



International Amateur Radio Union Region 1

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Subject	77 GHz band plan - amateur primary segment to be shifted to the beginning of the band		
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Author:	Sylvain Azarian, F4GKR		

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, the 77,5 to 78 GHz segment. This central frequency allocation, reserved for the exclusive use of the amateur service, creates two sub-bands (below and above), which are intended in particular for the use of radiolocation devices. Potential conflicts are likely in the coming years between the amateur service and 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 continually 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 a local oscillator and mixed with received waves. The resulting signal, after low-pass filtering, is related to the distance from the radar to the target. The range resolution of such devices is related to the covered bandwidth over time. For centimetre resolution, a bandwidth up to several GHz is generally used. A simple sampling system digitizes the mixed signal and computes the beat frequency to estimate the target's position.

The new generation of vehicles carry more and more embedded 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 closeby vehicles, for example by braking the vehicle ahead of the driver's reaction time. One can then expect these devices to enter quickly into common use.

Key point and proposal

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

To achieve precise range resolution, there will be a temptation for low-cost devices to extend their frequency sweep and cover the complete band, without any respect

to the current band plan. For a better coexistence of radiolocation devices and the amateur service, it would probably be better to move the amateur primary allocation to the beginning of this frequency segment, i.e. 75,500 to 76,000 GHz.

Recommendation

Send the CEPT a proposal to shift the amateur primary segment to 75,500 – 76,000 GHz.

Remark

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