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Analysis of Experimental Results related to the introduction of LTE in 2300-2400 MHz band in response to the European Commission

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A significant change in the use of Internet content is actually ongoing. Users rely more and more on mobile radio technologies, thanks to a capillary diffusion of LTE mobile terminals. It leads both to investigate techniques to use more efficiently the already assigned spectrum and to study further spectrum resources in millimetre-wave bands for 5G systems. Recent regulatory initiatives of the European Commission focused on developing conditions for the introduction of Wireless Broadband (WBB) in the 2.3 GHz band. Spectrum sharing techniques have been considered as a new regulatory tool to achieve efficient use of the spectrum assuring the protection of the incumbent users both within the band and in the adjacent bands. In response to the invitation of the European Commission to the Member States to perform specific coexistence analysis in this framework, Fondazione Ugo Bordoni and ISCOM (Istituto Superiore delle Comunicazioni e delle Tecnologie) investigated the possible interference towards WiFi, possibly due to out-of-band emissions from LTE equipment in the adjacent bands. This contribution describes the methodology used to perform such analysis and presents both laboratory results and on field measurements. The results provide the operational constraints that the LTE System has to respect in order to guarantee the protection of the WiFi system. The methodology and the results provide indication also for the development of the future 5G systems in order to study the coexistence between mobile networks and systems that works in unlicensed bands.