

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. 2018-01476  
U.S. Patent No. 7,764,711

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PATENT OWNER'S SUR-REPLY

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## I. INTRODUCTION

The '711 Patent claims a specific way of simultaneously using transmit diversity and spatial multiplexing to improve wireless communications.

Spatial multiplexing can be used to increase system throughput by utilizing multiple antennas to transmit different data items to the same user at the same time. Ex. 1001 at 1:18-27; Ex. 2002 at ¶¶ 28, 30. Spatial multiplexing, however, does not improve error protection. Ex. 1001 at 1:48-52; Ex. 2002 at ¶ 30.

Transmit diversity, on the other hand, utilizes redundancy to improve error protection by replicating a single data item and transmitting both the original and the replica from two different antennas, thereby doubling the chances the data is received correctly. Ex. 1001 at 1:60-67; Ex. 2002 at ¶¶ 28, 31. Transmit diversity, however, decreases throughput as it is sending the same data twice, as compared to sending different data. Ex. 1001 at 1:64-67; Ex. 2002 at ¶ 31.

The '711 Patent teaches a novel use of both spatial multiplexing and transmit diversity, simultaneously, where transmit diversity is limited to only a “specific [higher priority] data item” and its replica. *See, e.g.*, Ex. 1001 at 7:29-8:7; Ex. 2002 at ¶¶ 32-33; Ex. 1020 at 14:4-15:12. By using both spatial multiplexing and transmit diversity, but limiting the use of transmit diversity to higher priority data, the '711 Patent results in (1) increased throughput via spatial multiplexing,

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