

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,  
Petitioner,

v.

MOBILE TELECOMMUNICATIONS TECHNOLOGIES, LLC,  
Patent Owner.

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Case IPR2014-01035  
Patent 5,659,891

Before MIRIAM L. QUINN, MEREDITH C. PETRAVICK, and SCOTT A.  
DANIELS, *Administrative Patent Judges*.

DANIELS, *Administrative Patent Judge*.

DECISION

Decision on Institution of *Inter Partes* Review  
37 C.F.R. § 42.108

## I. INTRODUCTION

### A. Background

Apple Inc., (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1–5 of U.S. Patent No. 5,659,891 (“the ’891 patent”). Paper 7 (“Pet.”). Mobile Telecommunications Technologies, LLC, (“Patent Owner”) timely filed a Preliminary Response. Paper 9 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). Upon consideration of the Petition and the Preliminary Response, we determine that Petitioner has established a reasonable likelihood of prevailing on the claims challenged in the Petition. Accordingly, we institute an *inter partes* review of claims 1–5 of the ’891 patent.

### B. Additional Proceedings

Petitioner states that the ’891 patent presently is asserted against Petitioner in *Mobile Telecommunications Technologies, LLC v. Apple Inc.*, Case No. 2:13-CV-258, in the U.S. District Court for the Eastern District of Texas (hereinafter “Apple lawsuit”). Pet. 1. Petitioner also points out that the ’891 patent is asserted against other parties in *Mobile Telecommunications Technologies, LLC v. Leap Wireless International, Inc.*, Case No. 2-13-CV-885; and *Mobile Telecommunications Technologies, LLC v. T-Mobile USA, Inc.*, Case No. 2-13-CV-886, both also in the Eastern District of Texas. *Id.*

### C. The ’891 Patent

The ’891 patent (Ex. 1001), titled “Multicarrier Techniques in Bandlimited Channels,” generally relates to a method and apparatus for multicarrier modulation (“MCM”) using geographically co-located

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transmitters to achieve a higher frequency transmission capacity within FCC emission mask limits. The method provides for a plurality of overlapping subchannels within a single bandlimited channel to provide higher data transmission capacity for a mobile paging system. Ex. 1001, 2:15–59. The technique involves transmitting a plurality of paging carriers, in corresponding overlapping subchannels, from the same location and within the umbrella bandlimited channel, without bandlimiting each of the individual subchannels. *Id.* In this way, with the center frequencies of the plurality of modulated carriers within the single bandlimited channel, an optimum transmission capacity is provided and the plurality of carriers may emanate from the same transmission source, i.e., an antenna. *Id.*

Figure 3B of the '891 patent, reproduced below, depicts two adjacent carriers asymmetrically located within a single, mask-defined, bandlimited channel.

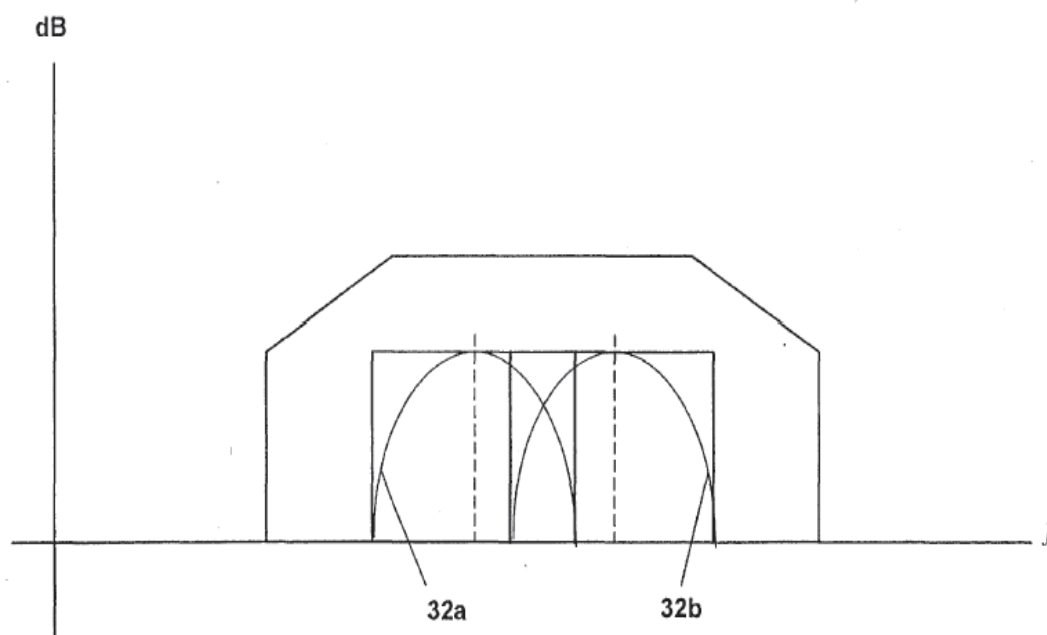


FIGURE 3B

As depicted by Figure 3B of the '891 patent, above, two carriers 32a and 32b are shown operating over two subchannels (no reference number) within a bandlimited mask (also no reference number) defining the channel. The subchannels are asymmetrically aligned within the mask resulting in partial subchannel overlap. *Id.* at 4:24–30. The center frequencies of the carriers 32a and 32b are shown by the vertical dashed lines, and, concomitant with the subchannels, carriers 32a and 32b also overlap. According to the '891 patent, geographic co-location of the transmitters reduces interference problems between adjacent subcarriers, thus allowing the spacing between subchannels to be reduced. *Id.* at 4:12–20. The '891 patent explains that the practical implications of such an asymmetrical arrangement are a greater range of operating parameters, essentially because

more subchannels can be fit within the bandlimited mask without undue interference. *Id.* at 4:36–46.

*D. Illustrative Claim[s]*

Of the challenged claims, claims 1, 3, and 5 are independent. Each of dependent claims 2 and 4 depend directly from claims 1 and 3 respectively.

Claim 1 illustrates the claimed subject matter and is reproduced below:

1. A method of operating a plurality of paging carriers in a single mask-defined, bandlimited channel comprising the step of transmitting said carriers from the same location with said carriers having center frequencies within said channel such that the frequency difference between the center frequency of the outer most of said carriers and the band edge of the mask defining said channel is more than half the frequency difference between the center frequencies of each adjacent carrier.

*E. The Alleged Grounds of Unpatentability*

Petitioner contends that the challenged claims are unpatentable on the following specific grounds.<sup>1</sup>

References	Basis	Claims Challenged
Petrovic <sup>2</sup>	§ 102	1–5
Petrovic, Raith <sup>3</sup> , and Alakija <sup>4</sup>	§ 103	5

<sup>1</sup> Petitioner supports its challenge with a Declaration of Dr. Apostolos K. Kakaes, Ph.D. (Ex. 1004, “Kakaes Decl.”).

<sup>2</sup> Ex. 1008, Rade Petrovic, Walt Roehr & Dennis Cameron, *Permutation Modulation For Advanced Radio Paging*, IEEE, 1993, at 1.

<sup>3</sup> Ex. 1010, WO 89/08355 (Aug. 9, 1989).

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