

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BROADCOM LIMITED,
Petitioner,

v.

TESSERA ADVANCED TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2017-00736
Patent 7,809,393 B2

Before BARBARA A. BENOIT, BARBARA A. PARVIS, and
STACY B. MARGOLIES, *Administrative Patent Judges*.

MARGOLIES, *Administrative Patent Judge*.

DECISION

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

I. INTRODUCTION

Broadcom Limited (“Petitioner”) filed a Petition for *inter partes* review of claims 1–20 of U.S. Patent No. 7,809,393 B2 (Ex. 1001, “the ’393 patent”). Paper 1 (“Pet.”). Tessera Advanced Technologies, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.108. Upon consideration of the Petition and the Preliminary Response, we conclude that the information presented shows that there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 1–3, 5, 6, 8, 10–15, and 17–19 of the ’393 patent.

A. Related Matters

The parties do not identify any pending matters that would affect, or be affected by, a decision in this proceeding. Pet. 1; Paper 4, 1; *see* 37 C.F.R. § 42.8(b)(2).

B. The ’393 Patent

The ’393 patent is titled “Method and Arrangement for Setting the Transmission of a Mobile Communication Device.” Ex. 1001, [54]. The patent explains as background that mobile communication devices must set the transmitted power with “great accuracy,” and that “[w]ith conventional analog amplifiers, accuracy of this kind can, at best, be ensured only by complicated and expensive circuitry and complicated and expensive calibration procedures.” *Id.* at 1:9–20. The ’393 patent describes a solution that combines digital and analog amplification and that takes advantage of “the high relative accuracy obtained on the basis of digital amplification and of the insensitivity that digital amplification has to fluctuations in the operating voltage and in temperature.” *Id.* at 1:29–37.

Figure 1 of the '393 patent is shown below:

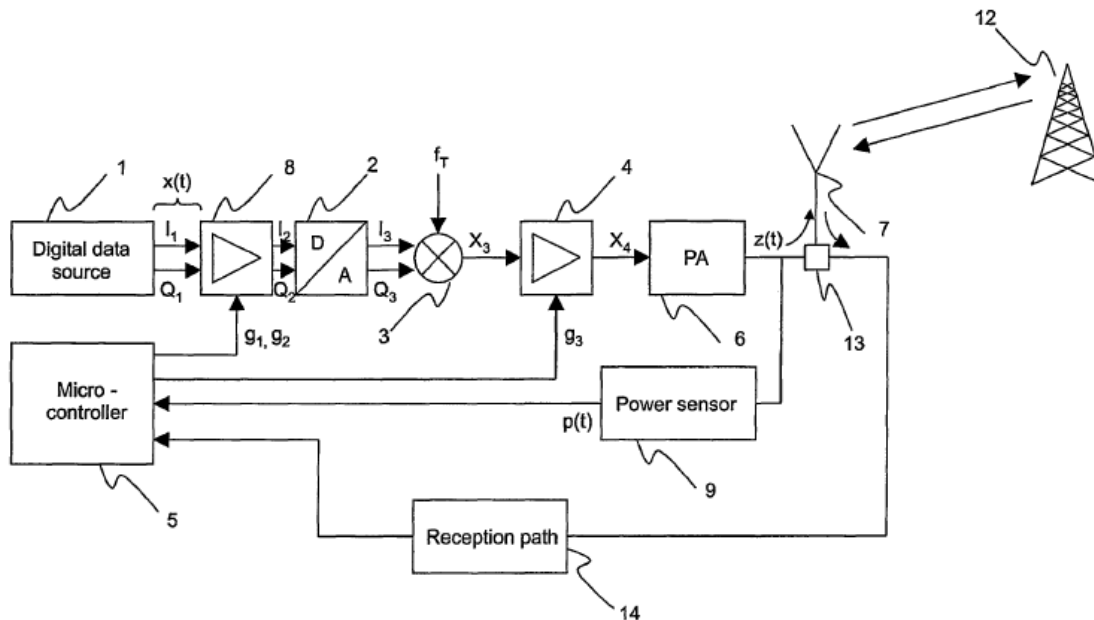


FIG. 1

Figure 1 above illustrates a block diagram relating to setting the transmitted power in a mobile communication device. *Id.* at 1:51–52. According to the '393 patent, digital data source 1 makes available the information to be transmitted, which is in the form of two digital signals I_1 and Q_1 . *Id.* at 1:57–59. Digital amplifier 8 amplifies the signals to give signals I_2 and Q_2 , which are converted by digital-to-analog converter 2 into analog signals I_3 and Q_3 . *Id.* at 1:60–62. I_3 and Q_3 are modulated in modulator 3 onto carrier frequency f_T , giving modulated analog signal X_3 . *Id.* at 1:63–64. Analog amplifier 4 (shown in Figure 1) or a plurality of analog amplifiers (shown in Figure 3) amplify analog signal X_3 to give signal X_4 . *Id.* at 1:66–2:3. Analog signal X_4 is fed to power output stage 6 and is applied as signal $z(t)$ to antenna 7 of the mobile communication device. *Id.* at 2:3–5.

The '393 patent discloses that control circuit (microcontroller) 5 sets the gain factors of digital amplifier 8 via control lines g_1 and g_2 , and sets the gain factors of analog amplifier 4 via control line g_3 or, as shown in Figure 3, via control lines g_3 , g_4 , and g_5 . *Id.* at 2:6–11. Power sensor 9 measures the actual transmitted power of signal $z(t)$ and transmits the corresponding signal $p(t)$ to control circuit 5. *Id.* at 2:11–14. Base station 12 specifies the necessary or desired change to the transmitted power. *Id.* at 2:19–20. According to the patent, “control circuit 5 determines, from the desired value for the transmitted signals and from the actual value of the transmitted signal, the gain factors that are to be set at the digital amplifier 8 and the analog amplifier 4 . . . under the operating circumstances at the time.” *Id.* at 2:24–28. The '393 patent discloses that “[b]y means of the control circuit 5, the overall gain needed for the transmitted power asked for at the time is apportioned between the digital amplifier 8 and the analog amplifier/amplifiers 4.” *Id.* at 2:29–32. The '393 patent describes optimizing the signal-to-noise ratio as follows:

To optimize the signal-to-noise ratio of the transmitted signal applied to the antenna 7, a high proportion of the overall gain is apportioned to the digital amplifier 8, with the dynamic range of the digital-to-analog converter 2 being exploited to the maximum possible degree. As low as possible a gain factor is set at the analog amplifier 4 or at the analog amplifiers 4, with the sum of the levels of the digital and analog gains producing exactly the desired level of transmitted power that is being asked for at the time by the base station 12.

Id. at 2:33–42.

The '393 patent also discloses an arrangement for self-calibration, illustrated in Figure 3 below:

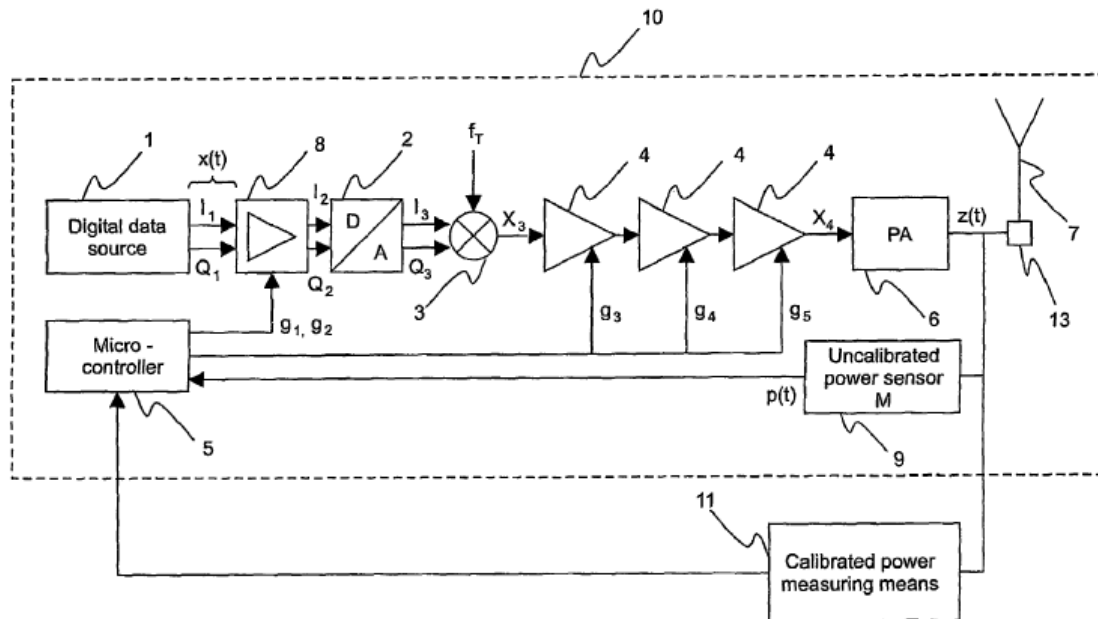


FIG.3

Figure 3 above illustrates an arrangement for self-calibration in which the parameters that determine the gain factors for the digital gain and the analog gain are stored in microcontroller 5. *Id.* at 3:30–34. Specifically, the '393 patent discloses that “a table of corrections . . . can then be stored in the mobile communication device 10 . . . for a given set of parameters . . . after only one absolute measurement by a calibrated measuring device 11.” *Id.* at 5:33–39. The '393 patent states that by reference to the table of corrections, “it is possible to make a correction that corrects, as appropriate and with the help of the digital amplifier 8, the analog gains that show a difference.” *Id.* at 5:39–42. The patent explains that “the amplifiers are thus set each time in such a way that the desired transmitted power is obtained even when the analog amplifiers are affected by changes in temperature or changes in the operating voltage.” *Id.* at 5:42–46.

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