

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE, INC., HTC CORPORATION, HTC AMERICA, INC.,
MICROSOFT CORPORATION, MICROSOFT MOBILE OY,
MICROSOFT MOBILE, INC., SAMSUNG ELECTRONICS CO., LTD.,
AND SAMSUNG ELECTRONICS AMERICA, INC., ZTE (USA) INC.,
Petitioners,

v.

EVOLVED WIRELESS LLC,
Patent Owner.

Case IPR2016-01208
Case IPR2016-01277¹
Patent 7,746,916 B2

Before CHRISTOPHER L. CRUMBLEY, PATRICK M. BOUCHER, and
TERRENCE W. McMILLIN, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

¹ These cases have been consolidated. Unless otherwise indicated, citations are to the record of IPR2016-01208.

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In response to a Petition (Paper 2, “Pet.”) filed in IPR2016-01208 by Apple, Inc. Microsoft Corporation, Microsoft Mobile OY, and Microsoft Mobile, Inc. (f/k/a Nokia, Inc.) (collectively, “Apple Petitioners”), we instituted an *inter partes* review of claims 1–10 of U.S. Patent No. 7,746,916 B2 (“the ’916 patent”). Paper 7 (“Dec.”), 23–24. ZTE (USA) Inc., Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., HTC Corporation, and HTC America, Inc. (collectively, “ZTE Petitioners”), filed a substantially identical Petition in IPR2016-01277 and trial was instituted in IPR2016-01277 on the same grounds. Paper 8, 2–3. Thereafter, the proceedings were consolidated and we required the Apple Petitioners and ZTE Petitioners (collectively, “Petitioners”) to file consolidated papers. *Id.* During the trial, Evolved Wireless LLC (“Patent Owner”) timely filed a Response (Paper 14, “PO Resp.”), to which Petitioners timely filed a Reply (Paper 17, “Reply”). An oral hearing was held on September 15, 2017, and a copy of the transcript was entered into the record. Paper 29 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioners have shown, by a preponderance of the evidence, that claims 1–10 are unpatentable.

I. BACKGROUND

A. Real Parties in Interest and Related Proceedings

The Apple Petitioners identify Apple, Inc., Microsoft Corporation, Microsoft Mobile OY, Microsoft Mobile, Inc. (f/k/a Nokia Inc.), Microsoft

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Luxembourg International Mobile SARL, and Microsoft Luxembourg USA Mobile SARL as the real parties in interest. Pet. 1. The ZTE Petitioners identify ZTE Corporation, ZTE (USA) Inc., Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., HTC Corporation, and HTC America, Inc. as the real parties in interest in IPR2016-01277 (Paper 2, 1). Patent Owner identifies only itself as a real party in interest and the owner of the '916 patent. Paper 5, 2.

The '916 patent has been asserted in several actions, captioned *Evolved Wireless, LLC v. Apple, Inc.*, C.A. 15-cv-542-SLR (D. Del.); *Evolved Wireless, LLC v. HTC Corp.*, C.A. 15-cv-543-SLR (D. Del.); *Evolved Wireless, LLC v. Lenovo Group Ltd.*, C.A. 15-cv-544-SLR (D. Del.); *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd.*, C.A. 15-cv-545-SLR (D. Del.); *Evolved Wireless, LLC v. ZTE Corp.*, C.A. 15-cv-546-SLR (D. Del.); and *Evolved Wireless, LLC v. Microsoft Corp.*, C.A. 15-cv-547-SLR (D. Del.). Pet. 1; Paper 5, 2–3.

The '916 patent is also the subject of IPR2016-01209 and IPR2016-01280, which are consolidated and in which a final written decision on claims 1–10 is being issued on the same date as this decision.

B. The '916 Patent

The '916 patent is titled “Method and Apparatus for Generating and Transmitting Code Sequence in a Wireless Communication System.” Ex. 1001, (54). The Specification states, “the code sequence or a code sequence set can be applied to 3rd Generation Partnership Project (3GPP) system or 3GPP2 system as well as a Wibro system or a Wimax system.” *Id.* at 17:22–25. Figure 13, which is reproduced below, is a “diagram illustrating

application of circular shift to the generated code sequence after a padding portion is attached.” *Id.* at 3:47–49.

FIG. 13

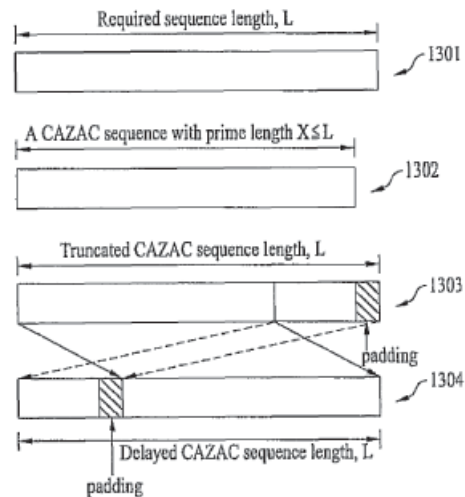


Figure 13 of the '916 patent depicts code sequence 1301 with a “[r]equired sequence length, L”; “CAZAC sequence [1302] with prime length $X \leq L$ ”; “[t]runcated CAZAC sequence [1303] length, L” with a padding portion added; and “[d]elayed CAZAC sequence [1304] length, L” in which the end portion from code sequence 1303 has been circularly shifted to the start of code sequence 1304. *Id.* at 12:37–49. Thus, the '916 patent describes providing a code sequence for a wireless communication system which is extended by cyclic extension and rearranging the sequence by performing a circular shift.

Claims 1 and 6 of the '916 patent, reproduced below, are independent claims respectively directed at a method of transmitting the above-described sequence and at apparatus for transmitting the above-described sequence.

1. A method for transmitting a code sequence from a transmitting party to a receiving party in a wireless communication system, the method comprising:
 - acquiring a code sequence having a second length by a cyclic extension of a code sequence having a first length;
 - performing a circular shift to the code sequence having the second length; and
 - transmitting the circular shifted code sequence having the second length to the receiving party,wherein the first length is a largest prime number smaller than the second length, and
wherein the cyclic extension of the code sequence having the first length is performed such that a part of the code sequence having the first length, having a length corresponding to a difference between the first length and the second length, is added to either a start or an end of the code sequence having the first length, and
wherein the circular shift is performed to the code sequence having the second length such that either a rear portion of the code sequence having the second length moves to a start of the code sequence having the second length, or a front portion of the code sequence having the second length moves to an end of the code sequence having the second length.
6. An apparatus for transmitting a code sequence in a wireless communication system, the apparatus comprising:
 - a code sequence generator for generating a code sequence having a second length by cyclic extension of a code sequence having a first length, and performing a circular shift to the code sequence having the second length; and
 - a transmitting unit for transmitting the circular shifted code sequence having the second length,wherein the first length is a largest prime number smaller than the second length,

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