International Amateur Radio Union Region 1

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Subject	77 GHz band plan - Amateur primary segment to be shifted in the beginning of the band		
Society	REF	Country:	France
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Résumé en français

Titre de la contribution
Plan de bande amateur dans le segment 75,5 – 81,5 GHz – Déplacement en début de bande du segment amateur statut primaire

Description
La bande 75,5 – 81,5 GHz est allouée à différents utilisateurs, dont les systèmes de localisation (radiolocation service). Le segment réservé aux amateurs avec statut primaire est en milieu de bande, alors que les systèmes tels que les radars embarqués à bord des véhicules ont une résolution en distance proportionnelle à la largeur de bande transmise. On peut craindre qu'à terme ces systèmes ne respectent pas cette portion de bande non autorisée et balayent l'ensemble du segment 75,5 à 81,5 GHz en continu.
Nous proposons de demander le déplacement du segment réservé aux amateurs avec statut primaire en début de bande, soit de 76,0 à 76,5 GHz pour éviter de futurs potentiels conflits avec les systèmes qui seront déployés en très grand nombre dans les années à venir.

Title
Amateur primary segment to be shifted in the beginning of the band.

Introduction
The 75,5 GHz to 81,5 GHz band is shared between different types of users, with a primary allocation for amateurs in the middle of the band, in the 77,5 to 78 GHz segment. This gap dedicated for amateurs creates two sub-bands (below and above), in particular allowed for radiolocation devices. Potential issues may raise in the coming years with automotive radars, because of the technique they use to detect objects in their vicinity.

Background

Low-cost radars transmit a continuous-wave frequency modulated signal, sweeping continuously between two frequencies. This is generally done by using a VCO fed by a saw tooth analogue signal.
This transmitted waveform is also used as local oscillator and mixed with received waves. Resulting signal after low-pass filtering is related to the distance from the radar to the target. Range resolution of such devices is related to the covered bandwidth over time. For centimetre resolution, bandwidth up to several GHz is

generally used. A simple sampling system digitizes the mixed signal and computes the beat frequency to estimate target position.

New generation of vehicles embed more and more security systems and current studies forecast up to 7 radars per car in the coming decade. Those radars are expected to assist the driver in avoiding pedestrians or collisions with other too-close vehicles, for example by breaking ahead of driver's reaction time, one can then expect these devices to spread quickly over the roads.

Key point and proposal

Currently the frequency segment allowed to the amateurs [75,500 to 81,500 GHz] is shared with the automotive radar. Frequency segment dedicated to radiolocation service is split in two sub-bands: [76,000 to 77,500] and [78,000 to 81,000 GHz], with a 500 MHz gap [77,500 to 78,000] for amateurs, with primary access.

To achieve proper range resolution, we can fear from low-cost devices the temptation to extend the frequency sweep and cover the complete band, without any respect to this band plan. For a better coexistence of radio location devices and amateurs, it would be probably better to move the amateur primary allocation to the beginning of the segment, in the 76,000 to 76,500 GHz.

Recommendation
Ask CEPT to shift amateur primary segment to 76,0 – 76,5 GHz

Remark
This proposal to shift the amateur dedicated segment is related to Agenda item 1.18 from Vienna C5 meeting.