

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

M-RED INC.,		§	
	Plaintiff,	§	Case No.
v.		§	<b>JURY TRIAL DEMANDED</b>
MEDIATEK INC.,		§	
	Defendant.	§	
		§	

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff M-Red Inc. (“M-Red” or “Plaintiff”) for its Complaint against Defendant Mediatek Inc. (“Defendant” or “Mediatek”) alleges as follows:

**THE PARTIES**

1. M-Red is a corporation organized and existing under the laws of the State of Texas, with its principal place of business located at 100 W. Houston Street, Marshall, Texas 75670.

2. Upon information and belief, Defendant Mediatek Inc. is a Taiwanese corporation with its principal place of business located at No. 1, Dusing 1st Road, Hsinchu Science Park, Hsinchu City 30078 Taiwan, Republic of China and may be served pursuant to the provisions of the Hague Convention. Upon information and belief, Mediatek does business in Texas, directly or through intermediaries, and maintains its principal place of business in Taiwan.

**JURISDICTION**

3. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, et seq. This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

4. This Court has personal jurisdiction over Defendant. Defendant regularly conducts business and has committed acts of patent infringement and/or has induced acts of patent infringement by others in this Judicial District and/or has contributed to patent infringement by others in this Judicial District, the State of Texas, and elsewhere in the United States.

5. Venue is proper in this Judicial District pursuant to 28 U.S.C. § 1391 because, among other things, Defendant does not reside in the United States, and thus may be sued in any Judicial District pursuant to 28 U.S.C. § 1391(c)(3).

6. Defendant is subject to this Court's jurisdiction pursuant to due process and/or the Texas Long Arm Statute due at least to its substantial business in this State and Judicial District, including (a) at least part of its past infringing activities, (b) regularly doing or soliciting business in Texas, and/or (c) engaging in persistent conduct and/or deriving substantial revenue from goods and services provided to customers in Texas.

#### **PATENTS-IN-SUIT**

7. On February 8, 2005 the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,853,259 (the "'259 Patent") entitled "Ring oscillator dynamic adjustments for auto calibration." A true and correct copy of the '259 Patent is available at <https://pdfpiw.uspto.gov/.piw?Docid=06853259>.

8. On June 27, 2006 the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,068,557 (the "'557 Patent") entitled "Ring oscillator dynamic adjustments for auto calibration." A true and correct copy of the '557 Patent is available at <https://pdfpiw.uspto.gov/.piw?Docid=07068557>.

9. On April 24, 2007 the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,209,401 (the “401 Patent”) entitled “Ring oscillator dynamic adjustments for auto calibration.” A true and correct copy of the ’401 Patent is available at <https://pdfpiw.uspto.gov/.piw?Docid=07209401>.

**FACTUAL ALLEGATIONS**  
**Asserted Patents (’259, ’557, ’401 Patents)**

10. The Asserted Patents generally cover integrated circuits comprising voltage and temperate sensors which output a voltage and temperate and store the output in memory. The technology was developed by Robert D. Norman and Dominik J. Schmidt. The Asserted Patents also cover methods for dynamically adjusting clock frequency based on voltage and temperature values. In some embodiments of the inventions, temperature sensors dynamically monitor environmental parameters and store these parameters on a memory. These temperature monitoring and power saving techniques are incorporated into chips made by numerous manufacturers, including Mediatek.

11. For example, Mediatek implements techniques for dynamic frequency and voltage scaling, and for thermal management, including at least CorePilot.<sup>1</sup> Mediatek’s CorePilot, “works closely with Thermal Management and User Experience (UX) Monitoring to further reduce battery power consumption . . . Based upon input from these control mechanisms, the right core(s), cluster(s) and frequencies/voltages are selected for the current application load.”<sup>2</sup>

12. Mediatek has infringed and is continuing to infringe the patents-in-suit by making, using, selling, offering to sell, and/or importing, and by actively inducing others to make, use, sell, offer to sell and/or importing, chips utilizing SoCs that utilize on-chip

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<sup>1</sup> Improving the Mobile User Experience with CorePilot, MediaTek (retrieved April 29, 2019), <https://www.mediatek.com/features/corepilot-evolution>.

<sup>2</sup> *Id.*

temperature sensors for power management. Upon information and belief, these products include all Mediatek SoCs, including at least Mediatek's MT6XXX, MT8XXX, Helio, and Automotive products. For example, on information and belief, the MT8163 SoC is sold in the United States and incorporated by others into products sold in the United States, such as the Amazon Kindle products.<sup>3</sup>

13. M-Red has at all times complied with the marking provisions of 35 U.S.C. § 287 with respect to the patents-in-suit. On information and belief, prior assignees and licensees have also complied with the marking provisions of 35 U.S.C. § 287.

**COUNT I**  
**(Infringement of the '259 Patent)**

14. Paragraphs 1 through 13 are incorporated by reference as if fully set forth herein.

15. M-Red has not licensed or otherwise authorized Mediatek to make, use, offer for sale, sell, or import any products that embody the inventions of the '259 Patent.

16. Defendant has and continues to directly infringe the '259 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '259 Patent. Upon information and belief, these products include all Mediatek SoCs, including at least the MT8163 SoC, which are sold in the United States and incorporated by others into products sold in the United States, such as the Amazon Kindle products.

17. For example, Defendant has and continues to directly infringe at least claim 1 of the '259 Patent by making, using, offering to sell, selling, and/or importing into the United States

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<sup>3</sup> Tablet Device Specifications – Custom Table, Amazon Appstore (retrieved April 29, 2019), <https://developer.amazon.com/docs/fire-tablets/ft-specs-custom.html>.

products that include an apparatus to compensate for voltage and temperature variations on an integrated circuit, such as, for example, the thermal controller components and associated software utilized with Mediatek SoCs such as the MT8163. The MT8163 includes a voltage sensor. For example, Mediatek SoCs operate at different voltages and frequencies and dynamically adjust these voltages and frequencies based on outputs from sensors.

18. For example, Defendant has and continues to directly infringe at least claim 1 of the '259 Patent by making, using, offering to sell, selling, and/or importing into the United States products that include an apparatus to compensate for voltage and temperature variations on an integrated circuit, comprising: a voltage sensor having a digital voltage output; a temperature sensor having a digital temperature output; a register coupled to the voltage sensor and the temperature sensor, the register adapted to concatenate the digital voltage output and the temperature output into an address output; and a memory device having an address input coupled to the address output of the register, the memory device being adapted to store one or more corrective vectors.

19. On information and belief, the Mediatek SoCs include a voltage sensor having a voltage output, and a temperature sensor having a temperature output. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include one or more temperature and voltage sensors that provide outputs stored in one or more registers.

20. On information and belief, the Mediatek SoCs include a register coupled to the voltage sensor and the temperature sensor, the register adapted to concatenate the voltage output and the temperature output into an address output. For example, on information and belief, Mediatek SoCs, including the MT8163 SoC, include one or more registers including registers that store voltage and temperature information related to the performance of the temperature

sensors, Thermal Controller, and the voltage states of the SoC and its cores. On information and belief, the one or more registers of Mediatek SoCs are adapted to combine the digital voltage and temperature in order to determine whether to alter the performance of the processor.

21. On information and belief, the Mediatek SoCs further include a memory device having an address input coupled to the address output of the register, the memory device being adapted to store one or more corrective vectors. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include ram, cache memory, and buffer memory to store corrective vectors, such as commands to increase or decrease the frequency and/or voltage of the SoC via, for example, dynamic voltage and frequency scaling (DVFS). As a further example, the Mediatek SoCs include CorePilot functionality that works closely with Thermal Management to ensure sustainable performance.<sup>4</sup>

22. Defendant has and continues to indirectly infringe one or more claims of the '259 Patent by knowingly and intentionally inducing others, including Mediatek customers and end-users of Mediatek products and products that include Mediatek SoCs, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, such as the MT8163 SoC and the Amazon Kindle products.

23. Defendant, with knowledge that these products, or the use thereof, infringe the '259 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '259 Patent by providing these products to customers and ultimately to end users for use in an infringing manner in the United States including, but not limited to, end users of Amazon Kindle products that

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<sup>4</sup> Improving the Mobile User Experience with CorePilot, MediaTek (retrieved April 29, 2019), <https://www.mediatek.com/features/corepilot-evolution>.

incorporate Mediatek SoCs.

24. Defendant induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '259 Patent, but while remaining willfully blind to the infringement.

25. M-Red has suffered damages as a result of Defendant's direct and indirect infringement of the '259 Patent in an amount to be proved at trial.

26. M-Red has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '259 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

**COUNT II**  
**(Infringement of the '557 Patent)**

27. Paragraphs 1 through 13 are incorporated by reference as if fully set forth herein.

28. M-Red has not licensed or otherwise authorized Mediatek to make, use, offer for sale, sell, or import any products that embody the inventions of the '557 Patent.

29. Defendant has and continues to directly infringe the '557 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '557 Patent. Upon information and belief, these products include all Mediatek SoCs, including at least the MT8163 SoC, which are sold in the United States and incorporated by others into products sold in the United States, such as the Amazon Kindle products.

30. For example, Defendant has and continues to directly infringe at least claim 1 of the '557 Patent by making, using, offering to sell, selling, and/or importing into the United States

products that include an integrated circuit comprising a voltage sensor having a voltage input; a temperature sensor having a temperature input; and a memory capable of receiving an input address based upon the voltage output and the temperature output, the memory configured to store compensation data. On information and belief, such integrated circuits include, by way of example, Mediatek SoCs that include thermal controller components and associated software such as the MT8163. For example, Mediatek SoCs operate at different voltages and frequencies and dynamically adjust these voltages and frequencies based on outputs from sensors.

31. On information and belief, the Mediatek SoCs include a voltage sensor having a voltage output, and a temperature sensor having a temperature output. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include one or more temperature and voltage sensors that provide outputs.

32. On information and belief, the Mediatek SoCs further include a storage capable of receiving an input address based upon the voltage output and the temperature output, the memory configured to store compensation data. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include ram, cache memory, and buffer memory capable of receiving an input address based upon the voltage output and temperature output, and are configured to store compensation data, such as commands to increase or decrease the frequency and/or voltage of the SoC. As a further example, the Mediatek SoCs include CorePilot functionality that works closely with Thermal Management to ensure sustainable performance.

33. Defendant has and continues to indirectly infringe one or more claims of the '557 Patent by knowingly and intentionally inducing others, including Mediatek customers and end-users of Mediatek products and products that include Mediatek SoCs, to directly infringe, either

literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, such as the MT8163 SoC and the Amazon Kindle products.

34. Defendant, with knowledge that these products, or the use thereof, infringe the '557 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '557 Patent by providing these products to customers and ultimately to end users for use in an infringing manner in the United States including, but not limited to, end users of Amazon Kindle products that incorporate Mediatek SoCs.

35. Defendant induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '557 Patent, but while remaining willfully blind to the infringement.

36. M-Red has suffered damages as a result of Defendant's direct and indirect infringement of the '557 Patent in an amount to be proved at trial.

37. M-Red has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '557 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

**COUNT III**  
**(Infringement of the '401 Patent)**

38. Paragraphs 1 through 13 are incorporated by reference as if fully set forth herein.

39. M-Red has not licensed or otherwise authorized Mediatek to make, use, offer for sale, sell, or import any products that embody the inventions of the '401 Patent.

40. Defendant has and continues to directly infringe the '401 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '401 Patent. Upon information and belief, these products include all Mediatek SoCs, including at least the MT8163 SoC, which are sold in the United States and incorporated by others into products sold in the United States, such as the Amazon Kindle products.

41. For example, Defendant has and continues to directly infringe at least claim 1 of the '401 Patent by making, using, offering to sell, selling, and/or importing into the United States products that include an integrated circuit comprising: a voltage sensor having a voltage output; a temperature sensor having a temperature output; an analog-to-digital converter ("ADC") coupled to the voltage sensor and the temperature sensor, the ADC to convert the voltage output and the temperature output to digital values; and a storage coupled to receive an input address based upon at least one of the voltage output and temperature output, the storage configured to store compensation data, for example, the Thermal Controller components and associated software utilized with Mediatek SoCs such as the MT8163. On information and belief, the MT8163 includes a voltage sensor having a digital voltage output. For example, Mediatek SoCs operate at different voltages and frequencies and dynamically adjust these voltages and frequencies based on outputs from sensors.

42. On information and belief, the Mediatek SoCs include a voltage sensor having a voltage output, and a temperature sensor having a temperature output. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include one or more temperature and voltage sensors that provide outputs.

43. On information and belief, the Mediatek SoCs include an analog-to-digital converter coupled to the voltage sensor and the temperature sensor, the ADC to convert the voltage output and the temperature output to digital values. For example, the Mediatek SoCs, including the MT8163 SoC, include sensors which output analog signals which are converted to digital signals prior to storage.

44. On information and belief, the Mediatek SoCs further include a storage capable of receiving an input address based upon the voltage output and the temperature output, the memory configured to store compensation data. For example, on information and belief, the Mediatek SoCs, including the MT8163 SoC, include ram, cache memory, and buffer memory capable of receiving an input address based upon the voltage output and temperature output, and are configured to store compensation data, such as commands to increase or decrease the frequency and/or voltage of the SoC. As a further example, the Mediatek SoCs include CorePilot functionality that works closely with Thermal Management to ensure sustainable performance.

45. Defendant has and continues to indirectly infringe one or more claims of the '401 Patent by knowingly and intentionally inducing others, including Mediatek customers and end-users of Mediatek products and products that include Mediatek SoCs, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling and/or importing into the United States products that include infringing technology, such as the MT8163 SoC and the Amazon Kindle products.

46. Defendant, with knowledge that these products, or the use thereof, infringe the '401 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '401 Patent by

providing these products to customers and ultimately to end users for use in an infringing manner in the United States including, but not limited to, end users of Amazon Kindle products that incorporate Mediatek SoCs.

47. Defendant induced infringement by others, including end users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end users, infringe the '401 Patent, but while remaining willfully blind to the infringement.

48. M-Red has suffered damages as a result of Defendant's direct and indirect infringement of the '401 Patent in an amount to be proved at trial.

49. M-Red has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '401 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

### **DEMAND FOR JURY TRIAL**

Plaintiff hereby demands a jury for all issues so triable.

### **PRAYER FOR RELIEF**

WHEREFORE, M-Red prays for relief against Defendant as follows:

a. Entry of judgment declaring that Defendant has directly infringed one or more claims of each of the patents-in-suit;

b. An order awarding damages sufficient to compensate M-Red for Defendant's infringement of the patents-in-suit, but in no event less than a reasonable royalty, together with interest and costs;

c. Entry of judgment declaring that this case is exceptional and awarding M-Red its costs and reasonable attorney fees under 35 U.S.C. § 285; and

d. Such other and further relief as the Court deems just and proper.

Dated: April 29, 2018

Respectfully submitted,

/s/ Alfred R. Fabricant

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