Xiaohua Huang
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Email: paul_huang1010@outlook.com
*Pro Se* Plaintiff

**UNITED STATES DISTRICT COURT**
**DISTRICT OF MINNESOT**

| | |
|---|---|
| Xiaohua Huang *Pro Se,*<br><br>Plaintiff,<br><br>v.<br><br>Knowledge Computers Inc.<br><br>Defendant. | No. 20-cv-1873 (SRN/HB)<br><br>**Redacted MR. Huang's first amended complaint against Knowledge Computers Inc. for patent infringement in response to Defendant's motion to dismiss (ECF.No.13)**<br><br>Demand for Jury Trial |

In response to Defendant's motion to dismiss (ECF.No.13) Plaintiff respectfully submits the first amended complaint. Plaintiff Xiaohua Huang (hereinafter "Huang" or "Plaintiff") alleges as follows:

## NATURE OF THE ACTION

1. This is an action for patent infringement arising out of U.S. Patent No. 6,744,653 (hereinafter the "'653 Patent") issued on June 1, 2004, U.S. Patent No. 6,999,331 (hereinafter the "'331 Patent") issued on Feb 14, 2006 and U.S. patent RE45259 issued on Nov.25, 2014 (hereinafter the "'RE259 Patent") to Xiaohua Huang. This action is brought to remedy the infringement of '653patent, '331patent and 'RE259Patent. This action is brought to remedy the infringement of '653patent, '331patent and 'RE259Patent by Defendant Knowledge Computer, Inc. (KCI) (hereinafter "KCI," or "Defendant").

## THE PARTIES

2. Xiaohua Huang is an individual, his current residential address is at 347 Massol ave, Los Gatos, CA95030. Huang has developed the state of the art high

speed and low power U.S. patented TCAM designs to build IC chips used inside of Internet IP Routers("Routers"), Wireless routers, Ethernet Switches("Switches") and Data Center Switches etc. since the year of 2000.

3. Knowledge Computers is or purports to be a company with its US main offices in 5205 Highway 169 N, Ste 200, Plymouth, Minnesota, 55442, United States with contact telephone number (763) 233-7500. Knowledge Computers has built(refurbish) and sold at least, one of Routers, Switches to generate its revenues in the United States.

4. This action arises under the patent laws of the United States, 35 U.S.C. § 101, *et seq*. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a). Venue is proper in this District pursuant to 28 U.S.C. §§1391(b) - (c) and 1400(b) in that Defendant have main operation and have been generating revenues and profits through selling "Switches", "Routers" which infringes the'331 patent within Minnesota.

**BACKGROUND FACTUAL ALLEGATION**

5. A true and correct copy of the'653patent, '331patent and 'RE259patent is attached hereto as Exhibit A,B and C. The '653patent, '331patent and 'RE259patent is valid and owned by Plaintiff Mr. Huang as the inventor.

6. In Nov. 2000 "Huang" found CMOS Micro Device Inc. "CMOS"） to develop Ternary Content Addressable Memory (TCAM). "Huang" is the owner of "CMOS", "CMOS" is a California corporation and having its office in Campbell, California. TCAM are used to perform the search function in internet networking router, switches and Data Center Switches.

7. From November, 2000 to October, 2002, Huang finished the design of ternary content addressable memory ( TCAM) with 0.18um and 90nm TSMC

technology which are covered by the '653patent, '331 Patent and 'RE259 patent. The TCAM designed by Huang is tens to hundreds of times faster in speed and consume much less power than the same products in Market at that time. Then Huang shared his patent application with two Cisco executives, they were GM and VP of Router and Gigabit Switches division respectively. They both consider that Huang's patent of TCAM are the best solution among all the vendors and asked Huang to review their next generation TCAM specification and do a feasible design to evaluate the product performance (see Exhibit R). Plaintiff did TCAM design based on the request and emailed his TCAM design and analysis to the General manager of Gigabit Switch division before the end of October of 2002. [redacted] Mr. Huang reversed the main chip of Cisco ASR 1000 Router with Cellixsoft Corporation's help. The main chip of Cisco ASR 1000 Router has the manufacture No: 2007 TI F751801A, the serial No. on the package include "Cisco Systems 08-0697-02". A schematic of TCAM extracted from this chip is same as the TCAM design Plaintiff did for Cisco in the year of 20002, which read the claim 1 of '331patent ( see page 7 of Exhibit N and page 8 of Exhibit R).

8. In 2001 the chairman of NetlogicMicrosystemInc. (acquired by Broadcom) invested CMOS Micro Device Inc., then obtained the TCAM design which Plaintiff invented, later Huang returned the investment back and the California Supreme Court in Santa Clara ruled that personals of Netlogic Microsystem,Inc. can not use the data they took from CMOS Micro Device Inc. and Xiaohua Huang. From 2011 to 2018 Plaintiff reversed numerous TCAM chips of NetlogicMicrosystem and TCAM chips of Renesas Electronics. With

the help of Cellixsoft Corporation and Wuxi Hengyu Micro Electronics Ltd. Plaintiff obtained the evidence that the TCAM chips of Netlogic Microsystems and TCAM chips of Renesas Electronics, Inc. used the content of US patent6744653, US patent 6999331 and RE45259(Exhibit M, Exhibit N). The TCAM chips of Netlogic Microsystems and Renesas Electronics infringed the claim 1 of US patent RE45259. Most switches and Routers of Cisco Systems, Extreme Networks, Juniper Networks,Dell and HP have used the TCAM chips of NetlogicMicrosystems Inc. and Renesas.

9. In 2003 Plaintiff found that a company called Silicon Design Solution Inc.(SDS) selling TCAM design same as the TCAM designed by CMOS Micro Device Inc., [redacted] Recently Plaintiff found that SDS sold the TCAM design to the company such as Open Silicon and Avago Technology and Cisco etc. Recently Plaintiff also found that Avago Technology designed networking chips with the TCAM obtained from SDS for Cisco Systems, Juniper Network, HPE, ZTE and Dell etc. The brief data sheet of the TCAM sold by SDS is attached as Exhibit E. Plaintiff also obtained the source code of TCAM sold by SDS, most of them are same as the TCAM designed by Plaintiff in CMOS Micro Device Inc.

10.Beased on information and belief that the CAM and TCAM design used in Sun server chips and IBM server chips have used the circuit described in Exhibit E and Figure5, which read the claims of US patent 6744653.

11. '653patnet,'331Patent and 'RE259patent are the basic fundamentals to design high speed and low power TCAM used in 4G,5G wireless routers, Internet Router and Switches as well as Data Center Switches up to today. The TCAM designed by Huang provide the example design using '653patent,'331 Patent and

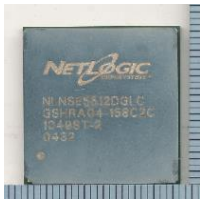
'RE259patent. By using the '653patent, '331Patent and 'RE259patent the TCAM used in Routers and Switches helps Internet transfer information Hundreds of time faster.

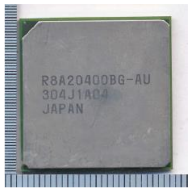
12. The patented TCAM developed by Huang has been recognized by the industry. In 2003 Huang was an invited speaker to present his TCAM design at networking symposium at Boston organized by the Industry Authority Linley Group. In 2015 Huang was also a presenter of MEMCON 2015 in Santa Clara convention center to present his patented TCAM design.

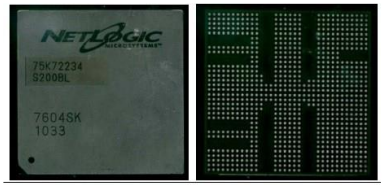
13. The ternary content addressable memory component are used as table look up function and used in 4G, 5G wireless router, internet router and switches as well as data center switches to perform table look up to realize access control list (ACL), Quality of Service(QoS), VLAN, LPM, Packet forwarding and other parallel searching.

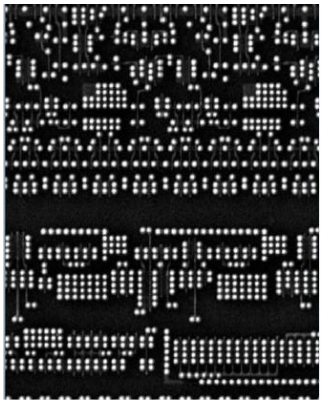
**THE INFRINGING PRODUCTS WHICH DEFENDNAT MAY HAVE BOUGHT, BUILT(REFURBISH) AND SOLD**

14. The Catalyst Switches WS-C3750,WS-C4900,WS-C6500 of Cisco System, Cisco 10700 Series, Catalyst 8510,Catalyst 8540,Cisco XR 12000 Series, M and MX series Router of Juniper Network, HP ProCurve Core Switches and Dell Networking X-Series Smart Managed Switches use TCAM chips of Renesas and NetlogicMicrosystems, including but not limited to: NL9512, NL5512,R8A20400 etc. The following is the picture of TCAM chips and the layout inside the chips used in the above Networking Switches:

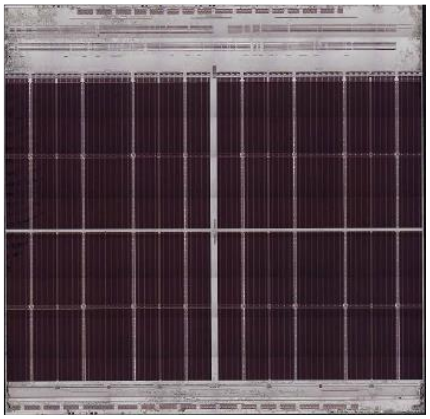


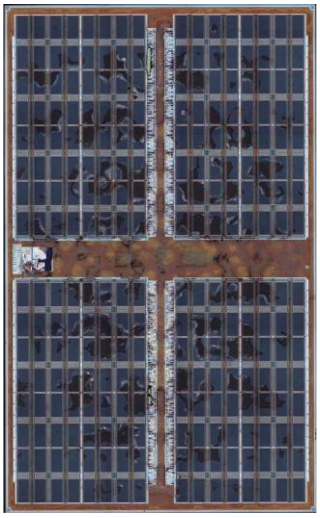





Picture 1



Picture 2

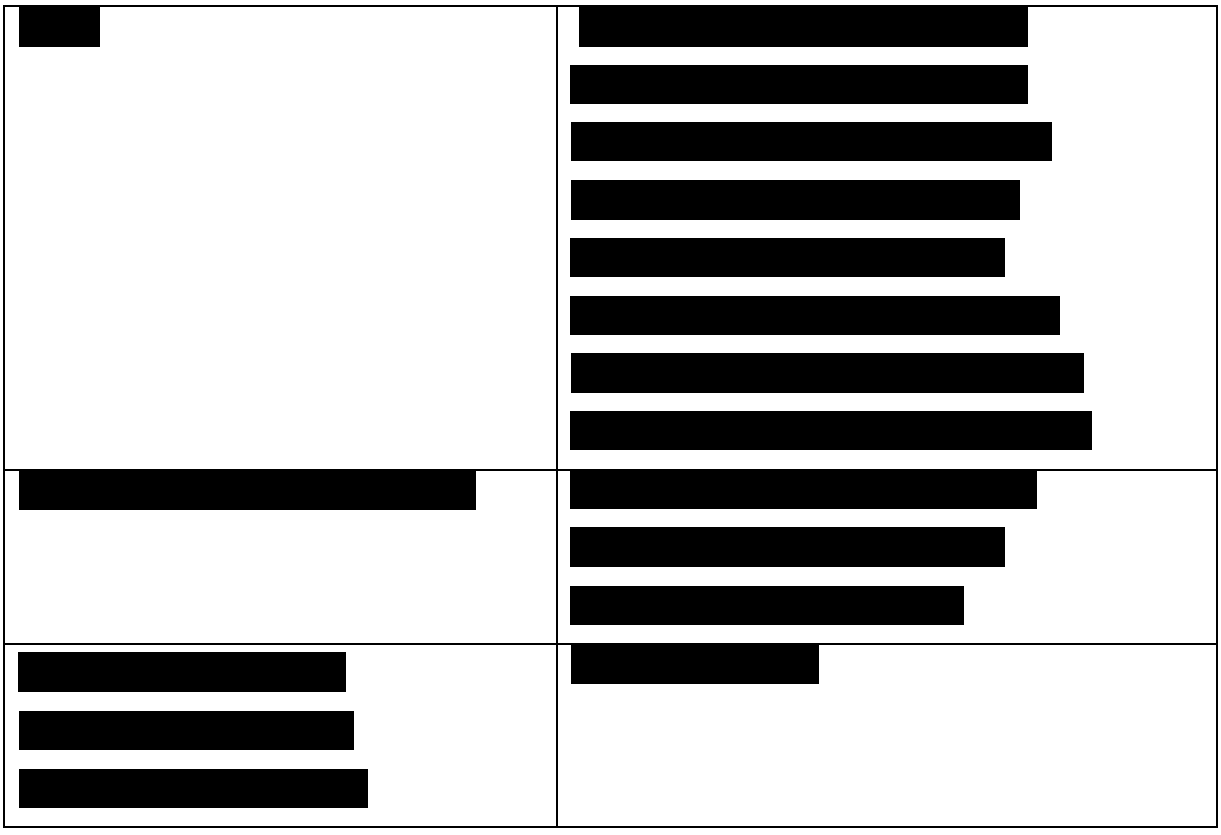


Picture 3

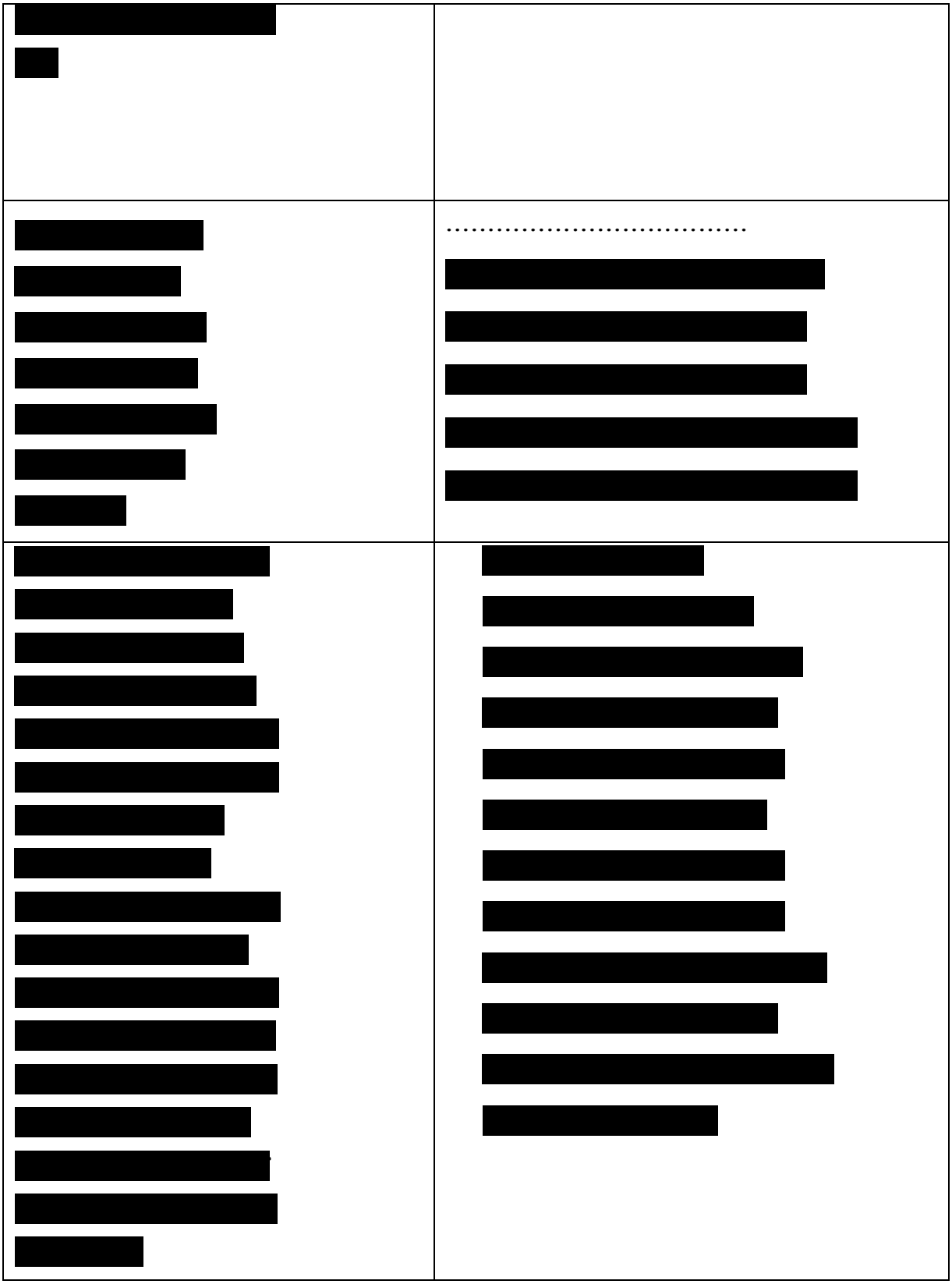
Figure 1 A schematic and logic of TCAM extracted from the above chips in Picture 1,picture2 and picture 3.

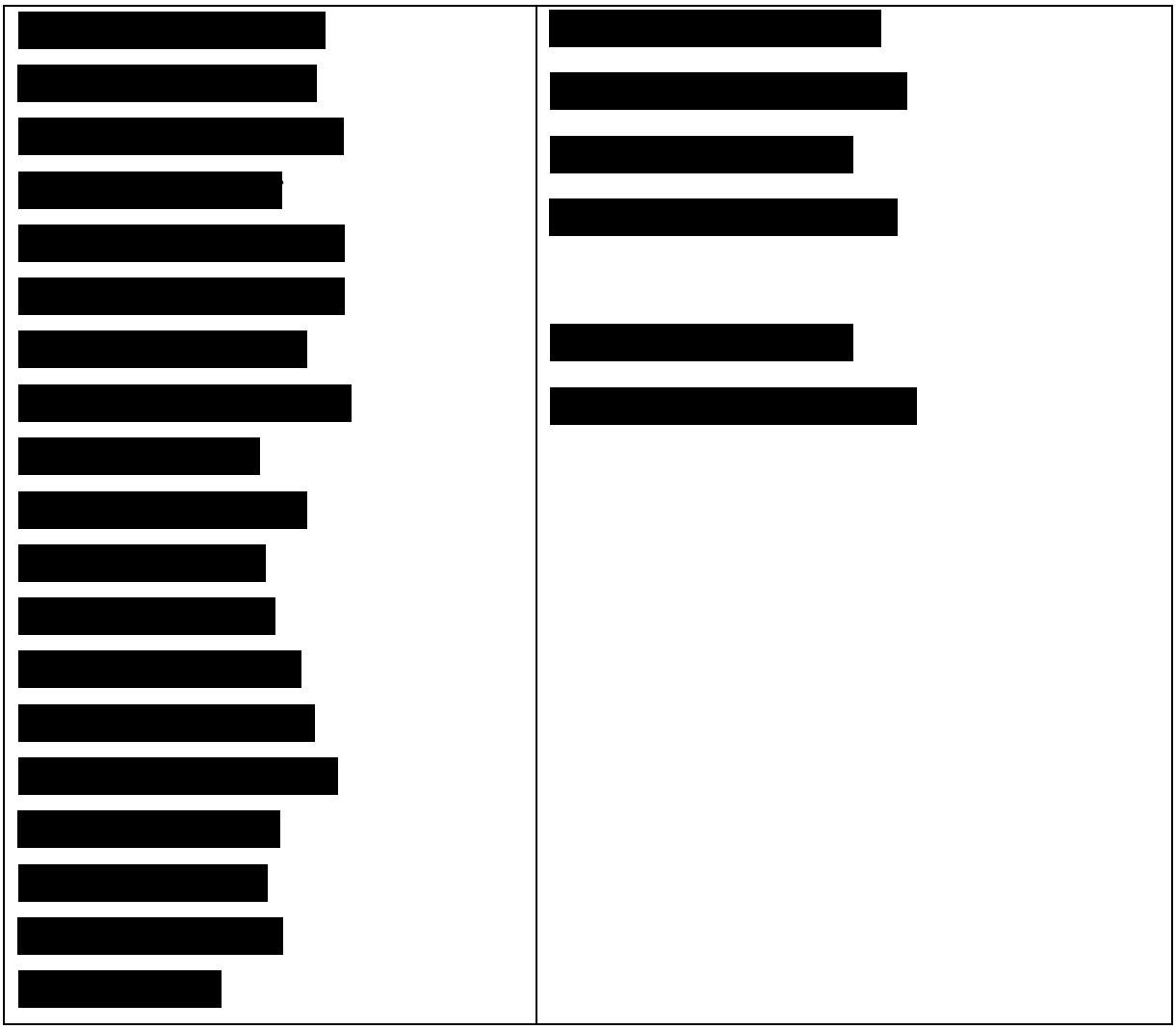
Figure 3 Priority encoding and address generation logic of Box E, BoxD in the Figure1, extracted from the Layout of the chips above as shown in picture 1...

Figure 4 block hit generation circuit,which is the circuit in the box B and Box C in the Figure1, Extracted from the picture 1 of the chips.



| | |
|---|---|
| [redacted] | |
| [redacted] | [redacted] |
| [redacted] | [redacted] |
| [redacted] | [redacted] |
| [redacted] | (4) ..... [redacted] |

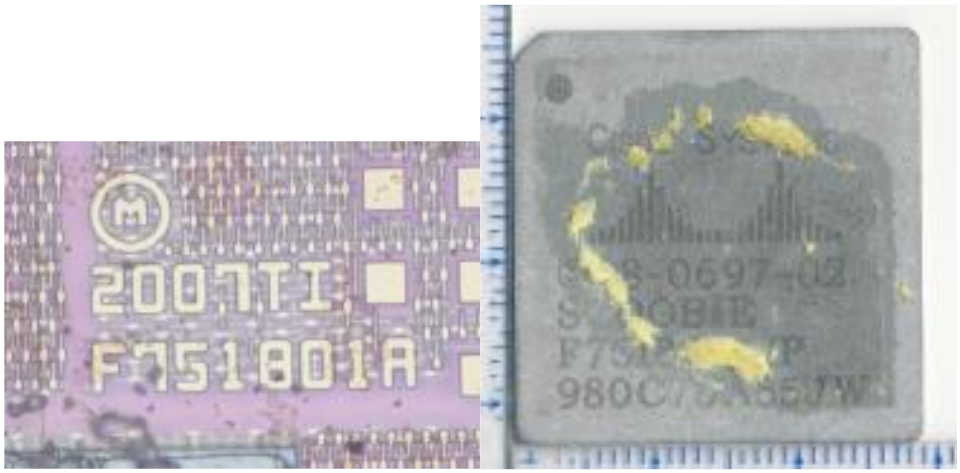


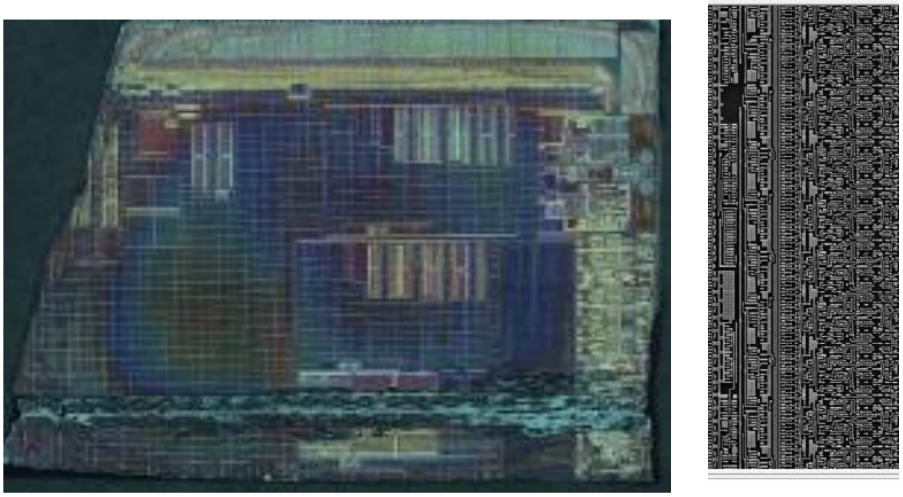


So the TCAM chips of Netlogic Microsystem (acquired by Broadcom) and Renesas are read by claim 1 of US patent RE45259. Then the Catalyst Switches WS-C3750,WS-C4900,WS-C6500 etc.of Cisco System, M&MX series Router of Juniper Network, HP ProCurve Core Switches and Dell Networking X-Series Smart Managed Switches use TCAM chips of Renesas and NetlogicMicrosystems. Those networking products of Cisco, Juniper Network, HP and Dell bought, rebuilt and sold by Defendant, are read by claim 1 of US patent RE45259.

15. Based on its company website the routers and Switches which Defendant KCI sold including but not limited to: ASR 1000 Aggregation Services Routers. The main chip of Cisco ASR 1000 Router has the manufacture No: 2007 TI F751801A, the serial No. on the package include

"Cisco Systems 08-0697-02". Plaintiff reversed this chip with Cellixsoft Corporation's help. The picture of the chip and the layout inside the chip is in the below:



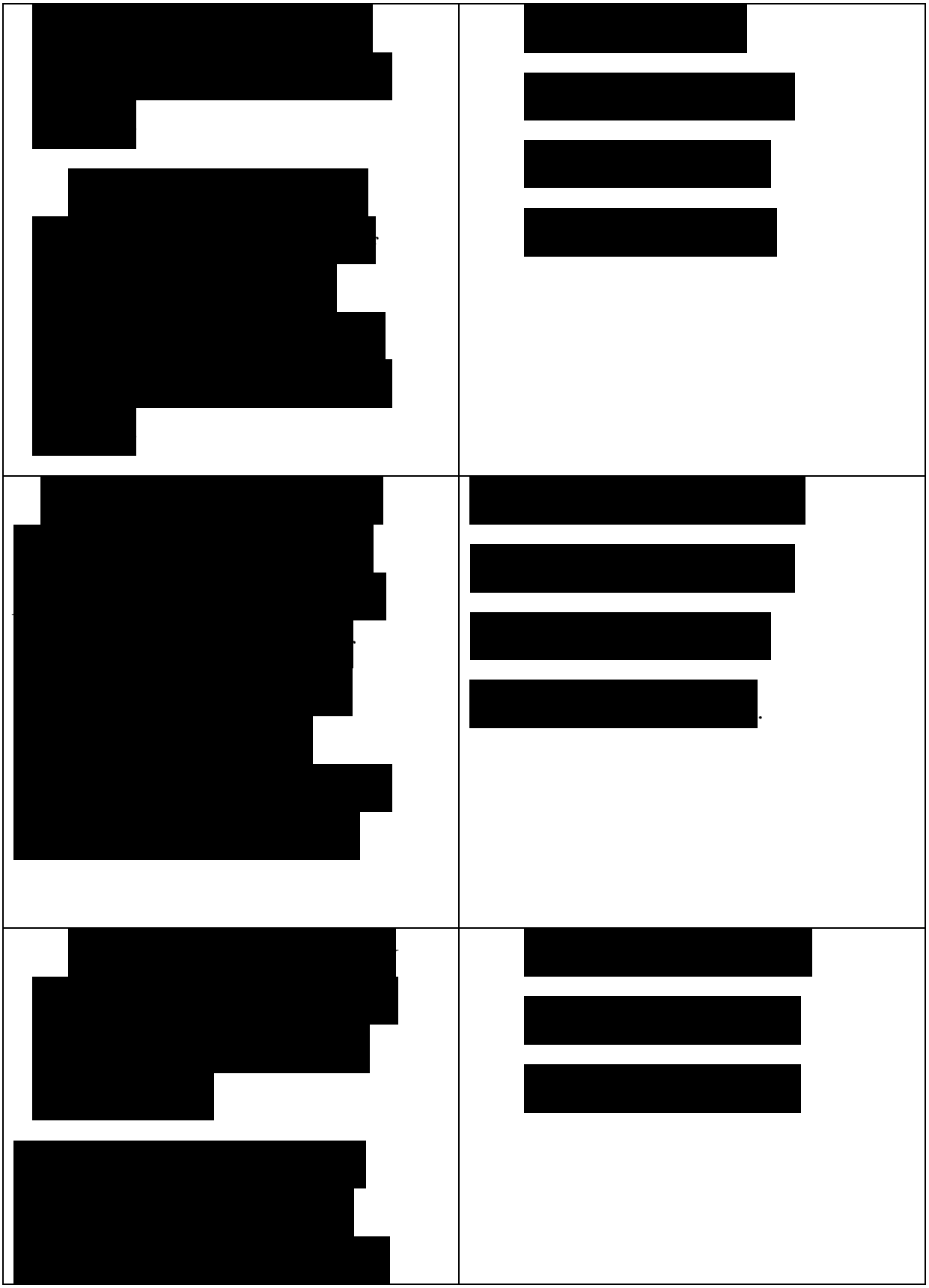



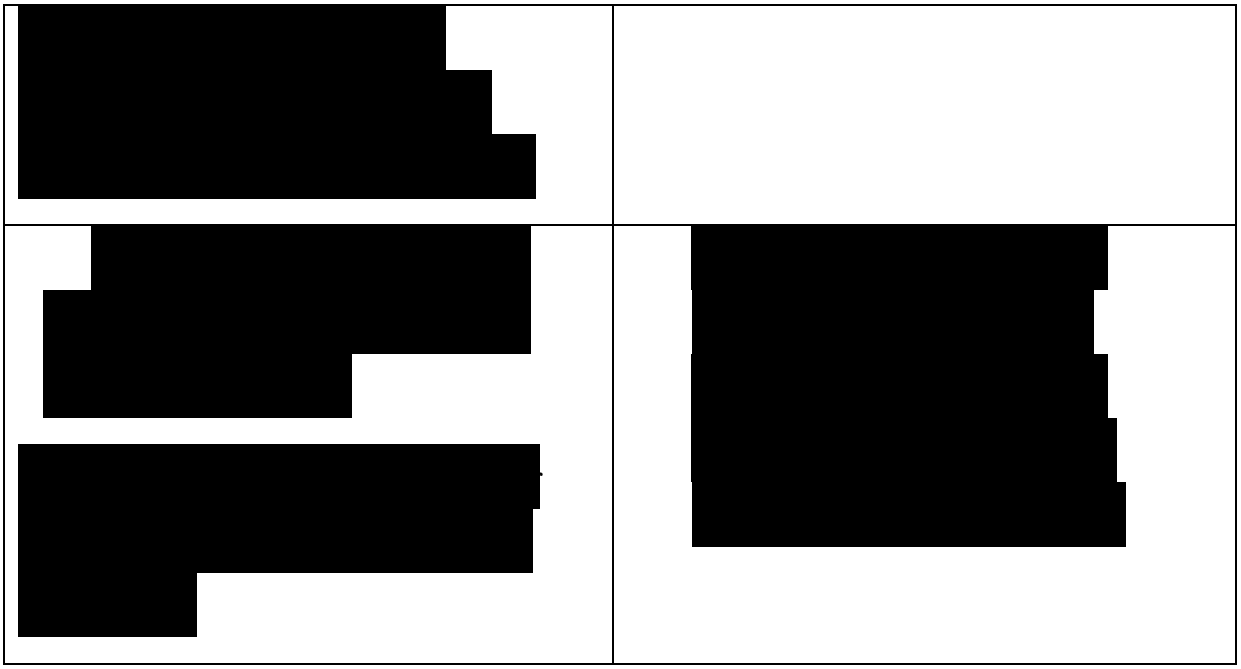
Picture 4 the picture of the chips " Cisco Systems 08-0697-02"

Figure 6. One schematic of TCAM extracted from the chip is in Picture 4.

which is same as the TCAM design Plaintiff did for Cisco in the year of 20002, which read the claim 1 of '331patent ( see page 8 of Exhibit R).

| | |
|---|---|
| [redacted] | [redacted] |
| [redacted] | [redacted] |
| [redacted] | ……<br>…… |

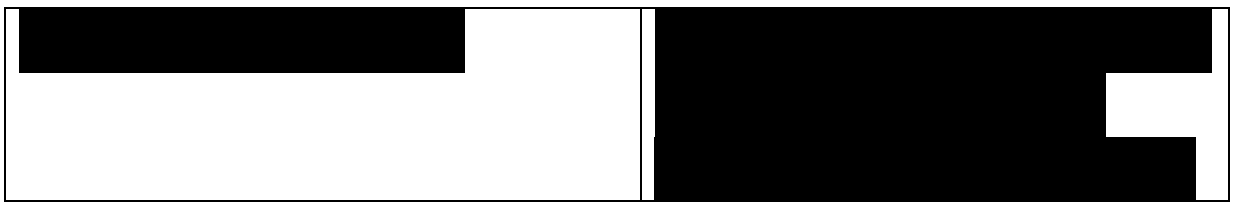


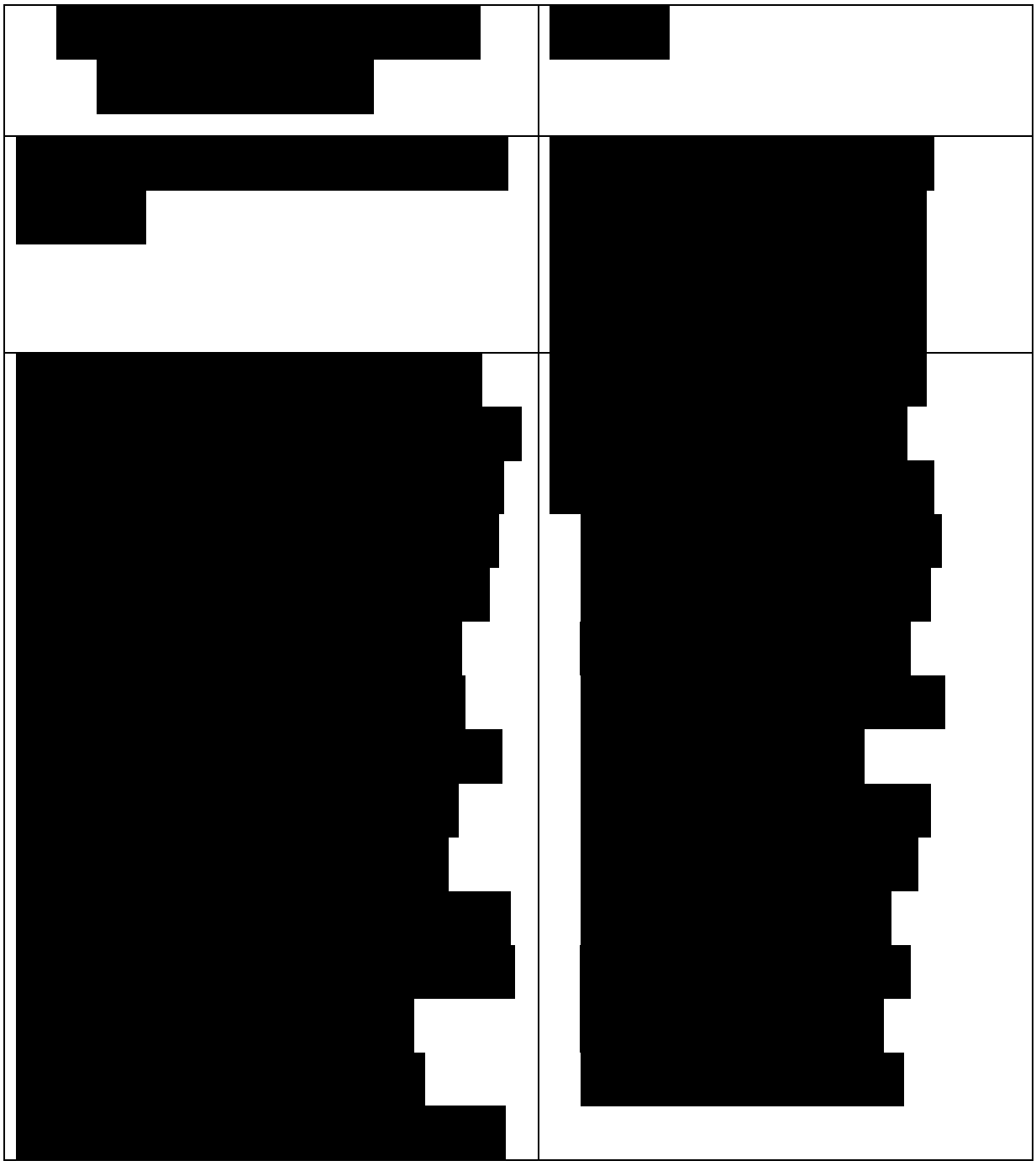


So the TCAM used in the main chip "Cisco Systems 08-0697-02" made in 2007 by Texas Instrument (TI) of the Cisco ASR 1000 Router are read by claim1 of '331patent.

16. Figure 5 is the schematic obtained from the Source code of TCAM which was sold to Avago Technology, Avago Technology did networking chip design with the TCAM of SDS for Cisco System ,Juniper Network, Extreme Networks, HP ,Dell and ZTE. The schematic of Figure 5 is same as extracted from Cisco chip "Cisco Systems 08-0697-02"used in ASR1000 serial Routers and CAM circuit extracted from the chip NL9512 and R8A20400

Figure 5 The circuit extracted from CAM used in the chips of Cisco , Juniper Networks, HP, Dell and ZTE.





So the claim 1 of US patent 6744653 read the chips used in Cisco ASR1000, the Router and Switches of Juniper Networks, Extreme Networks, Dell and HP.

**COUNT I: INFRINGEMENT OF U.S. PATENT NO. 6744653**

17. Plaintiff Mr. Huang refers to and incorporates herein the allegations of

Paragraphs 1-16 above.

18. On June1, 2004, U.S. Patent No.6744653 (the "'653Patent") was duly and legally issued for a "CAM cells and differential sense circuit for content addressable memory (CAM)." A true and correct copy of the '653 patent is attached hereto as Exhibit B. Xiaohua Huang as inventor is the owner of all rights, title, and interest in and to the '653 patent.

19. On information and belief, Defendant KCI have infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent one or more of the claims of the'653patent through buying/selling the Catalyst Switches WS-C3750,WS-C4900,WS-C6500 etc. of Cisco System, MX series Router of Juniper Network, Dell ,HP, SUN blade server and IBM servers those product devices containing "TCAM " which have infringed at least claim 1 of the '653patent under 35 U.S.C. § 271(a), (b) and(c).

20. On information and belief KCI have induced its Customers to have infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent one or more of the claims of the '653patent by transferring data through Networking Routers and Switches of Internet and Data centers. Those Networking Routers and Switches using "TCAM" which have infringed at least claim 1 of the'653patent under 35 U.S.C. § 271(a), (b) and (c).

21. On information and belief, KCI have made contributory infringement directly, indirectly, literally, on Doctrine of Equivalent to one or more of the claims of '653patent by its customers adding its Switches and Routers to Internet System and transferring data through the TCAM for its basic ACL and QoS function which have infringed at least claim 1 of the'653patent under 35 U.S.C. § 271(a), (b) and(c). The using of TCAM to achieve ACL and QoS function of routers and switches accused are completely not a staple article or

commodity of commerce suitable for substantial non-infringing use.

22. Defendant KCI's acts of infringement, inducing infringement and contributory infringement have caused damage to Xiaohua Huang, and Xiaohua Huang is entitled to recover from DefendantKCI for the damages sustained by Xiaohua Huang as a result of DefendantKCI's wrongful acts in an amount subject to proof at trial. Defendant KCI's infringement of Xiaohua Huang exclusive rights under the '653patent patent will continue to damage Xiaohua Huang, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court. DefendantKCI's infringement entitle Xiaohua Huang to recover damages under 35 U.S.C.§284 and to attorneys' fees and costs incurred in prosecuting this action under35 U.S.C. § 285.

**COUNT II: INFRINGEMENT OF U.S. PATENT NO. RE45259**

23. Plaintiff refers to and incorporates herein the allegations of Paragraphs 1-16 above.

24. On November 25, 2014 U.S. Patent No. RE45259 (the"'RE259Patent") was duly and legally issued for a "Hit ahead hierarchical scalable priority encoding logic and circuits." A true and correct copy of the 'RE259patent is attached hereto as Exhibit A. Xiaohua Huang as inventor is the owner of all rights, title, and interest in and to the 'RE259 patent.

25. On information and belief, KCI has infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent one or more of the claims of the'RE259 patent through buying /selling theASR1000, Catalyst Switches WS-C3750,WS-C4900,WS-C6500 etc. of Cisco System, MX series Router of Juniper Network , series, SUN blade servers and IBM Servers those product devices containing "TCAM "and " circuit " which have infringed at least claim 1 of the 'RE259patent under 35 U.S.C. § 271(a), (b) and(c).

26. On information and belief,KCI has induced its Customers to have infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent the claim 1 of the 'RE259 patent by transferring data through TCAM used in Networking Routers and Switches of Internet and Data centers. Those "TCAM" have infringed at least claim 1 of the'RE259 patent under 35 U.S.C. § 271(a), (b) and (c).

27. On information and belief, KCI has made contributory infringement directly, indirectly, literally, on Doctrine of Equivalent to the claim 1 of 'RE259 patent by its customers adding its Switches and Routers to Internet System and transferring data through the TCAM for its basic ACL and QoS function which have infringed at least claim 1 of the'RE259patent under 35 U.S.C. § 271(a), (b) and(c). The using of TCAM to achieve ACL and QoS function of routers and switches accused are completely not a staple article or commodity of commerce suitable for substantial non-infringing use.

28. DefendantKCI's acts of infringement, inducing infringement and contributory infringement have caused damage to Xiaohua Huang, and Xiaohua Huang is entitled to recover from Defendant KCI for the damages sustained by Xiaohua Huang as a result of Defendant KCI's wrongful acts in an amount subject to proof at trial. Defendant KCI's infringement of Xiaohua Huang exclusive rights under the 'RE259 patent will continue to damage Xiaohua Huang, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court. Defendant KCI's infringement entitle Xiaohua Huang to recover damages under 35 U.S.C.§284 and to attorneys' fees and costs incurred in prosecuting this action under35 U.S.C. § 285.

**COUNT III: INFRINGEMENT OF U.S. PATENT NO. 6999331**

29. Plaintiff Mr. Huang refers to and incorporates herein the allegations of Paragraphs 1-16 above.

30. On Feb.14, 2006, U.S. Patent No.6999331 (the "'331Patent") was duly and legally issued for a "CAM cells and differential sense circuit for content addressable memory (CAM)." A true and correct copy of the '331 patent is attached hereto as Exhibit C. Xiaohua Huang as inventor is the owner of all rights, title, and interest in and to the '331 patent.

31. On information and belief, Defendant KCI have infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent one or more of the claims of the'331patent through buying/selling the Catalyst Switches WS-C3750,WS-C4900,WS-C6500 etc. of Cisco System, MX series Router of Juniper Network, Dell ,HP, SUN blade server and IBM servers those product devices containing "TCAM " which have infringed at least claim 1 of the '331patent under 35 U.S.C. § 271(a), (b) and(c).

32. On information and belief KCI have induced its Customers to have infringed and continue to infringe directly, indirectly, literally, on Doctrine of Equivalent one or more of the claims of the '331patent by transferring data through Networking Routers and Switches of Internet and Data centers. Those Networking Routers and Switches using "TCAM" which have infringed at least claim 1 of the'331patent under 35 U.S.C. § 271(a), (b) and (c).

33. On information and belief, KCI have made contributory infringement directly, indirectly, literally, on Doctrine of Equivalent to one or more of the claims of '331patent by its customers adding its Switches and Routers to Internet System and transferring data through the TCAM for its basic ACL and QoS function which have infringed at least claim 1 of the'331patent under 35 U.S.C. § 271(a), (b) and(c). The using of TCAM to achieve ACL and QoS function of routers and switches accused are completely not a staple article or commodity of commerce suitable for substantial non-infringing use.

34. Defendant KCI's acts of infringement, inducing infringement and contributory infringement have caused damage to Xiaohua Huang, and Xiaohua Huang is entitled to recover from DefendantKCI for the damages sustained by Xiaohua Huang as a result of DefendantKCI's wrongful acts in an amount subject to proof at trial. Defendant KCI's infringement of Xiaohua Huang exclusive rights under the '331patent patent will continue to damage Xiaohua Huang, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court. DefendantKCI's infringement entitle Xiaohua Huang to recover damages under 35 U.S.C.§284 and to attorneys' fees and costs incurred in prosecuting this action under35 U.S.C. § 285.

**JURY DEMAND**

35. Pursuant to Fed. R. Civ. P. 38(b), Plaintiff Xiaohua Huang requests a trial by jury on all issues.

**PRAYER FOR RELIEF**

WHEREFORE, Xiaohua Huang prays for the following relief:

(a). A judgment in favor of Xiaohua Huang that Defendant has infringed and is infringing U.S. Patent No 6744653,6999331 and RE45259;

(b). A judgment that the '653,'331 and 'RE259 patent are valid and enforceable;

(c). An order preliminarily and permanently enjoining Defendant and its subsidiaries, parents, officers, directors, agents, servants, employees, affiliates, attorneys and all others in active concert or participation with any of the

foregoing, from further acts of infringement of the '653patent,'331patent and 'RE259;

(d). An accounting for damages resulting from Defendant's infringement of the '653,'331 and 'RE259 patent under 35 U.S.C. § 284;

(e). An assessment of interest on damages;

(f). A judgment awarding damages to Xiaohua Huang for its costs, disbursements, expert witness fees, and attorneys' fees and costs incurred in prosecuting this action, with interest pursuant to 35 U.S.C. § 285 and as otherwise provided by law;

(g). Such other and further relief as this Court may deem just and equitable.

Dated: January 11, 2021

Respectfully Submitted,

Xiaohua Huang
P.O. Box 1639, Los Gatos CA95031
Tel: 669 273 5650
Email: paul_huang1010@outlook.com

Exhibit A US patent RE45259

Exhibit B US patent 6744653

Exhibit C US patent No. 6999331

Exhibit M Guo Declaration

Exhibit N Sun Declaration

Exhibit R Huang declaration of sharing TCAM design with Cisco

Exhibit E Data sheet of TCAM

CERTIFICATE OF SERVICE

I hereby certify that the foregoing document was mailed to the Clerk of the Court and will be filed with the Court's CM/ECF system which will provide notice on all counsel deemed to have consented to electronic service. Defendant and All other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing document by mail and email on this day.

Dated: January 11, 2021

By /S/ Xiaohua Huang