

**RADIO SPECTRUM AND TECHNICAL STANDARDS
ADVISORY COMMITTEE**

**Proposed Allocation of the 5850 – 5925 MHz Band
to the Mobile Service on a Secondary Basis**

Introduction

This paper seeks Members' views on the proposed allocation of the 5850 – 5925 MHz band ("the 5.9 GHz band") to the mobile service on a secondary basis¹.

Background

2. At the 15th SSAC meeting held in August 2017, SSAC Paper No. 2/2017² was discussed which proposed to allocate the 5.9 GHz band to the mobile service, among other existing services, on a co-primary basis with a view to facilitating the introduction of innovative services, such as Intelligent Transport Systems ("ITS")³ in Hong Kong, following the global trend.

3. At that meeting, local satellite operators commented that the existing primary allocation of the fixed-satellite service ("FSS") in the Earth-to-space direction ("uplink") might cause harmful interference to the proposed mobile service in the 5.9 GHz band. They objected to the proposed co-primary allocation to the mobile service unless the following three conditions could be met –

¹ According to Radio Regulations Article 5, secondary service shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date, and cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date.

² SSAC Paper No. 2/2017 entitled "Proposed Allocation of the 5850 – 5925 MHz Band to the Mobile Service" available at https://ofca.gov.hk/filemanager/ofca/en/content_751/SSAC_Paper_2_2017.pdf.

³ ITS pertains to vehicle-to-vehicle and vehicle-to-infrastructure communications for exchange of information on road safety and traffic efficiency with a view to improving traffic management and assisting safe driving.

- (a) the mobile service would not claim protection from FSS uplink nor cause interference to FSS;
- (b) the mobile allocation would not impose additional constraints or restrictions to the deployment of FSS uplink stations in the 5.9 GHz band in Hong Kong; and
- (c) it could be demonstrated that sharing between FSS and the mobile service in this band was feasible in Hong Kong.

4. At the subsequent 16th SSAC meeting held in December 2017, a mobile network operator offered a presentation covering the use of the 5.9 GHz band for ITS in other economies and a brief discussion on the potential harmful interference caused by FSS uplinks to ITS as mobile services. It was noted that such interference would be localised in the vicinity of FSS uplink stations and that ITS was offered on an uncoordinated and unprotected basis, and not for safety application in general, in those economies currently deploying ITS in the 5.9 GHz band.

Considerations

5. The proposed allocation of the 5.9 GHz band to the mobile service, among other existing services, is in line with Region 3⁴ allocation of the International Telecommunication Union (“ITU”), and the frequency harmonisation work for the implementation of ITS under existing mobile service allocation, in relation to Agenda Item 1.12 of the ITU World Radiocommunication Conference to be held in 2019⁵.

6. In Australia, Europe, Mainland China, Singapore and the United States, the 5.9 GHz band is allocated to the mobile service, among other services. In Mainland China, trial tests on LTE-V2X have been conducted in the 5905 – 5925 MHz band since 2017 and preparations are underway for the introduction of ITS in Mainland China.

7. In Hong Kong, the 5.9 GHz band was allocated to FSS uplinks, fixed links and Industrial Scientific and Medical (“ISM”) applications. For the time being, all fixed links operating in the 5.9 GHz band have been withdrawn and

⁴ Region 3 covers Asia and Australasia, including China, and the ITU Region 3 allocation covers primary allocation of this band to the mobile service, among others.

⁵ A related report of the ITU WP 5A quoting the use of the 5.9 GHz band is available at https://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-0650!N31!MSW-E

there is no ISM assignment in this band. In other words, the FSS uplink is currently the sole application utilising the 5.9 GHz band.

8. Mobile terminals on ground are well separated from space stations on board satellites flying in the geostationary orbits some 36,000 km above ground. Although they share the same frequency band (i.e. the 5.9 GHz band), the low transmitting power of mobile terminals are unlikely to cause interference to the space stations of FSS in orbit.

9. The proposed mobile service sharing the 5.9 GHz band on a secondary basis should accept interference from FSS uplinks which might occur in the overlapped frequency range due to side lobe radiations of a transmitting dish antenna in the vicinity. In Europe, ITS as a mobile service is deployed on a non-protected basis in the 5855 – 5925 MHz band and cannot claim protection from FSS uplinks operating in the same band⁶. In Australia, the mobile service cannot claim protection from FSS uplink stations with an elevation angle of greater than 15 degrees and within a 1 km radius from the satellite stations⁷. In Singapore, mobile services are operated on a non-protected and non-interference basis in 5875 – 5925 MHz band with the existing service⁸.

10. In view of the overseas experience in deploying mobile services in the concerned band, the need for the harmonised use of radio spectrum as per international development and the need to facilitate the introduction of innovative services in Hong Kong, the proposed allocation of the 5.9 GHz band to the mobile service on a secondary basis in Hong Kong would create an environment conducive to the fulfilment of the aforesaid needs and address the local satellite operators' concern as well.

Proposed Frequency Allocation

11. It is recommended that the 5850 – 5925 MHz band be allocated to the mobile service on a secondary basis as given in **Annex**. Subject to the support

⁶ The European Conference of Postal and Telecommunications Administrations Recommendation ECC/REC/(08)01 and Decision ECC/DEC/(08)01, as available at <https://www.ecodocdb.dk/download/798c1836-20c6/REC0801.pdf>
<https://www.ecodocdb.dk/download/b470d271-048b/ECCDEC0801.PDF>

⁷ The Australian Communications and Media Authority Radiocommunications (Intelligent Transport Systems) Class Licence 2017, as available at <https://www.legislation.gov.au/Details/F2018L00026>

⁸ The Singaporean Regulatory Framework and Standards for Intelligent Transport Systems (“ITS”) in the 5.9 GHz (5.875 – 5.925 GHz) frequency band, as available at <https://www.imda.gov.sg/-/media/imda/files/regulation-licensing-and-consultations/consultations/pending-consultations/proposed-regulatory-framework-and-standards-for-its/decision---its-regulatory-framework-and-standards.pdf?la=en>

of the Members, the Office of the Communications Authority will make a recommendation to the Communications Authority for the aforesaid allocation to take effect.

Advice Sought

12. Members are invited to offer comments on the proposed frequency allocation in paragraph 11 above.

Office of the Communications Authority
April 2018

**Existing and Proposed Allocation
of the 5850 – 5925 MHz Band
in Hong Kong**

Existing	Proposed
5850-5875 MHz FIXED FIXED-SATELLTE (Earth-to-space) INDUSTRIAL SCIENTIFIC AND MEDICAL (ISM)	5850-5875 MHz FIXED FIXED-SATELLTE (Earth-to-space) INDUSTRIAL SCIENTIFIC AND MEDICAL (ISM) <u>Mobile</u>
5875-5925 MHz FIXED FIXED-SATELLTE (Earth-to-space)	5875-5925 MHz FIXED FIXED-SATELLTE (Earth-to-space) <u>Mobile</u>
Note: Services in “capitals” : primary services Services in “normal characters” : secondary services	