UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,
HTC CORPORATION AND HTC AMERICA, INC.,
ZTE(USA) INC.
Petitioners

v.

INVT SPE LLC
Patent Owner

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Case No. 2018-01473
U.S. Patent No. 6,611,676

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**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 6,611,676**

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I. INTRODUCTION

Petitioners Apple Inc., HTC Corporation, HTC America, Inc. and ZTE (USA) Inc. ("Petitioners") request an *Inter Partes* Review ("IPR") of claims 1-11 (collectively, the "Challenged Claims") of U.S. Patent No. 6,611,676 ("the '676 Patent"). *'676 Patent* (Ex. 1001).

II. SUMMARY OF THE '676 PATENT

A. Background of the technology

Code Division Multiple Access (CDMA) is a multiple access scheme for allowing multiple users to communicate at the same time and is commonly used for cellular communications between a mobile station and a base station. *Singer Decl.* (Ex. 1003) at ¶ 30. Unlike Frequency Division Multiple Access (FDMA) in which users communicate on different frequencies or Time Division Multiple Access (TMDA) in which users communicate serially (i.e., one at a time), CDMA allows each user to communicate on all frequencies at the same time. *Id.*

This multiple access in CDMA is accomplished by encoding a user's data on the transmit side with a unique spreading code such that each user's communications can be identified (and distinguished from other users) on the receiving end by decoding with that user's unique spreading code (referred to as despreading). *Id.* at ¶ 32. In general, the full spreading code (or its inverse) is used to represent a single bit of information. For example, a spreading code of

[00110011] would represent a "1" bit of information and the inverse of the spreading code [11001100] would represent a "0" bit of information. Each bit of a spreading code is referred to as a "chip," and the number of chips per second is referred to as the "chip rate." *Id.*

Because the full spreading code represents only a single bit of information, the chip rate is always higher than the information rate. The relationship between the chip rate and the information rate and is referred to as a "spreading factor." *Id.* at ¶ 32. As noted above, a longer spreading code results in lower throughput, so there is an inverse relationship between the spreading factor and the overall throughput of the system.

Key to the technical issues discussed herein, modifying the spreading factor is a tradeoff between throughput and robustness. For example, increasing the chip rate results in a more robust communication that is less prone to error when the system experiences deteriorated channel quality. *Id.* at ¶ 32. The downside to this increased robustness is a decrease in overall system throughput.

B.   Description of the alleged invention of the '676 Patent

The '676 Patent generally describes a "communication terminal apparatus" "capable of controlling transmission power" and "switch[ing] the transmission rate of a transmission signal based on reception quality information." *'676 Patent* (Ex. 1001) at 1:59-2:4, 13:26-28. The '676 Patent describes methods for measuring

channel quality, including "received signal strength, desired signal reception power, signal to interference ratio (SIR), Signal-to-Interference plus Noise Ratio (hereinafter abbreviated as "SINR"). *Id.* at 4:7-10; *see also, id.* at 4:28-42, 4:51-58, Figs. 3-5.

The '676 Patent contends that in cases where the reception SIR decreases due to fading, prior art "mobile station[s] instruct[] the base station to increase transmission power to make the reception SIR come closer to the target SIR," but that this power increase "is likely to increase interference with other mobile stations to an intolerable degree." *Id.* at 1:50-56. To avoid increasing interference, the '676 Patent proposes decreasing "the transmission rate of a transmission signal based on reception quality information," which the '676 Patent contends "makes it possible to improve the reception quality of the other end of communication even if the condition of the communication path with the other end of communication deteriorates drastically." *Id.* at 1:65-2:4, 7:9-25, Figs. 12-15. The '676 Patent teaches that, "in a CDMA communication system," the proposed rate change is accomplished by modifying "the spreading factor." *Id.* at 7:1-3.

C.   Summary of the prosecution history of the '676 Patent

The application that resulted in the '676 Patent was filed on February 27, 2002 as a continuation of a U.S. Patent Application No. 09/424,843, filed on April 19, 1997. *'676 Patent File History* (Ex. 1002), at 6. For purposes of this

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