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Technical Report

Electromagnetic compatibility and Radio spectrum Matters (ERM); SRD radar equipment using Wideband Low Activity Mode (WLAM) and operating in the frequency range from 24,05 GHz to 24,50 GHz; System Reference Document

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

Executive summary

The European Union's eSafety Initiative in 2003 established the goal to reduce the number of road fatalities by 50 % up to the year 2010. According to some accident studies referred to in TR 102 664 [i.9], rear-end collisions dominate in collision statistics.

The 2nd Mandate of the European Commission on SRR [i.4] calls for alternative regulatory options for short range radars. The proposed regulation is based on the existing 24 GHz NB radar operating in the 24,05 GHz to 24,25 GHz band and is related to a supplementary mode for an extension band which ranges from 24,25 GHz to 24,50 GHz and operates with a low-activity factor. In certain driving situations, this supplementary mode will be activated. It extends the usable radar bandwidth from 200 MHz (ISM Mode) to 450 MHz (WLAM Mode).

WLAM is seen as being complementary to existing regulations for automotive radar applications. This regulatory solution does not compete with long range solutions which can be addressed by 77 GHz to 79 GHz. The addition of the WLAM extension mode to the present 24 GHz NB radars will minimize the investment required. The present document describes the need for an improvement of the existing 24 GHz NB automotive radars. The following information is important to note:

1) The 24 GHz NB technology has been successfully deployed since it covers most of the short/mid-range driving assistance and safety features required to the front and rear of the car, based on a 200 MHz bandwidth.

2) Many car-makers have invested in the 24 GHz NB technology which is in line with the frequency allocation strategy defined by the CEPT and European Commission.

3) The WLAM mode will improve the 24 GHz NB technology in specific driving situations, where a larger bandwidth is required to discriminate specific targets such as pedestrians in parking lots or cities.

4) The WLAM mode is expected to comply with the protection of the passive services between 23,6 GHz to 24 GHz.

5) The WLAM mode is not seen to impact the fixed services implemented between 24,5 GHz and 26,5 GHz.

6) The WLAM mode is using a bandwidth also designated for SAP/SAB temporary applications, which are unidirectional fixed links.

7) The radar technology is available. A short term safety benefit can be achieved at a limited add-on development cost.

Add-on system cost due of additional sensors for front radar WLAM activation and pedestrian recognition and time for the implementation of these technologies are not regarded in the present document.