

**Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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In The Matter Of)	
)	
Service Rules for Advanced Wireless Services)	WT Docket No. 07-195
In the 2155-2175 MHz Band)	
)	
_____)	

To: The Commission

COMMENTS OF QUALCOMM INCORPORATED

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SUMMARY

QUALCOMM Incorporated (“Qualcomm”) applauds the Commission for the issuance of the Notice of Proposed Rule Making (“NPRM”) in this proceeding in which the Commission seeks comment on service rules for the 2155-2175 MHz band, the so-called AWS-3 band, which is immediately adjacent to half of the AWS-1 spectrum, 1710-1755/2110-2155 MHz. This new AWS-3 spectrum band represents another band on which advanced wireless services can be deployed to meet the insatiable appetite of the American public for these exciting, bandwidth-intensive services, which can only be offered over licensed spectrum. As the NPRM states, “(g)rowth in demand for mobile wireless services, coupled with the increasingly important role of the Internet for voice and data applications has elevated the need for advanced technologies capable of providing wireless Internet access and other voice and high-speed data services and spectrum to accommodate these advanced technologies.”¹ Qualcomm is pleased to offer its comments on some of the many issues identified by the NPRM.

In particular, Qualcomm focuses its comments on the need for the Commission to follow the approach for the AWS-3 band that the Commission has used so successfully in other AWS bands of adopting highly flexible service rules and minimally intrusive regulations so that marketplace forces, not regulatory fiat, determine the highest and best use of the spectrum. Accordingly, Qualcomm urges the Commission to allow any one-way or two-way service to be deployed on the AWS-3 spectrum and to adopt a full duplex band plan so that the AWS-3 spectrum can be used for TDD, FDD, or HFDD service. The AWS-3 spectrum should be divided into four 5 MHz blocks, and the Commission should not mandate or prohibit the use of the spectrum for any particular service. It is not appropriate or possible for the Commission to

¹ NPRM at para. 6.

determine how this spectrum is best used. This spectrum may be used for technologies that exist today, but it also may be used for some new technology or technologies. In keeping with past Commission policy that has served the American public so well, the Commission should let the licensees decide which technologies and which services to deploy on the AWS-3 spectrum.

Similarly, Qualcomm urges the Commission to adopt technical rules for AWS-3 along the lines of those which govern the adjacent AWS-1 spectrum. There is no need for the Commission to mandate an amount of guardband or to adopt overly tight out of band emissions requirements for AWS-3. The out of band emission limit should be the same $43 + 10 \log P$ which governs the adjacent AWS-1 spectrum should likewise govern the AWS-3 spectrum. It may well be that if a licensee deploys a particular technology on AWS-3, the licensee will need to adhere to a tighter or even a much tighter out of band emission limit to avoid interfering with operations on an adjacent block. Licensees on the four blocks of AWS-3 should have mutually reciprocal incentives to avoid interfering with one another, and those incentives should be sufficient to protect against harmful interference from one AWS-3 licensee to another.

With respect to power limits, Qualcomm believes that the Commission should allow mobiles to operate at up to 250 mW average EIRP and base stations to operate at a limit based on power spectral density so that wider band technologies are not disadvantaged in any way. The Commission theorizes that this spectrum could be used for downstream video service similar to Qualcomm's MediaFLO service and asks for comment on whether base stations could operate at up to 50 kW so long as licensees adhere to a power flux density limit. Qualcomm believes that it is unlikely that this spectrum, at 2.1 GHz, will be used for a downstream-only mobile video service given the inherent propagation limits of the band. In any event, if operations over 1,640 watts EIRP are authorized, the base station power and power flux density limits need to be

sufficiently tight to protect both the operations on the adjacent AWS-1 band and two-way services on the 2155 to 2175 MHz band.

Finally, the Commission should not impose eligibility restrictions or spectrum aggregation limit in auctioning the AWS-3 spectrum. It should auction the spectrum to the highest bidder, period.

Qualcomm looks forward to working with the Commission and its staff as they fashion rules for this new band.

TABLE OF CONTENTS

Summary i

I. Background 1

**II. The Commission Should Not Prohibit Any Services in AWS-3
and Should Adopt a Full Duplex Band Plan, Dividing
the Spectrum Into Four 5 MHz Licenses On Which
AWS-3 Licensees Can Deploy TDD, FDD, or HFDD Services 3**

**III. The Commission Should Adopt Minimally Intrusive Technical Rules,
Which Are Similar to the Technical Rules Which Govern
the AWS-1 Spectrum 5**

**IV. The Commission Should Not Impose Eligibility Restrictions or
Spectrum Aggregation Limits for the AWS-3 Band 6**

V. Conclusion 7

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QUALCOMM Incorporated (“Qualcomm”) hereby submits its Comments on the Notice of Proposed Rule Making, FCC 07-164, released September 19, 2007 (“NPRM”), in which the Commission sought comments on service rules for the 2155 to 2175 MHz band, the so-called AWS-3 band.

I. Background

Qualcomm is a world leader in developing innovative digital wireless communications technologies and in enabling products and services based on the digital wireless communications technologies that it develops. Qualcomm is a pioneer of the code division multiple access (“CDMA”) technology, which is utilized in the 3G CDMA family of wireless technologies. These technologies include CDMA2000 and WCDMA/HSPA, which are the two technologies used in today’s third generation (3G) wireless networks and devices to enable consumers to enjoy advanced, high speed, and ubiquitous wireless services. Qualcomm broadly licenses its technology to over 140 handset and infrastructure vendors around the world.

Qualcomm is also a leader in developing wireless technologies based on orthogonal frequency division multiple access (“OFDMA”). These technologies include the ultra mobile broadband (“UMB”) and long term evolution (“LTE”) technologies, which are now in varying degrees of development. Another OFDM-based technology developed initially by Qualcomm but supported by many companies around the world is the MediaFLO technology. As the NPRM notes, Qualcomm holds licenses covering the entire nation for Block D in the Lower 700 MHz band, and on that spectrum, Qualcomm’s wholly-owned subsidiary MediaFLO USA, has launched a service delivering high quality video to 3G cell phones. MediaFLO is available today in over 50 markets to Verizon Wireless subscribers, and next year, it will also be available to AT&T Mobility subscribers.

The 3G CDMA technologies are proliferating at a very rapid pace, here in the United States and around the world. In the United States, there are three nationwide 3G networks operated by Verizon Wireless, AT&T Mobility, and Sprint. T-Mobile USA is constructing a fourth nationwide 3G network on its AWS-1 spectrum. Regional wireless carriers, such as ALLTEL, have also deployed 3G networks. As of last year, when the Commission issued its last report on competition in the US wireless industry, wireless broadband service based on the 1xEV-DO technology was available to nearly two-thirds of the U.S. population, a footprint which included many rural areas.² Since then, the scope of that footprint expanded substantially all over the country, and it will continue to expand into next year and beyond. Likewise, the WCDMA/HSPA-based wireless broadband footprint, which now stands at 220 major metropolitan areas, is also literally expanding every day. The number and variety of mobile

² See Separate Statement of Chairman Martin, Eleventh Report, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, FCC 06-142, released September 29, 2006.

devices that use these wireless broadband networks range from all types of cell phones to PDAs to embedded laptops, and the number and variety of these devices is growing exponentially.

The result of both the constant expansion of wireless broadband networks all over the United States and the explosion in new devices is that there is an ever-increasing demand for more licensed spectrum for AWS-type services. It is, therefore, entirely necessary and appropriate that the Commission proceed with adopting service rules and then auctioning the AWS-3 band.

II. The Commission Should Not Prohibit Any Services in AWS-3 and Should Adopt a Full Duplex Band Plan, Dividing the Spectrum Into Four 5 MHz Licenses On Which AWS-3 Licensees Can Deploy TDD or FDD Services

The Commission seeks comment on whether to restrict use of the AWS-3 spectrum to downlink-only operations such that AWS-3 would have to be used in combination with other FDD bands; to permit mobile-plus-base transmit operations and downlink-only operations, but only in particular parts of the band; or to allow AWS-3 to be used for TDD, FDD, or HFDD operations. See NPRM at paras. 11 to 24. Qualcomm strongly believes that the Commission should not restrict the services that could be deployed on AWS-3. Licensees should be allowed to use the spectrum for one-way or two-way services based upon TDD, FDD, or HFDD technologies. Qualcomm agrees with the Commission that its objective should be to “develop an approach for 2155-2175 MHz that will enable service providers to maximize use of this spectrum to provide advanced wireless services, while providing necessary protections against interference” and with the Commission’s stated plan for achieving that objective, namely “to permit as many types of technologies in the band as possible that are consistent with (the Commission’s) fixed and mobile allocation, and with the need to protect against interference.” NPRM at para. 11.

Accordingly, to achieve that laudable objective and plan, the Commission should not dictate what services or technologies can be deployed in the AWS-3 band. The Commission has served the American public so well by refraining from technology or service mandates and instead by auctioning spectrum for AWS or other use without any such restrictions. The AWS-3 band should be treated in this same manner. The Commission should not limit the entire band to downlink-only operations or dictate that particular parts of the band can only be used for downlink. Rather, the Commission should allow the use of the band for both one way and two-way services.

Similarly, the Commission should not dictate any particular type of technologies which would have to be used in the AWS-3 band, be it FDD, TDD, or HFDD. Rather, the Commission should allow FDD, TDD, or HFDD to be deployed in AWS-3. Licensees should each decide which technology they choose to deploy in AWS-3, free of any government prohibition.

As for the band plan, Qualcomm believes that the Commission should simply divide the band into four 5 MHz blocks. In an auction or in the after-market, companies should be free to aggregate the spectrum into bigger blocks, but by issuing the initial licenses in four 5 MHz blocks, the Commission will maximize the opportunities for use of this spectrum.

The Commission should certainly not take the unprecedented step of dictating specific data rates or even pricing plans for services offered on AWS-3 spectrum. See NPRM at paras 86-91. As the Commission has found time and again, the US wireless market is robustly competitive. In its most recent annual report on the state of competition in the industry, the Commission found that there is “effective competition” in the wireless marketplace; the market “continues to behave in a competitive manner;” that “consumers continue to pressure carriers to compete on price and other terms and conditions of service by freely switching providers in

response to differences in cost and quality of service;” that “competitive pressure continues to drive carriers to introduce innovative pricing plans and service offerings, and to match the pricing and service innovations introduced by rival carriers;” mobile voice calls are “far less expensive on a per minute basis in the United States than in Western Europe and Japan;” and, that “deployment of next-generation networks based on competing technological standards continues to be an important dimension of non-price rivalry in the U.S. mobile telecommunications market.”³

Accordingly, there is no legal or policy basis for the Commission to regulate the prices charged by AWS-3 licensees or to dictate data rates for services launched on the AWS-3 spectrum.

III. The Commission Should Adopt Minimally Intrusive Technical Rules, Which Are Similar to the Technical Rules Which Govern the AWS-1 Spectrum

As part and parcel of achieving the Commission’s objective for maximizing use of the AWS-3 spectrum while providing the necessary protections against interference, the Commission should adopt a minimally intrusive set of technical rules for AWS-3 which are similar to those which govern the immediately adjacent AWS-1 spectrum. The Commission should not specify any guardband or impose an unduly tight out of band emission limit. Rather, the Commission should require AWS-3 licensees to meet the same $43 + 10 \log P$ out of band emission limit as AWS-1 licensees must meet. See 47 C.F.R. § 27.53 (g). As in other bands to which the Commission applies this limit, it may well be that if a licensee deploys a particular technology on AWS-3, the licensee will need to adhere to a tighter or even a much tighter out of band emission limit to avoid interfering with operations on an adjacent block. Licensees on the

³ Eleventh Report, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, 21 FCC Rcd 10947 (2006) “(Eleventh CMRS Competition Report”).

four blocks of AWS-3 should have mutually reciprocal incentives to avoid interfering with one another, and those incentives should be sufficient to protect against harmful interference from one AWS-3 licensee to another.

Similarly, the Commission seeks comment on whether to impose a power limit on mobiles of 250 mW EIRP. NPRM at paras. 63, 64. Qualcomm agrees that such a limit, on average power from mobiles, will be sufficient to protect against overload interference, while still allowing mobiles to transmit at high enough power to enable the provision of innovative and exciting AWS services.

Finally, with respect to base station power, Qualcomm believes that the Commission should adopt a power spectral density limit so that licensees seeking to deploy wider bandwidth technologies are not disadvantaged in any way. The Commission speculates in the NPRM that AWS-3 may be used for a one-way video service similar to Qualcomm's MediaFLO service and, thus, seeks comment on whether to allow base stations to operate at power levels greater than 1640 watts EIRP. Qualcomm does not believe that the AWS-3 spectrum will be used for a mobile video service given the propagation characteristics of the spectrum. However, if the Commission decides to authorize operations in AWS-3 at power levels of greater than 1,640 watts EIRP, the base station power and power flux density limits need to be sufficiently tight to protect both the operations on the adjacent AWS-1 band and two-way services on the 2155 to 2175 MHz band.

IV. The Commission Should Not Impose Eligibility Restrictions or Spectrum Aggregation Limits for the AWS-3 Band

In the NPRM, the Commission correctly proposes not to impose a spectrum aggregation limit or eligibility restrictions for the AWS-3 band. See NPRM at para. 103. The Commission cites its prior decisions which hold that it would not restrict eligibility for a band "absent a

compelling showing that regulatory intervention to exclude potential participants is necessary,” and the Commission states that “open eligibility in the 2155-2175 MHz band does not appear to pose a significant likelihood of substantial harm to competition in any specific market, and thus it does not appear that an eligibility restriction in this band is warranted.” Id.

Qualcomm agrees with these statements in the NPRM. There is no need to restrict eligibility or to impose a spectrum aggregation limit. Any such restriction or limitation would be counterproductive. As the Commission itself notes, open eligibility is consistent with the Commission’s statutory mandate “to promote the development and rapid deployment of new technologies, products and services; economic opportunity and competition; and the efficient and intensive use of the electromagnetic spectrum.” Id., (quoting 47 U.S.C. § 309 (j) (3) (A), (B), & D.) The Commission should auction the AWS-3 spectrum to the highest bidder and let the chips fall where they may.

V. Conclusion

Wherefore, Qualcomm respectfully requests that the Commission adopt service rules for the AWS-3 band consistent with these comments.

Respectfully submitted,

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