

3GPP TSG RAN WG4
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R4-070117

Title: Overview of 2300 MHz band in the US.
Source: Cingular Wireless / AT&T
Agenda Item: 9
Document for: Discussion on Work Item Description for 2300 MHz band.

1. Introduction

The 2300 MHz band in the US was originally auctioned in 1997 and is known as the Wireless Communications Services (WCS) band. It was originally thought that the WCS band would be used for both fixed and mobile voice/data services. However, up to this point there have very few deployments in the band mainly due to the low emission levels allowed in neighboring spectrum bands. More recently, there has been some renewed interest in using the WCS band for wireless DSL and other portable/mobile data services through the use of recently developed technologies (e.g. WiMAX/IEEE 802.16). In an effort to further the applicability and availability of UMTS/HSPA technology for those having WCS licenses, the companion WI proposal is being presented to RAN WG4 #42 for information, and if agreed, will be put forward for approval into RAN Plenary #35.

2. 2300 MHz band (WCS band)

The band plan for the WCS band is shown below in Fig. 1. The band consists of 2 license blocks, A and B, each made of a 5 MHz + 5 MHz pair. In addition, the C and D blocks are each 5 MHz unpaired, but could be used as paired blocks if a licensee owns both C and D. Also, according to the regulations, both base stations and mobiles are allowed to transmit in the upper and lower license blocks (*i.e.* the duplex direction is not specified in the rules and both FDD and TDD are allowed).

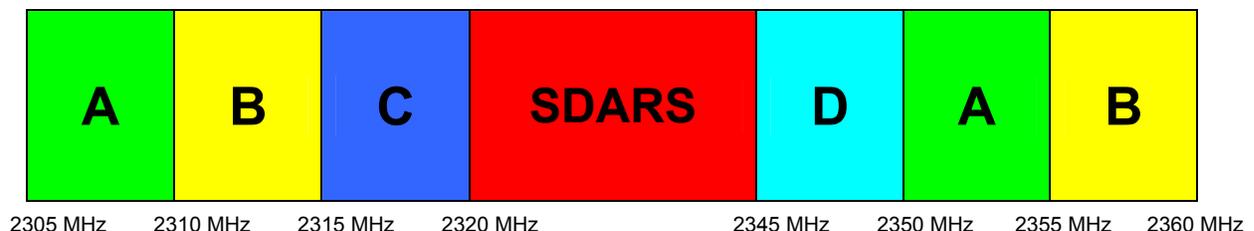


Fig. 1. 2300 MHz (WCS) Band Plan.

As shown in the figure, the WCS band is both above and below the SDARS band which is satellite-based digital audio radio service and includes two commercial operators, XM Radio and Sirius Satellite Radio. Both XM and Sirius have also been allowed to operate terrestrial transmitters to provide improved coverage and additional services in their band.

One of the main issues with using the WCS band for portable and/or mobile services is the very low level of out of band emissions which are allowed into the SDARS band. From Part 27 (US Code of Federal Regulations Title 47 Part 27.53), for fixed stations operating within 2305-2320 MHz and 2345-2360 MHz the allowed emission level in the SDARS band is -50 dBm/MHz. For mobile stations, the limit on emissions into the SDARS band is even lower, -80 dBm/MHz and this may be a severe limitation on practical mobile devices particularly for operation in the WCS C and D blocks. In addition to the limits on emissions into the SDARS band, emissions are limited to -40 dBm/MHz below 2300 MHz and above 2370 MHz and are otherwise limited to -13 dBm/MHz between 2300 and 2320 MHz and also between 2345 and 2370 MHz. The regulations also contain allowances for devices using circular polarization if it is opposite to the sense of that by SDARS and also for devices using a TDMA signal format at lower power. In practical terms, however, neither of these allowances has been widely used.