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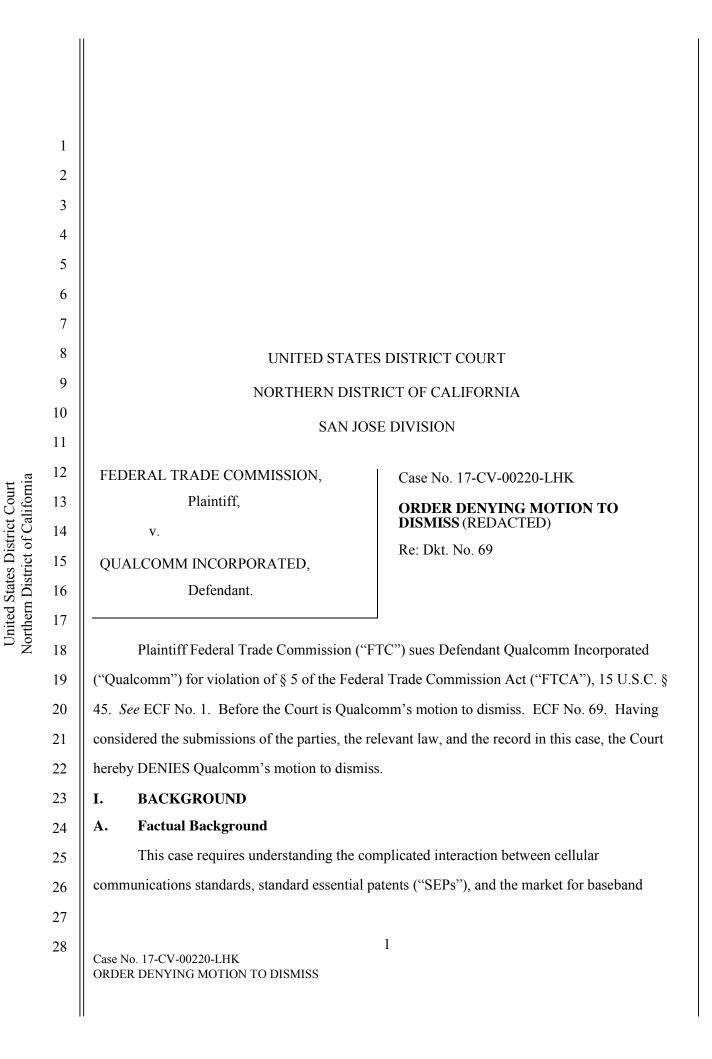
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Developments on SEP/FRAND Issues in the U.S. and abroad

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United States District Court Northern District of California 6

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processors, or "modem chips."¹ The Court begins by discussing cellular communications
 standards and modem chips generally. Then, the Court discusses Qualcomm's cellular
 communications SEPs and Qualcomm's participation in the markets for modem chips. Finally,
 the Court discusses FTC's allegations that Qualcomm has used its SEPs and its modem chips
 monopoly to harm competition in certain modem chips markets.

Cellular Technology and the Baseband Processor Industry Generally i. Cellphone Networks

Cellular communications depend on widely distributed networks that implement cellular
communications standards. ECF No. 1 ("Compl."), ¶ 18. Network operators, including Verizon,
AT&T, T-Mobile, and Sprint, "build networks that comply with these standardized protocols." *Id.*Cellular communications standards have evolved over four "generations." *Id.* ¶ 19. Firstgeneration cellular communications standards were developed in the 1980s. These standards
support analog transmissions of voice calls. *Id.* ¶ 19a.

Second-generation ("2G") cellular communications were developed in the early 1990s. *Id.* ¶ 19b. 2G cellular communications standards support digital transmissions of voice calls. *Id.* The leading 2G standards are the Global System for Mobile communications standard ("GSM") and second generation Code Division Multiple Access standard ("2G-CDMA"). *Id.* In the United States today, AT&T and T-Mobile operate "legacy" GSM networks. By contrast, Verizon and Sprint operate "legacy" 2G-CDMA networks. *Id.*

In the late 1990s and early 2000s, third-generation ("3G") cellular communications
standards were developed. *Id*. ¶ 19c. The leading 3G standards are the Universal Mobile

- 22 Telecommunications system ("UMTS") and third-generation CDMA ("3G-CDMA") standards.
- 23 *Id.* Network operators that deployed 2G GSM networks, such as AT&T and T-Mobile,
- 24
- ¹ The Complaint and the parties' motions refer to baseband processors as "processors," "chips,"
 "modem chips," and "chipsets." Qualcomm states in its motion that "these terms are not in fact interchangeable," but Qualcomm uses the term "modem chips" in its motion. *See* Mot. at 5 n.6. For simplicity and consistency, the Court will refer to baseband processors throughout this Order as "modem chips" or "chips."
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