Inmarsat response to Ofcom consultation

Variation of the Spectrum Access Licence for 1452-1492MHz and changes for fixed link use in the paired bands 1350-1375 MHz and 1492-1517 MHz

9 December 2014

Inmarsat is pleased to respond to Ofcom's consultation: "Variation of the Spectrum Access Licence for 1452-1492MHz and changes for fixed link use in the paired bands 1350-1375 MHz and 1492-1517 MHz". The changes proposed by Ofcom in this consultation document principally address sharing and compatibility between the use of MFCN SDL (Mobile/Fixed Communication Network supplemental downlink) and fixed links. However the proposed changes would have some impact on the operation of MSS terminals which receive in the band 1518-1559 MHz. Inmarsat's comments relate only to the potential impact of SDL and fixed links on MSS operations in the band above 1518 MHz.

The band 1518-1559 MHz is used by GSO MSS systems globally and is used by aeronautical, maritime and land mobile terminals. This is a downlink band, and so MSS terminals receive the signals from GSO spacecraft, 36,000 km above the equator. The wanted signal powers are low compared to those common in terrestrial systems and hence the MSS terminals are susceptible to interference. The lower part of this band, 1518-1525 MHz has been brought into use by the MSS relatively recently, following the launch of the "Alphasat" satellite in 2013, which is the first MSS satellite to use the band 1518-1525 MHz for MSS downlinks. MSS terminals operating in the band 1518-1559 MHz may be operated from almost any location, and hence no geographic separation can be assured between MSS user terminals on one hand, and SDL base stations or fixed link transmitters on the other hand.

Regarding the use of SDL systems in the band 1452-1492 MHz, there is some risk of interference to MESs operating above 1518 MHz. The frequency separation between the uppermost SDL channel and the lowest MSS channel is 26 MHz, and hence one would not expect significant issues regarding potential interference from SDL base stations to MSS terminals. Nonetheless, the OOB emission limits proposed by Ofcom extend above 1498.5 MHz, therefore setting the maximum power in the MSS band above 1518 MHz. Ofcom has proposed e.i.r.p. limits and out-of-band emission limits which, while driven primarily by the need for compatibility with fixed links, will also control the potential interference to MSS terminals. **While out-of-band emissions at the level of the limit proposed could cause harmful interference to MSS terminals located in the vicinity of SDL base stations, Inmarsat can accept the proposed limit on the out-of-band emissions above 1498.5 MHz (-62.5 dBm/MHz). Inmarsat would be concerned with any relaxation of this limit.**

Ofcom proposes to introduce a guard band between SDL and new fixed links, limiting new fixed links assignments to the bands 1356.5-1375 MHz and 1498.5-1517 MHz. This will effectively introduce a 6.5 MHz guard band between SDL and new fixed links. The current 1 MHz guard band between fixed links and MSS operations above 1518 MHz would be maintained. Ofcom explains that up to now, fixed links have been assigned with priority given to the lower part of the FS band, which ensures the maximum possible frequency separation with respect to the MSS. However, in addition to the introduction of the 6.5 MHz guard band with respect to SDL operations, Ofcom proposes to modify the channel assignment algorithm, so that priority is given to channels at the upper edge of the fixed link band – closest to the MSS band.

These proposed changes are likely to have a negative impact on MSS operations in the UK, as increasing the density of fixed links close to the MSS band will increase the likelihood of MSS terminals receiving interference from fixed links. Interference may be caused by the in-band e.i.r.p. of the fixed link transmitter, causing overload of the receiver in the MSS terminal, or may be caused by the out-of-band emissions of the fixed link transmitter, falling within the channel occupied by the MSS terminal. Ofcom's proposals will increase the impact of both interference mechanisms.

Inmarsat would prefer that fixed links are not concentrated into a smaller band adjacent to the MSS band, but we recognise the need for a guardband between SDL and FS systems. **However, Inmarsat proposes that the fixed link channel assignment algorithm should not be modified as proposed by Ofcom and fixed link channels should continue to be assigned with priority given to lowest frequency channels.** The increased density of fixed links in the band 1498.5-1517 MHz could lead to increased interference to MSS terminals, however this negative impact could be minimised by retaining the current channel assignment policy of giving priority to lowest frequency channels.

Inmarsat thanks Ofcom for the opportunity to comment, and requests that Ofcom give full consideration to our proposal not to proceed with the suggested change to the fixed link channel assignment algorithm.