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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RAVI GIDVANI, SUDHEER KUMAR SURYADEVARA, and
CARLOS HORACIO ALDANA

Appeal 2020-000757
Application 15/370,977
Technology Center 3600

Before MICHAEL L. HOELTER, JEREMY M. PLENZLER, and
LEE L. STEPINA, *Administrative Patent Judges*.

STEPINA, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–20, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Qualcomm, Inc. as the real party in interest. Appeal Br. 3.

CLAIMED SUBJECT MATTER

The claims are directed to a ranging protocol for wireless transceivers. “The application discloses systems, methods, apparatus, and computer-readable medium for exchanging positioning messages between a responding station and an initiating station in a dense operating environment, including exclusively occupying a wireless communication medium by using short interframe space (SIFS) bursting techniques.” Appeal Br. 3. According to Appellant, “the responding station may immediately transmit subsequent Fine Timing Measurement (FTM) messages upon receiving an acknowledgement message from the initiating station acknowledging receipt of a previous FTM message.” *Id.*

Claim 1, reproduced below with emphasis added, is illustrative of the claimed subject matter.

1. A method, at a first wireless station (STA), comprising:
transmitting a first fine timing measurement (FTM) message in a burst of FTM messages to a second STA;
receiving an acknowledgement message transmitted from the second STA in response to receipt of the FTM message at the second STA; and
transmitting a second FTM message in the burst of FTM messages *immediately after Short Interframe Space (SIFS) duration following receipt of the acknowledgement message.*

Appeal Br. 22 (Claims App.).

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Wang et al. (“Wang”)	US 2015/0094103 A1	Apr. 2, 2015
Zhang et al. (“Zhang”)	US 9,237,546 B1	Jan. 12, 2016
Segev	US 2016/0345277 A1	Nov. 24, 2016

REJECTIONS

- I. Claims 1–3, 6–8, 11–13, and 16–18 are rejected under 35 U.S.C. § 103 as unpatentable over Segev.
- II. Claims 1–3, 6–8, 11–13, and 16–18 are rejected under 35 U.S.C. § 103 as unpatentable over Segev and Zhang.
- III. Claims 4, 5, 9, 10, 14, 15, 19, and 20 are rejected under 35 U.S.C. § 103 as unpatentable over Segev, Zhang, and Wang.

OPINION

Rejection I–Segev

Claims 1–3

The Examiner finds that paragraphs 54 and 58 and Figures 5 and 6 of Segev disclose most of the limitations recited in claim 1, but do not disclose that the transmission of the second FTM message occurs immediately after a Short Interframe Space (SIFS) duration that follows the receipt of the acknowledgement message. Final Act. 7–8. In other words, the Examiner finds that the specific timing of the final step in claim 1 is not explicitly disclosed in this portion of Segev.

To address this deficiency, the Examiner finds Figure 4 and paragraph 47 of Segev disclose a process,² “which is [the] same as the claimed features ‘transmitting FTM message immediately after Short Interface Space (SIFS) duration following receipt of the acknowledgement message.’” *Id.* at 8–9 (emphasis omitted). The Examiner reasons it would have been obvious to implement this timing in the process disclosed in Figures 5 and 6 of Segev “[in] order to determin[e] one-way or round trip measurement times between the STA and other BSS or IBSS members.” *Id.*

Appellant argues that, where Segev discloses sending a signal after a SIFS period, it is after receipt of an FTM message and *before* transmission of an acknowledgement message. Appeal Br. 13. In other words, according to Appellant, Segev uses the SIFS time period at a different point in the sequence of signals than the sequence recited in claim 1. Further, Appellant, argues, Segev teaches away from transmitting a second FTM message immediately after a SIFS duration that follows the receipt of the acknowledgement message because Segev intentionally uses a Distributed Coordinated Function Inter Frame Space (DIFS) period at this point in the process, and the use of the DIFS time period serves a required function in Segev’s process. *Id.* at 13–14. Thus, according to Appellant, “Segev provides no motivation to transmit a second FTM message in the burst of FTM messages immediately after Short Interframe Space (SIFS) duration following receipt of the acknowledgement message, as recited in claim 1.” *Id.* at 14.

² The Examiner refers to this disclosure in Segev as a different embodiment from the disclosure in Figures 5 and 6. Final Act. 8.

In response, the Examiner modifies the finding that Segev discloses transmitting an FTM message immediately after a SIFS duration *following* receipt of the acknowledgement message (*see* Final Act. 8–9), and, instead, finds Segev merely teaches the use of a SIFS time period *between* a response message and an acknowledgement message. Ans. 5–6 (citing Segev Fig. 4). In other words, the Examiner no longer finds that Segev’s SIFS time period occurs after receipt of the acknowledgement message. *See id.* Now, the Examiner reasons that it would have been obvious to use a SIFS time period after receipt of an acknowledgement message in the sequence depicted in Figure 5 of Segev “in order to more accurately determine one-way or round trip measurement times between STA and other BSS or IBSS members.” *Id.* at 6; *see also id.* at 11.

In reply, Appellant argues “the Examiner provides no basis for the proxy motivation that utilizing the SIFS value instead of the DIFS value would allow one ‘to more accurately determine one-way or round trip measurement times’ recited on page 11 of the Examiner’s Answer.” Reply Br. 6.

First, a preponderance of the evidence does not support the Examiner’s initial finding that Segev discloses transmitting a second FTM message immediately after a SIFS duration following the receipt of the acknowledgement message as recited in claim 1. *See* Final Act. 8–9; Segev ¶ 47, Fig. 4. Rather, as Appellant points out (Appeal Br. 14), the time period following the Acknowledgement is time period G3, which corresponds to a DIFS, not a SIFS. *See* Segev, Fig. 4. Thus, the rejection of claim 1 as set forth on pages 7–9 of the Final Office Action is not based on adequate underpinnings.

Next, with respect to the Examiner's proposed modification based on Segev's disclosure of a SIFS time period *between* a response message and an acknowledgement message, we agree with Appellant that the Examiner does not provide a sufficient basis for concluding that the proposed modification would allow Segev's system to "more accurately determine one-way or round trip measurement times between STA and other BSS or IBSS members." Ans. 5–6, 8, 11. Specifically, the Examiner does not explain why the use of one defined time period (a SIFS) rather than another defined time period (a DIFS) would improve determination of measurement times between STA and BSS or other IBSS members. Accordingly, we do not sustain the rejection of claim 1, and claims 2 and 3 depending therefrom, as unpatentable over Segev.

Claims 6–8, 11–13, and 16–18

Independent claims 6, 11, and 16 recite substantially similar limitations to those discussed above regarding claim 1. *See* Appeal Br. 23, 25–26 (Claims App.). Consequently, for the same reasons discussed above, we do not sustain the rejection of claims 6, 11, and 16, and associated dependent claims 7, 8, 12, 13, 17, and 18, as unpatentable over Segev.

Rejection II–Segev and Zhang

Claims 1–3

In rejecting claim 1 as unpatentable over Segev and Zhang, the Examiner makes the same findings of fact with respect to Figure 5 of Segev as those discussed in Rejection I. *See* Final Act. 20–21. The Examiner relies on Zhang to teach transmitting an FTM message immediately after an SIFS time period following receipt of an acknowledgement message. *Id.* at 21 (citing Zhang 3:3–7, 6:9–13, 20:45–48). The Examiner reasons that it

would have been obvious “to have modified the teaching of Segev with the teaching of Zhang to receive an immediate acknowledgement frame within a short interframe space (SIFS) following the first frame in order to accurately measure RTT (or ToF).” *Id.*

Appellant argues, and we agree, that Zhang appears to implement a SIFS time period before an acknowledgement rather than after. *See* Appeal Br. 15–17; Zhang 3:3–7, 6:9–13, 20:45–48. For example, Zhang states, “[t]he frame M requires an immediate response frame or an immediate acknowledgment frame, ACK(M), within a short interframe space (SIFS) immediately following the frame M.” Zhang 20:45–48. Accordingly, the Examiner’s determination that the subject matter of claim 1 would have been obvious is based on an unsupported finding of fact. Therefore, we do not sustain the rejection of claim 1, or claims 2 and 3 depending therefrom, as unpatentable over Segev and Zhang.

Claims 6–8, 11–13, and 16–18

As claims 6, 11, and 16 recite substantially similar limitations to those discussed above regarding claim 1, for the same reasons, we do not sustain the rejection of claims 6, 11, and 16, and associated dependent claims 7, 8, 12, 13, 17, and 18, as unpatentable over Segev and Zhang.

Rejection III–Segev, Zhang, and Wang

Claims 4, 5, 9, 10, 14, 15, 19, and 20

Claims 4, 5, 9, 10, 14, 15, 19, and 20 each depend from one of independent claims 1, 6, 11, and 16. Appeal Br. (Claims App.). The Examiner does not rely on the teachings of Wang in any manner that would remedy the deficiencies discussed above regarding Rejection II. *See* Final

Act. 32–38. Accordingly, we do not sustain the rejection of claims 4, 5, 9, 10, 14, 15, 19, and 20 as unpatentable over Segev, Zhang, and Wang.

CONCLUSION

The Examiner’s rejections are reversed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1–3, 6–8, 11–13, 16– 18	103	Segev		1–3, 6–8, 11–13, 16– 18
1–3, 6–8, 11–13, 16– 18	103	Segev, Zhang		1–3, 6–8, 11–13, 16– 18
4, 5, 9, 10, 14, 15, 19, 20	103	Segev, Zhang, Wang		4, 5, 9, 10, 14, 15, 19, 20
Overall Outcome				1–20

REVERSED