration of cost or availability of resources). It would simplify understanding of safe operating procedures, where necessary, for Masters etc, operators and license holders. Larger vessel may also carry additional transmitters, for example Earth Stations on a Mobile Platform (ESOMPs) and many vessels can carry satellite phones. Guidance might be possible for these. From a shore-based perspective, again the MCA agrees in principle with proposals to improve safety. For example, our radio transmitting aerials are mounted above ground on a mast (or

	tower or building) in the case of VHF services or, in the case of MF services, at ground level but within the bounds of a protective inner stockade. In either case, a secure perimeter fence surrounds the radio facility and limits access to authorized visitors only. Such facilities reside within MCA-owned sites and third-party sites where MCA is a tenant. Typically, our aerials are mounted at height and/or protected via anti-climb features and physical boundaries at much greater distances than the minimal safe distance derived under ICNIRP. We would be interested in further understanding how the proposal aligns with the Communications Act 2003 and the Wireless Telegraphy Act 2006 in the sections that reference regulatory interventions by Ofcom.