UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TEXAS INSTRUMENTS INCORPORATED,
Petitioner

v.

PARKERVISION, INC.,
Patent Owner

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Case IPR2024-00935
Patent 7,865,177

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# SUPPLEMENTAL DECLARATION OF DR. JAMES DICKENS



TI 1067
TI v. ParkerVision
IPR2024-00935

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## I. INTRODUCTION

1. I have been retained by Fish & Richardson P.C. as an independent expert on behalf of Petitioner Texas Instruments ("TI"). I understand that this declaration will be submitted in support of the Petitioner Reply to Patent Owner's Response ("POR") to the Petition for *Inter Partes* Review of U.S. Patent No. 7,865,177 ("'177 Patent").

2. In writing this '177 Patent Declaration, I have considered the following: my own knowledge and experience, including my teaching and work experience in the above fields; and my experience of working with others involved in those fields. I have also reviewed at least the materials listed in Section III.

3. I am not, and never have been, an employee of TI. I am being compensated at my standard consulting rate for my time providing my independent analysis, plus reasonable out-of-pocket expenses. I have received no additional compensation for my work in this matter, and my compensation does not depend upon the content of my opinions, any testimony that I may provide, or the ultimate outcome of the matter. All of the opinions set forth in this declaration are my own.

4. I have been asked to review materials provided by Patent Owner in support of their attempt to "swear behind" U.S. Patent No. 6,230,000 to Tayloe, which was filed on October 15, 1998. The materials include circuit diagrams in EX2011-EX2013, chart provided by ParkerVision for the '177 patent (EX2015),

circuit diagrams provided by the declarations of Dr. Ricketts (EX2024, which cites EX2015) and Mr. Sorrells (EX2016), and Boeing test documents (e.g., EX2010, EX2022).

5. The following represents my factual determinations pertaining to the circuits in the exhibits:

a. [redacted] in the circuit shown in EX2011 would cause [redacted];

b. [redacted];

c. [redacted] identified by ParkerVision (EX2015, 34-35) in the circuit shown in EX2011 [redacted]

d. There are [redacted] shown in EX2011; and

e. [redacted] provided by Dr. Ricketts in EX2015 illustrates [redacted]

## II. BACKGROUND AND QUALIFICATIONS

6. My qualifications are set forth in my curriculum vitae, a copy of which is attached to this report as Exhibit A. As set forth therein, I am a tenured Professor in the Electrical and Computer Engineering Department of Texas Tech University in Lubbock, Texas, and a Licensed Professional Engineer in the State of

Texas. I hold the C. B. Thornton Chair for Electronics in Electrical Engineering, and currently serve as Co-Director of the Center for Pulsed Power and Power Electronics at Texas Tech University.

7. I earned a Bachelor of Science (B.S.), a Master of Science (M.S.), and a Doctorate (Ph.D.) degree in Electrical Engineering from Texas Tech University in 1991, 1993, and 1995, respectively. I have over 25 years of design and research experience in the areas of microelectronics and integrated circuits, power electronics, radio frequency ("RF") and microwaves, high speed pulse data acquisition systems, Si, GaN, GaAs and SiC fabrication processes and device design, and energetic materials and systems.

8. I have published over one-hundred articles in peer-reviewed journals and spoken at more than 100 conferences throughout the world, many of which involve RF and microwave circuits and systems including mixers and RF amplifiers. I regularly teach the terminal Advanced Electronics course at Texas Tech University, in which I cover many aspects of the circuit designs, RF, and control electronics discussed in the '177 Patent.

9. I have also served as an expert in certain legal proceedings. A list of cases in which I have testified at trial, hearing, or by deposition (including those during the past five years) is provided in my curriculum vitae, a copy of which is

attached as Exhibit A. Over the years, I have been retained by both patent owners and petitioners, and plaintiffs and defendants.

10. I am being compensated for my work in this case at my standard rate of $400.00 per hour (plus reimbursement for expenses) in connection with my preparation of this report, as well as for each hour spent providing testimony. This compensation is not contingent upon my performance, the opinions I offer, the outcome of this case, or any issues involved in or related to this case. I have no financial interest in this matter, or in any of the parties to this litigation.

## III. MATERIALS CONSIDERED

11. In forming my opinions, I have considered the following materials:

| Exhibit Number | Description |
|---|---|
| EX2010 | [redacted] dated April 29, 1998 |
| EX2011 | ParkerVision schematic dated January 20, 1998 |
| EX2012 | Eddie chip layout dated March 6, 1997 |
| EX2013 | ParkerVision circuit board layout |
| EX2014 | ParkerVision schematic dated August 21, 1997 |
| EX2015 | Conception/Reduction to practice chart |
| EX2016 | Declaration of Mr. David Sorrells |
| EX2019 | ParkerVision Announces Breakthrough in Wireless Radio Frequency Technology |
| EX2020 | Laboratory Tests Verify ParkerVision Wireless Technology |
| EX2021 | Universal Direct Conversion Receiver Evaluation ASIC Contract between ParkerVision and The Boeing Company |
| EX2022 | Notes from [redacted] |
| EX2024 | Declaration of Dr. David Ricketts |

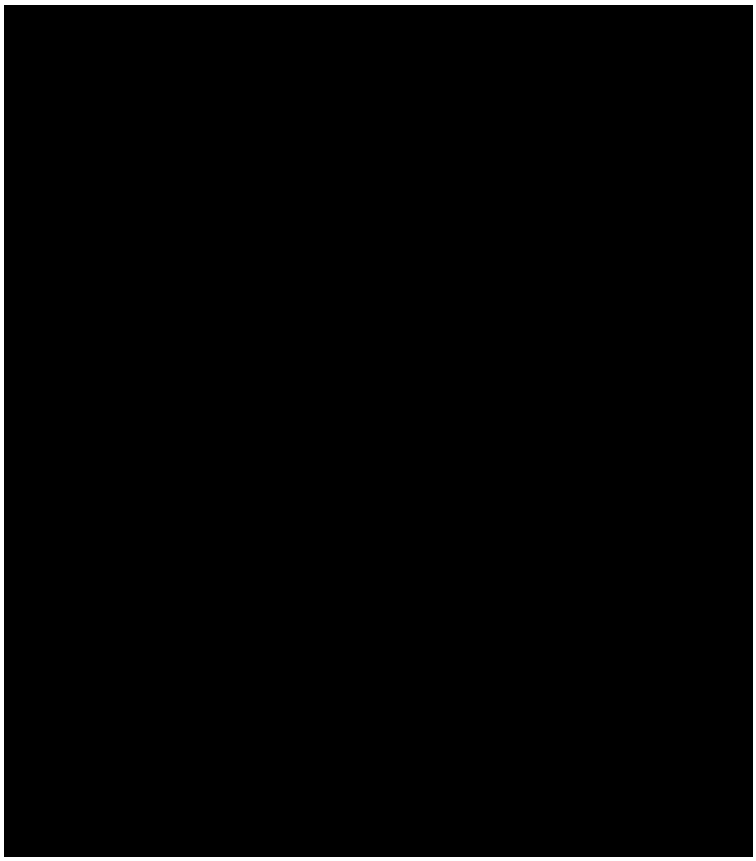
## IV. ANALYSIS OF THE EXHIBITED CIRCUITRY

12. What follows is my analysis of ParkerVision's circuit schematics:

***1.*** [redacted]

13. ParkerVision's schematic shows only [redacted]

[redacted]



EX2015, at 5 (partial, annotated)

14. The [redacted] in EX2015, at 5 shows that [redacted]

[redacted]

15. Also, [redacted]

[redacted]

***2.*** [redacted]

16. ParkerVision states that "non-negligible amounts of energy from the input signal [redacted] EX2015, 19, 28. I disagree. The circuit in EX2011, however, shows [redacted]:

[1] [redacted]. EX2010, 1, 6.

EX2011 (annotated)

Based on the information presented in the schematic and confirmed by Dr. Ricketts,

17. .[2]

[2]

[redacted]

18. Note that the [redacted] in Dr. Ricketts's claim chart [redacted] EX2022, at 10. [redacted]. Below, I provide an annotation of [redacted] from Dr. Ricketts's claim chart. I assume the pad labels based on Mr. Sorrells declaration. EX2016, at 11.

EX2025, at 5 (annotated)

If the power of the input signal were increased such that these diodes were to conduct, the signal would shunt to ground, as shown above.

19. Because [redacted] respectively, [redacted].

20. [redacted]

### *3. the circuit does not*

21. As discussed in §II.A.2, *supra*, If the circuit worked and if

22. I have shown this in FIG. Dickens1:

[3] Dr. Ricketts does not specify which capacitor is performing the integration or charge accumulation.

FIG. Dickens1

[redacted] This is shown in FIG. Dickens2:

FIG. Dickens2

***4.***

23. Dr. Ricketts asserts that

EX2015, at 30. Even assuming down-conversion takes place in the circuit shown in the schematics (I have shown that it does not),

24. I understand "combining" to include merging two or more signals into a single output signal. And in the circuit in EX2011, [redacted] But nothing in ParkerVision's schematics suggests that [redacted]

EX2015, at 30 (annotated)

***5.*** [redacted]

25. ParkerVision's circuit schematics do not show [redacted] *See* EX2015, at 12 (showing [redacted]) & 21 ([redacted]). These [redacted] are shown in EX2011 below:

EX2011 (partial, annotated)

26. As shown in EX2013, [redacted]:

EX2013 (annotated)

27. Based purely on the circuit schematics in the exhibits, I do not see the circuitry for [redacted].

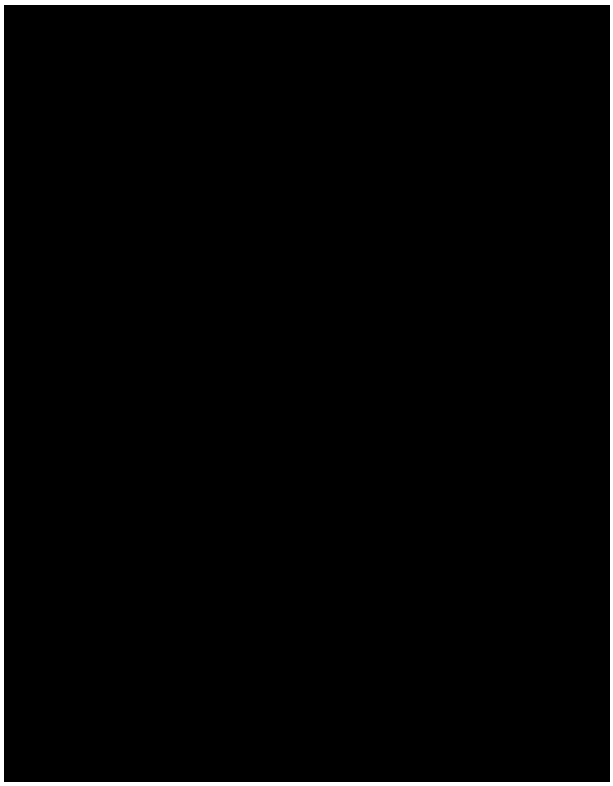
***6.*** [redacted]

28. Dr. Ricketts tape-out schematic illustrates a differential amplifier, but does not indicate the inputs to it. Below, I provide annotated figures that show that the differential amplifier in Dr. Ricketts tape out [redacted]:

EX2015, at 5 (annotated)

I assume the pad labels above based on Mr. Sorrells declaration. EX2016, at 11.

Thus, [redacted]:



EX2011 (annotated)

29. Looking at the mounting circuit board (EX2011), [redacted]:

[redacted]

And as shown in EX2013, [redacted]:

EX2013 (annotated)

30. [redacted]

[redacted].

*7.* [redacted]

31. ParkerVision shows [redacted]. EX2010, 7 (annotated below). I note that [redacted].

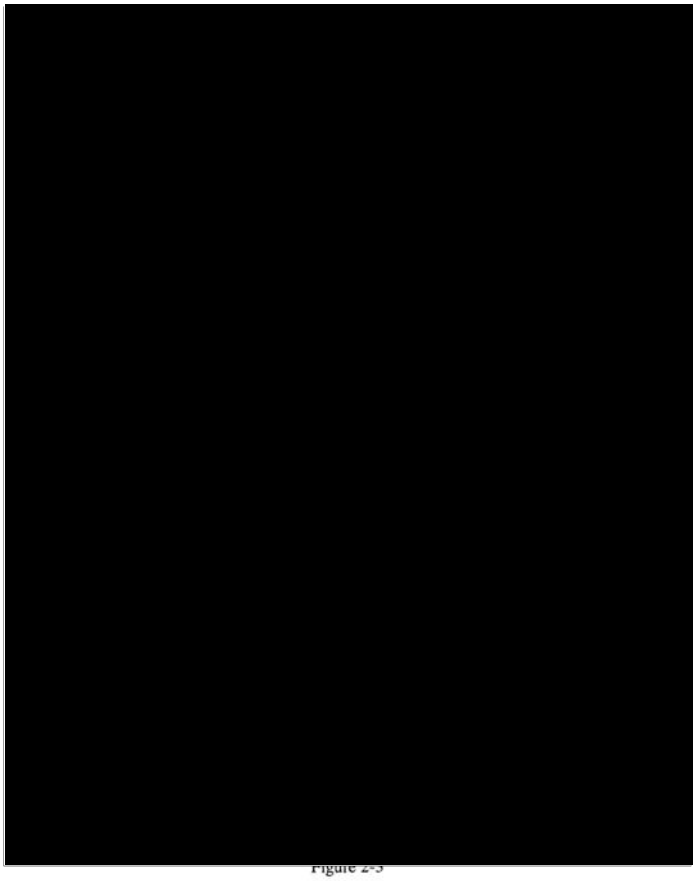


Figure 2-3

EX2010, 7 (annotated showing [redacted].

32. I currently hold the opinions set expressed in this declaration. But my analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

33. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by imprisonment or a fine under Section 1001 of Title 18 of the United States Code.

Dated: June 19, 2025 By:

Dr. James Dickens