IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

IN RE NEO WIRELESS, LLC PATENT LITIG.	§ § § § § § §	2:22-MD-03034-TGB HON. TERRENCE G. BERG

NEO WIRELESS, LLC'S COMMENTS ON THE DEFENDANTS' FIRST TECHNOLOGY TUTORIAL

Pursuant to the Court's instruction, Plaintiff Neo Wireless, LLC respectfully submits the following comments on Defendants' First Technology Tutorial as previously exchanged and discussed during the first technology tutorial conference held on January 23, 2023. The remarks below seek to clarify potential misunderstandings about the technology at issue, or highlight situations where the technical issues discussed at the hearing are potentially disputed, rather than generally accepted background.

Neo's Patents Do Read on 5G.

During the tutorial, the Court asked about the difference between 4G/LTE and the newest 5G (also called New Radio) standards. 1/23/23 Hg. Tr. ("Tr.") 9:20–22. While Neo has no further comment on the explanation of 5G offered during the hearing, Neo Wireless notes that, as reflected in its Complaints, the Asserted Patents

cover implementations of both 4G/LTE and 5G. Neo's infringement contentions to date have focused on Defendants' use of 4G/LTE, based on Neo's understanding that Defendants have yet to implement 5G compatible technology into their Accused Products. But if Defendants did implement 5G, they would infringe most if not all of the same claims at issue in the case, in much the same way.

Neo's Inventions Do Not Mandate the Use of DSSS Signals.

During the tutorial, there was a brief discussion by Defendants' expert about "Direct Sequence Spread Spectrum" (DSSS) signals. *See* Tr. 21:14–23:1. This concept was not introduced in either party's first tutorial, but Defendants' expert referred to it as a topic the Court should focus on, in part because this type of signal is purportedly "part of" Neo's invention in certain patents. Tr. 22:20–21. As will be addressed in the parties' claim construction briefing, this was not objective background information, but rather a preview of a heavily disputed claim construction argument. Neo expects Defendants will attempt, in the claim construction process, to improperly limit Neo's claimed invention to one specific embodiment described in the specification. *See* Dkt. 114-2 (Joint Claim Construction Chart) at 3, 6 (disputed terms 6 and 10). As Neo will explain in its second technology tutorial, certain Asserted Patents describe DSSS as an example embodiment of certain signals described therein. But despite any insinuation by Defendants' expert, the Asserted Patents and claimed inventions are not limited to using DSSS signals.

Defendants' Discussion of Physical Channels Was Incomplete.

As discussed briefly during the hearing and in Defendants' tutorial, the 4G/LTE and 5G standards define physical channels—that is, sets of physical resources in time and frequency (subcarriers), for various types of signaling. Defendants' tutorial describes two types of defined physical channels in both the uplink and downlink between a mobile device and a base station, and the Court asked about the relationship between those channels and the random access procedure also described in Defendants' tutorial. Tr. 11:1–11. Neo notes that the relevant standards define additional channels that are used in both the uplink and downlink. A relevant example is the Physical Random Access Channel (PRACH), which carries the random access signaling enabling the initial and re-establishment of communication within the cellular network. Neo Wireless's second technology tutorial intends on further discussing the channels relevant to the Asserted Patents and Claims.

In addition, slide 36 of Defendants' tutorial presents a representation of an uplink resource grid allocated between two uplink physical channels (the PUCCH and PUSCH), stating that "the location of the PUCCH and PUSCH can vary on the uplink resource grid according to the base station's decision[.]" The representative grid in slide 36 shows instances where the PUSCH intermingles with the frequency subcarriers used by the PUCCH (such in RB0, RB1, RB4, and RB5). While this issue will be addressed more fully later in the case, in the context of infringement,

Neo notes for the record that to the best of its knowledge, this configuration never occurs in LTE. Rather, based on the allocation rules defined in the 3GPP standards, the PUCCH is scheduled on the frequency subcarriers near the edge of the grid, with the remaining central frequency subcarriers (those between the subcarriers scheduled for the PUCCH) allocated to other uplink channels, such as the PUSCH.

OFDMA and SC-FDMA Are Two Versions of the Same System.

Defendants' first technology tutorial states that that the uplink signaling between a mobile device and the base station in a 4G/LTE network does not use OFDMA (Orthogonal Frequency Division Multiple Access) because it uses Single-Carrier Frequency Division Multiple Access (SC-FDMA). This is a thinly veiled preview of Defendants' non-infringement position in this case. But it is incorrect.

SC-FDMA, like standard OFDMA, is a version of OFDM, and that is not in dispute. Furthermore, as presented in Neo Wireless's first technology tutorial, SC-FDMA is also referred to as linearly pre-coded OFDMA (LP-OFDMA). As will be explained in further detail in Neo's forthcoming second technology tutorial, Defendants' side-by-side illustrations of OFDMA and SC-FDMA are misleading to the extent they suggest that SC-FDMA signals do not assign data to individual subcarriers. On the contrary, just like in traditional OFDMA, SC-FDMA allocates individual portions of data to each subcarrier allocated for the signal. SC-FDMA does distribute individual pieces of data across multiple subcarriers, and uses

adjacent subcarriers for transmission (rather than scattered subcarriers, as is possible in standard OFDMA). But this process does not "cancel" or negate the fundamental features of OFDMA, as suggested by Dr. Akl. Tr. 26:11–25. Instead, as described during the hearing, Tr. 27:1–4, SC-FDMA shifts processing and energy burdens from the mobile device to the base station.

An SC-FDMA scheme still contains all the foundational features and principles that are in standard OFDMA. For example, in both standard OFDMA and SC-FDMA schemes, there is a time-frequency resource grid which allocates the wireless communication resources by the frequency domain and the time domain. In both schemes, the frequency domain is divided into multiple subcarriers, where the subcarriers are all orthogonal to one another, and the time domain is divided into symbols. In both schemes, one subcarrier and one OFDM symbol define a resource element, which is the smallest unit used for transmission of information. In short, standard OFDMA and SC-FDMA (LP-OFDMA) are two versions of OFDM networks, and SC-FDMA is a modified form of standard OFDMA.

This dispute need not be resolved by the Court now, but Neo simply notes that, contrary to the suggestions in Defendants' tutorial, the relationship between OFDMA and SC-FDMA is in dispute.

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