

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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EMERSON ELECTRIC CO.,  
Petitioner,

v.

SIPCO, LLC,  
Patent Owner.

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Case IPR2015-01579  
Patent 6,914,893

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**PETITION FOR *INTER PARTES* REVIEW OF  
U.S. PATENT 6,914,893**

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**TABLE OF EXHIBITS**

<b>Exhibit</b>	<b>Description</b>
1001	U.S. Patent No. 6,914,893 (issued August 20, 2002), <i>System And Method For Monitoring And Controlling Remote Devices</i> .
1002	“Advances in Packet Radio Technology,” Kahn, Robert, November 1978 (“Kahn”)
1003	Kantronics KPC-3 – Users Guide, 1997 (“Kantronics”)
1004	Expert Declaration of Stephen Heppe (“Expert Decl.”)
1005	Claim Construction Opinion Filed July 30, 2012 in the case of SIPCO, LLC v. ABB, INC, et al, Civil Action No. 6:11-CV-0048 LED-JDL.
1006	Curriculum Vitae of Stephen Heppe

## **I. INTRODUCTION**

Emerson Electric Co. (“Petitioner”) petitions for *Inter Partes* Review (“IPR”) under 35 U.S.C. §§ 311-319 and 37 C.F.R., Part 42 of claims 1, 2, 10, and 37 of U.S. Patent No. 6,914,893 (“the ‘893 patent”) (Ex. 1001).

The ‘893 patent is directed to a system for monitoring and controlling remote devices by transmitting data between the remote systems via a packet message protocol system. Ex. 1001, Abstract. The system comprises one or more remote devices that interface with uniquely identified remote transceivers that transmit and/or receive data. Ex. 1001, Abstract. For each of the remote devices to communicate, transmissions use a standard packet protocol. Ex. 1001, 10:22-25. Each packet may include a sender address, a receiver address, a command code, a data section, and an error detector. Ex. 1001, 10:25-11:10. The receiver address can vary in size based upon the size and complexity of the system. Ex. 1001, 10:32-45. The data section can also vary in size. Ex. 1001, 10:11-21. However, these features were well known to one of skill in the art long before the ‘893 patent’s earliest possible effective filing date.

As grounds for cancellation of claims 1, 2, 10, and 37 of the ‘893 patent, this petition relies on: (1) Kahn, “Advances in Packet Radio Technology” (“Kahn”), (2) Kantronics KPC-3 – User Guide (“Kantronics”), and (3) Admitted Prior Art (“APA”). Kahn and Kantronics were not before the Patent Office during

prosecution, and these grounds are not redundant because each challenge renders the claims anticipated or obvious in different manners.

As shown below, there is a reasonable likelihood that Petitioners will prevail with respect to at least one of the challenged claims. The required fee is being paid through the Patent Review Processing System. Please charge any fee deficiency, or credit any overpayment, to Deposit Acct. No. 50-1860.

## **II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8**

### **A. Real Parties in Interest under 37 C.F.R. § 42.8(b)(1)**

Emerson Electric Co. is the Petitioner. Emerson Electric Co., Fisher-Rosemount Systems, Inc. and Rosemount, Inc. are real parties-in-interest.

### **B. Related Matters under 37 C.F.R. § 42.8(b)(2)**

Petitioner is not aware of any other judicial or administrative matter that would affect, or be affected by, a decision in the present proceeding based on U.S. Patent No. 6,914,893.

### **C. Lead and Backup Counsel under 37 C.F.R. § 42.8(b)(3)**

Lead counsel in this matter is Donald L. Jackson (Reg. No. 41,090) of Davidson Berquist Jackson & Gowdey, LLP, 8300 Greensboro Dr., Suite 500, McLean, Virginia 22102, Telephone: 571-765-7700, Fax: 571-765-7200, Email: [djackson@dbjg.com](mailto:djackson@dbjg.com). Back-up counsel includes Walter D. Davis, Jr. (Reg. No. 45,137) of Davidson Berquist Jackson & Gowdey, LLP, 8300 Greensboro Dr.,

Suite 500, McLean, Virginia 22102, Telephone: 571-765-7700, Fax: 571-765-7200, Email: [wdavis@dbjg.com](mailto:wdavis@dbjg.com); and James D. Berquist (Reg. No. 34,776) of Davidson Berquist Jackson & Gowdey, LLP, 8300 Greensboro Dr., Suite 500, McLean, Virginia 22102, Telephone: 571-765-7700, Fax: 571-765-7200, Email: [jberquist@dbjg.com](mailto:jberquist@dbjg.com).

**D. Service Information under 37 C.F.R. § 42.8(b)(4)**

Documents may be delivered by hand to the address of lead and back-up counsel above. Petitioners consent to service by e-mail to the following address: [SIPCO-IPCO-IPR@davidsonberquist.com](mailto:SIPCO-IPCO-IPR@davidsonberquist.com).

**III. REQUIREMENTS FOR IPR UNDER 37 C.F.R. § 42.104**

**A. Grounds for Standing under 37 C.F.R. § 104(a)**

Petitioner certifies that the ‘893 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the claims of the ‘893 Patent identified herein. Petitioner had previously filed a declaratory judgment action challenging the validity of claim 1 of the ‘893 patent in *Emerson Electric Co. v. SIPCO, LLC*, No. 1:13-cv-02528-AT, filed in the U.S. District Court for the Northern District of Georgia. The plaintiffs in that case, including Petitioner, dismissed that action without prejudice on January 29, 2015. Because that action was dismissed without prejudice, Petitioner is not barred from requesting IPR of the ‘893 patent. *See Clio USA, Inc. v. Proctor and Gamble Co.*,



Case IPR2013-00438 (PTAB 2014) (Paper 9), pp. 6-9.

**B. Identification of Challenges under 37 C.F.R. § 42.104(b) and Relief Requested**

Petitioner requests cancellation of claims 1, 2, 10, and 37 of the '893 Patent on the following grounds, supported by the Dr. Steve Heppe Declaration (Ex. 1004):

**Ground 1:** Claims 1, 2, 10, and 37 are anticipated under pre-AIA 35 U.S.C. § 102(b) by Kahn.

**Ground 2:** Claim 10 is rendered obvious under 35 U.S.C. § 103(a) by Kahn in view of Kantronics and the Admitted Prior Art.

**Ground 3:** Claims 1, 2, 10, and 37 are anticipated under pre-AIA 35 U.S.C. § 102(b) by Kantronics.

**IV. THE '893 PATENT**

**A. Discussion of Embodiments and Disclosure**

The '893 patent is directed to a system for monitoring and controlling remote devices by transmitting data between the remote systems via a packet message protocol system. Ex. 1001, Abstract.

The system comprises one or more remote sensors to be read and possibly one or more actuators to be remotely controlled. Ex. 1001, Abstract. The remote sensor(s)/actuator(s) interface with uniquely identified remote transceivers that transmit and/or receive data. Ex. 1001, Abstract. For each of the remote devices

to communicate, transmissions use a standard packet protocol. Ex. 1001, 10:22-25. Each packet may include a sender address, a receiver address, a command code, a data section, and an error detector. Ex. 1001, 10:25-11:10. The receiver address can vary in size based upon the size and complexity of the system. Ex. 1001, 10:32-45. The data section can also vary in size. Ex. 1001, 10:11-21.

## **B. Claim Construction**

Except as argued for specific terms, for the purposes of this IPR only, the remaining claim terms can be given their plain and ordinary meaning. Because claim construction standards differ between the Patent Office and other forums under current law, Petitioner reserves the right to argue different constructions and/or construe other claims terms in any other proceedings.

### **1. Legal Standard for Claim Construction**

The Board interprets claims in unexpired patents using the broadest reasonable interpretation understood by one of ordinary skill in the art and consistent with the disclosure (“BRI”). 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1280 (Fed. Cir. 2015). Terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). “[T]he PTO should only limit the claim based on the specification or prosecution history when those sources expressly

disclaim the broader definition.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed Cir. 2004).

The Board will not read an embodiment into the claim, if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

2. Terms to be Construed

“scalable address”

The term “scalable address” should be construed as **an address that has a variable size based on the size and complexity of the system.** Ex. 1001, 10:32-45; Ex. 1005, p. 22; Ex. 1004, ¶¶ 7-9. This construction matches the Court’s construction of that term in *SIPCO v. ABB*. Ex. 1005, p. 22.

The intrinsic evidence of the ‘893 patent supports Petitioner’s proposed construction. For example, the ‘893 patent discloses that “[t]he ‘to’ address 700 indicates the intended recipient of the packet.” Ex. 1001, 10:31-32. This address corresponds to the claimed receiver address and “can be scalable from one to six bytes based upon the size and complexity of the system.” Ex. 1001, 10:32-33. Moreover, “[t]he length of the address can be varied as necessary given individual design constraints.” Ex. 1001, 6:56-57; *see also* Ex. 1001, 12:20-27, and Ex. 1004, ¶¶ 8-9, relating to multiple addresses. For at least the foregoing reasons, Petitioner believes that “scalable address” should be construed to mean “an address that has a variable size based on the size and complexity of the system.”

“scalable message”

The term “scalable message” should be construed as **a message in which the size of the message can be varied.** Ex. 1001, 11:11-21; Ex. 1005, p. 23; Ex. 1004, ¶ 10. This construction matches the Court’s construction of that term in *SIPCO v. ABB*. Ex. 1005, p. 23.

The intrinsic evidence of the ‘893 patent supports Petitioner’s proposed construction. For example, the ‘893 patent discloses that “[t]he data section of a single packet is scalable up to 109 bytes.” Ex. 1001, 11:16-17, Fig. 7. In other words, the data section can vary in size from zero (0) to 109 bytes. For at least the foregoing reasons, Petitioner believes that “scalable message” should be construed to mean “a message in which the size of the message can be varied.”

“sensor”

A “sensor” should be construed as **an equipment, program or device that monitors or measures the state or status of a parameter or condition and provides information concerning the parameter or condition.** Ex. 1001, 3:53-56, 6:16-20, 8:33-38; Ex. 1005, p. 29; Ex. 1004, ¶ 12. This construction matches the Court’s construction of that term in *SIPCO v. ABB*. Ex. 1005, p. 29.

The ‘893 patent uses the term “sensor” in its usual way. For example, the ‘893 patent states that a “home thermostat control connected with the home heating system could be integrated with a sensor that reports the position of a manually

adjusted temperature control (i.e., temperature set value), as well as, a sensor integrated with a thermister [sic] to report an ambient temperature.” Ex. 1001, 8:33-38. The ‘893 patent also contemplates a wide variety of sensors. For example, the ‘893 patent discloses that “[o]ften, the transceivers will be electrically interfaced with a sensor or actuator, such as a smoke detector, a thermostat, a security system, etc., where external buttons are not needed.” Ex. 1001, 3:53-56. A “sensor” can detect an on or off condition of a device, or it can detect a continuous range of values associated with a device. *Id.*, 6:16-20 (“For example, sensor 310 in its simplest form could be a two-state 30 device such as a smoke alarm. Alternatively, the sensor 310 may output a continuous range of values to the data interface 321.”). Moreover, nothing in the ‘893 patent explicitly limits a “sensor” to a device that only monitors physical phenomena. Accordingly, for at least the foregoing reasons, Petitioner believes that a “sensor” should be construed to mean “an equipment, program or device that monitors or measures the state or status of a parameter or condition and provides information concerning the parameter or condition.”

“actuator”

An “actuator” should be construed as **equipment, program and/or device that receives control signals and controls the state or status of a parameter, condition, equipment, program or device.** ‘893 Patent, 8:43-50; 13:64-14:6; Ex.

1004, ¶ 11.

The intrinsic evidence of the ‘893 patent supports Petitioner’s proposed construction. For example, the ‘893 patent describes an “actuator” broadly as anything that controls the state or status of another thing. Notably, the ‘893 patent states that “[t]he addition of the actuator 520 to the integrated transceiver permits the data interface 525 to apply control signals to the manual temperature control for the temperature set point, the climate control mode switch, and the system on/off switch. In this way, a remote workstation 250 or a laptop 240 with WAN access (*see* Fig. 2) could control a home heating system from a remote location.” Ex. 1001, 8:44-50. For at least the foregoing reasons, Petitioner believes that “actuator” should be construed to mean “equipment, program and/or device that receives control signals and controls the state or status of a parameter, condition, equipment, program or device.”

“integrated”

“Integrated” should be construed as **a combination of elements communicatively coupled together**. ‘893 Patent, 3:6-8; 3:37-41; 6:26-37; Fig. 3; Ex. 1004, ¶ 13.

The intrinsic evidence of the ‘893 patent supports Petitioner’s proposed construction. For example, the ‘893 patent states that Figure 3 “is a block diagram illustrating a transceiver in accordance with the present invention integrated with a

sensor.” Ex. 1001, 3:6-8. Figure 3 shows that sensor 310 is coupled to transceiver 340 through a signal line. Data from sensor 310 is received at “an input port” of the data interface 321. *Id.*, 6:30-32. The ‘893 patent states that “the sensor 310 may be communicatively coupled with the RF transceiver 340.” *Id.*, 6:26-27. The same relationship between the transceiver and the sensor is described with respect to Figure 4. *Id.*, 7:6-8. Figure 5 shows the same arrangement between the transceiver, a sensor and an actuator. Thus, the broadest reasonable interpretation of “integrated” is “a combination of elements communicatively coupled together.”

### **C. Priority Claims and File History**

#### **1. Parent Applications**

The ‘893 patent has a long claim of priority through several earlier applications. The ‘893 patent is a continuation of application no. 09/704,150; and a continuation-in-part of application nos. 09/439,059; 09/412,895; 09/271,571; 09/172,554; and 09/102,178. The ‘893 patent further claims the benefit of U.S. Provisional Application No. 60/224,043.

#### **2. The ‘893 Patent’s File History**

The ‘893 patent was filed on March 19, 2001. On April 9, 2001, the applicant filed a preliminary amendment, which modified claims 1, 3, 5, 10, 11, 17, 19, 21, 26-28, and 33. In the first Office Action mailed August 20, 2004, the PTO allowed claims 1-44 and rejected claims 45-48 as directed to non-statutory subject matter. Claims 45-48 were also rejected under 35 USC § 102(e) as being

anticipated by Gelvin (U.S. Patent No. 6,735,630). However, the substance of the 102 rejection was in fact based on a combination of Gelvin and Davis (U.S. Patent No. 6,362,745).

The applicant filed a response on November 3, 2004, canceling claims 45-48. The PTO issued a Notice of Allowance on December 27, 2004, allowing claims 1-43. In the statement of reasons for allowance, regarding claims 1-18, the examiner stated that the claims were allowable because the prior art does not disclose a system for communicating command and sensed data between remote devices, the system comprising a combination of: a receiving address comprising a scalable address of the at least one of the intended receiving transceivers; a command indicator comprising a command code; at least one data value comprising a scalable message; wherein the controller sends preformatted command messages via the controller transceiver, and the plurality of transceivers send preformatted response messages.

Regarding claims 37-43, the examiner stated that the claims were allowable because the prior art does not disclose a method of communicating between geographically remote devices, the method comprising a combination of: a command indicator comprising a command code; a scalable data value comprising a scalable message; and an error detector that is a redundancy check error detector. The '893 patent issued on July 5, 2005.



**V. BRIEF SUMMARY OF THE CITED PRIOR ART****A. Kahn**

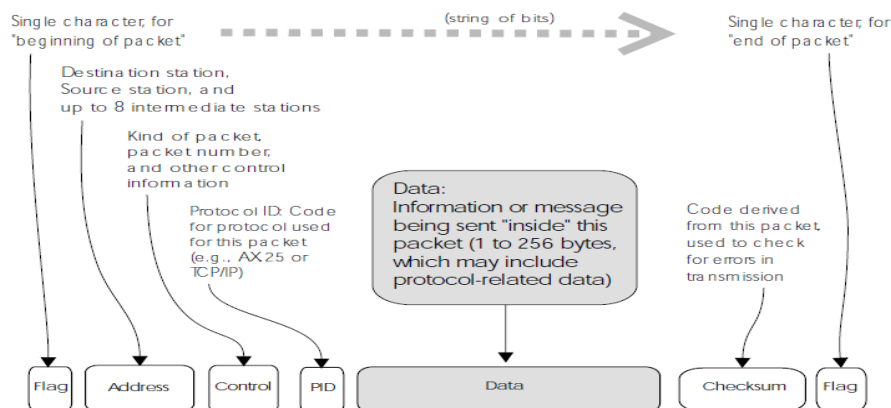
Kahn was published in Proceedings of the IEEE, Vol. 66, No. 11, November 1978. Therefore, it is a prior-art reference under pre-AIA 35 U.S.C. § 102(b). Ex. 1004, ¶ 19. Kahn provides an overview of the basic concepts of packet radio, including a then-current (1978) description of “PRNET,” a multi-hop, multi-access packet radio network sponsored by the Advanced Research Projects Agency (ARPA) with influence from ARPANET. Ex. 1002, p. 1468-69. In general, packet radio uses packet-switched wireless communications for distributing information and communicating among computers. Ex. 1002, p. 1468. The unit of transmission is a packet that includes a number of data bits that include “all the addressing and control information necessary to correctly route it to its destination.” Ex. 1002, p. 1468. Additional discussion of Kahn is provided below in the analysis of the claims. *See also*, Ex. 1004, ¶¶ 19-25.

**B. Kantronics**

The Kantronics Company, Inc. has been building wireless products since 1971. In 1997, they published the KPC-3 Plus User Guide (“Kantronics”) for the KPC-3 Plus Terminal Node Controller (TNC) intended for amateur radio operators. Kantronics is thus a prior-art reference under pre-AIA 35 U.S.C. § 102(b). Ex. 1004, ¶ 14. Kantronics incorporates the AX.25 standard (*see*

“copyright page”). Kantronics provides a brief introduction to packet radio, information on installing and configuring the KPC-3 Plus to operate a packet radio station, and documentation for a PC terminal software package called Pacterm (which shipped with the hardware). Ex. 1003, p. 11. As noted in Kantronics, a packet radio station has three basic parts: a transceiver with an antenna; a device called a terminal node controller (TNC), which is a combination modem and special-purpose micro-computer; and a general purpose computer (or a terminal). Ex. 1003, p. 18. Kantronics is a user guide that describes the structure, function, capabilities and uses of each TNC. Thus, where multiple TNC-based stations are used, the Kantronics reference is describing each of the TNC-based stations in the system.

Kantronics teaches “All amateur radio packets (also called ‘frames’) are defined by the AX.25 protocol... The following diagram shows the basic building blocks of ‘connected information’ packets used in amateur packet radio” Ex. 1003, p. 26.

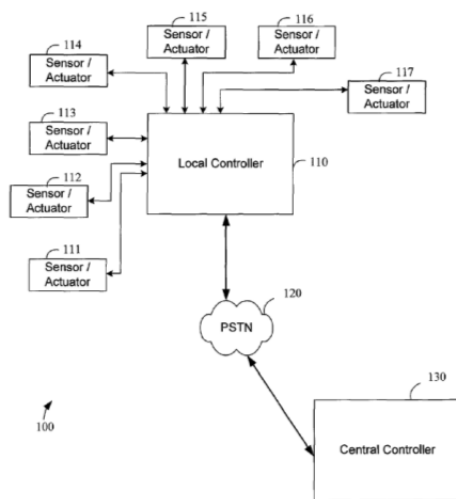


Additional discussion of Kantronics is provided below in the analysis of the claims. *See also*, Ex. 1004, ¶¶ 14-18.

### C. Admitted Prior Art

In the '893 patent, the applicants make several relevant admissions regarding the scope of the prior art (*i.e.*, “APA”). Ex. 1004, ¶¶ 26-28. Applicants admit that there were a variety of known systems for monitoring and controlling manufacturing processes, inventory systems, emergency control systems, heating, ventilation, air conditioning systems, fire reporting and damage control systems, alarm systems, and access control systems. Ex. 1001, 1:54-56; 2:27-29. Applicants admitted that it was known to use sensors and actuators to monitor and control automated systems. Ex. 1001, 1:56-65.

Figure 1 shows a prior art system for monitoring and controlling these



**FIG. 1**  
(PRIOR ART)

systems. The prior art control system 100 includes a plurality of sensor/actuator pairs 111-117 coupled to local controller 110. Local controller 110 formats and applies data signals from the sensors to process control functions. It also returns control signals from the process control functions to the actuators to effectuate changes in the control system. Ex. 1001, 5:32-41.

The control system 100 can also be integrated to a central controller 130 using a network such as the public switched telephone network (“PSTN”). Ex. 1001, 5:42-44.

## **VI. SPECIFIC GROUNDS FOR PETITION**

The challenged claims are unpatentable for the reasons set forth in detail below, per 37 C.F.R. § 42.104(b)(4)–(5).

### **A. Kahn Anticipates Claims 1, 2, 10, and 37 of the ’893 Patent**

#### **Claim 1**

**[1a] A system for communicating commands and sensed data between remote devices, the system comprising:**

Kahn discloses a system for communicating commands and sensed data between remote devices. Ex. 1004, ¶¶ 31-35. For example, Kahn discloses that packets have associated addressing and control information in the headers of packets which are communicated between remote devices. Ex. 1002, p. 1477. Kahn also discloses that measurement facilities built into packet radios “provide for the collection and delivery of measurement data over the radio channel in real-time while an experiment is being run.” Ex. 1002, p. 1495. This requires the communication of commands and sensed data between remote devices. Ex. 1004, ¶¶ 31-35.

**[1b] a plurality of transceivers, each transceiver being in**

**communication with at least one other of the plurality of transceivers, wherein each transceiver has a unique address, wherein the unique address identifies an individual transceiver, wherein each transceiver is geographically remote from the other of the plurality of transceivers, wherein each transceiver communicates with each of the other transceivers via preformatted messages;**

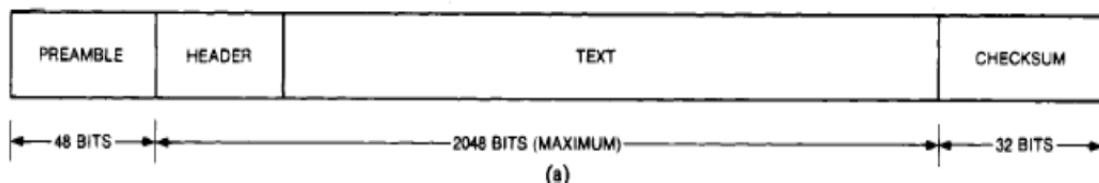
Kahn discloses a plurality of transceivers which are geographically remote from each other, each transceiver being in communication with at least one other of the plurality of transceivers. Ex. 1004, ¶¶ 42-48. For example, Kahn discloses a plurality of geographically distributed packet radios, each of which is capable of communicating packets to some subset of radios within line of sight propagation range. Ex. 1002, p. 1481; *see also* Ex. 1002, p. 1477, 79, 88, 89. The packet radios are geographically remote from each other because they are separately located. *See* Ex. 1005, pp. 6-11.

Kahn also discloses that each transceiver has a unique address, wherein the unique address identifies an individual transceiver. For example, each radio in Kahn has a unique identifier called a selector. Ex. 1002, p. 1479.

In addition, in discussing point-to-point routing from a source packet radio (“PR”) to a destination, Kahn uses a definite article to refer to the source PR. Ex. 1002, p. 1480. One of ordinary skill in the art would appreciate that the use of this definite article indicates that the source PR has a unique ID.

Moreover, Kahn repeatedly indicates that its radios have unique identifiers. For example, Kahn refers to “the unique identifier of the next intended receiver” and discloses that “each radio would use its own unique identifier.” Ex. 1002, p. 1487. This disclosure establishes that each radio (transceiver) has a unique identifier.

Kahn also discloses that each transceiver communicates with each of the other transceivers via preformatted messages. For example, Kahn indicates that packets have a structure as shown in Fig. 8 (reproduced below). Ex. 1002, p. 1478. Packets consist of a 48-bit preamble, followed by a variable length header, text, and a 32-bit checksum. Ex. 1002, p. 1478.



**[1c] a controller, connected to one of the plurality of transceivers, the controller being in communications with each of the plurality of transceivers via a controller transceiver, the controller communicating via preformatted messages;**

Kahn discloses a controller connected to one of the plurality of transceivers, the controller being in communications with each of the plurality of transceivers via a controller transceiver. Ex. 1004, ¶¶ 52-57. For example, Kahn discloses a

system that includes one or more network entities called stations. Ex. 1002, p. 1477. A station is a controller, because it operates to control the operation of another device. For example, functions performed by a station may include: network routing control; a network measurement facility which collects, stores, and delivers experimental statistics from any network components; a debugging facility which supports examining and depositing the contents of memory in the packet radio units; and an experiment configuration control module. Ex. 1002, p. 1488. A station can also remotely set parameters in each packet radio unit. Ex. 1002, p. 1495.

In order to perform functions such as remotely setting parameters in each packet radio unit and collect data from any radio packet unit, a station has a transceiver associated with it. For example, Kahn discloses that measurement facilities built into the packet radio and station software “provide for the collection and delivery of measurement data over the radio channel in real-time while an experiment is being run.” Ex. 1002, p. 1495; *see also*, Ex. 1002, Fig. 12. Because this collection and delivery of data occurs “over the radio channel,” one of ordinary skill in the art would understand that a station has an associated transceiver. A station also is connected to one of the plurality of transceivers (each packet radio unit has one) and in communications with each of the plurality of transceivers. Ex. 1002, Fig. 12, p. 1495.

Kahn discloses additional components that qualify as a controller. For example, Kahn discloses that each packet radio unit has a radio section and a digital section which controls the radio. Ex. 1002, p. 1477. The digital section includes a microprocessor controller, and the radio section includes an RF transmitter/receiver. Ex. 1002, p. 1477. This microprocessor controller, which as noted is connected to the packet radio unit's RF transmitter/receiver, corresponds to the claimed controller that has an associated transceiver. Exemplary control functions of the aforementioned microprocessor controller include route discovery and route setup in at least a "stationless" mode of operation. Ex. 1002, p. 1484. In addition, this microprocessor controller can control the point-to-point routing of a packet to a destination packet radio unit. Ex. 1002, pp. 1479, 1490.

As noted above, packets in Kahn have the structure shown in Fig. 8, which establishes that the aforementioned controllers disclosed in Kahn communicate via preformatted messages.

**[1d] wherein the preformatted messages comprises at least one packet, wherein the packet comprises:**

Kahn discloses that the preformatted messages comprise at least one packet ("the unit of transmission"). Ex. 1004, ¶ 59. For example, as noted above, Fig. 8 shows the structure of the packets that comprise the preformatted messages.

**[1e] a receiver address comprising a scalable address of the at least one**



**of the intended receiving transceivers;**

Kahn discloses that the packet includes a receiver address comprising a scalable address of the at least one of the intended receiving transceivers. Ex. 1004, ¶¶ 62-64. For example, each packet in Kahn includes a destination identifier. Ex. 1002, p. 1479. The destination identifier is part of the packet's header, which is disclosed as being variable in length. Ex. 1002, p. 1478. A packet can include the destination identifier for a single packet radio unit or for multiple packet radio units in the route from the source to the destination (in either a route setup packet or otherwise), making the address scalable. Ex. 1002, p. 1479.

The aforementioned scalable address in Kahn varies depending on the size and complexity of the network. Ex. 1004, ¶ 64. If the network only has four packet radio units, there can only be a maximum of two intermediate stations identified in a packet. *Id.* Whereas if the network has, for example, ten packet radio units, there could be a maximum of eight intermediate stations identified in a packet. *Id.*

**[1f] sender address comprising the unique address of the sending transceiver;**

Kahn discloses that the packet includes a sender address comprising the unique address of the sending transceiver. Ex. 1004, ¶¶ 67, 68. For example, packets in Kahn may include the source selector. Ex. 1002, p. 1484. The source

selector is a unique address that corresponds to the sending transceiver. Ex. 1002, p. 1479.

In addition, in discussing point-to-point routing from a source packet radio (“PR”) to a destination, Kahn uses a definite article to refer to the source PR. Ex. 1002, p. 1480. One of ordinary skill in the art would appreciate that the use of this definite article indicates that the source PR has a unique ID. This unique address is the “sender address” of the packet which was sent to the station.

**[1g] a command indicator comprising a command code;**

Kahn discloses that the packet includes a command indicator comprising a command code. Ex. 1004, ¶¶ 72-75. For example, packets in Kahn include control information in the packet header. Ex. 1002, pp. 1468, 77. This control information in the packet header causes the unit that receives the packet to perform different actions depending on the content of that information. For example, a packet radio unit, upon correct receipt of a packet, processes the header to determine if it should relay the packet, deliver it to an attached device, or discard it. Ex. 1002, p. 1477. Therefore, the header includes a command indicator comprising a command code.

Kahn provides additional evidence that its packets include a command indicator comprising a command code. For example, a station can use an X-RAY debugger to remotely examine the memory of packet radios throughout the

network. Ex. 1002, p. 1494. To do so, the station commands the remote packet radio unit to report certain portions of its memory. Ex. 1004, ¶ 75. And because the station communicates with remote packet radio units using packets, such as those depicted in Fig. 8 or 15, one of ordinary skill in the art would understand that a packet that initiates the X-RAY process includes a command indicator comprising a command code. Ex. 1004, ¶ 75

Moreover, Kahn discloses that a packet known as a route setup packet can be used to setup a route between a source and a destination. Ex. 1002, p. 1482. A packet radio unit identifies a packet as a route setup packet through a special bit in the packet header. Ex. 1002, p. 1482. A packet radio unit that receives a route setup packet from another packet radio unit performs specific actions (extracts renewal table information from a list of selectors in the packet and writes it into the renewal table) when it detects this special bit in the packet header. Ex. 1002, p. 1482. Thus, one of ordinary skill in the art would view the special bit in the header as a command indicator comprising a command code.

**[1h] at least one data value comprising a scalable message; and**

Kahn discloses that the packet includes at least one data value comprising a scalable message. Ex. 1004, ¶¶ 77, 78. For example, Fig. 8 of Kahn shows that the header and text section of a packet can be a maximum of 2048 bits. Conversely, the preamble and checksum sections of the packet are indicated as

being specific, fixed sizes. Because the header and text are only indicated as having a *maximum* total size, one of ordinary skill in the art would understand that each of the header and text can be variable in size. If the text section of a packet in Kahn were intended to have a fixed size, then Kahn would have disclosed that fixed size, as was done for the preamble and checksum sections. The text of the packet in Kahn thus corresponds to the claimed at least one data value comprising a scalable message. Kahn also expressly refers to “variable length packet sizes” which again suggests a variable length message. Ex. 1002, p. 1470.

**[1i] an error detector comprising a redundancy check error detector;  
and**

Kahn discloses that the packet includes an error detector comprising a redundancy check error detector. Ex. 1004, ¶ 81. For example, Kahn discloses that “[t]he radio unit completes the packet format previously illustrated in Fig. 8 by adding a 32-bit cyclic redundancy checksum (CRC).” Ex. 1002, p. 1490.

**[1j] wherein the controller sends preformatted command messages via the controller transceiver, and the plurality of transceivers send preformatted response messages.**

Kahn discloses that the controller sends preformatted command messages via the controller transceiver, and the plurality of transceivers send preformatted response messages. Ex. 1004, ¶ 84, 85. For example, as previously noted, the stations disclosed in Kahn are one example of a component that corresponds to the

claimed controller. Kahn also discloses that the packet format used in the system is illustrated in Fig. 8. Therefore, packets sent from a station correspond to “preformatted command messages.” And those messages are sent via a transceiver associated with the station (e.g., controller transceiver). Ex. 1002, p. 1495, Fig. 12.

For example, a station can use an X-RAY debugger to remotely examine the memory of packet radios throughout the network. Ex. 1002, p. 1494. To do so, the station uses command messages to initiate the X-RAY process and command the remote devices to report the contents (or at least selected contents) of their memories (via response messages). Ex. 1004, ¶ 84.

Moreover, the microprocessor controller associated with a packet radio unit also sends preformatted command messages via an associated transceiver, and receives preformatted response messages from other transceivers. For example, once a route comprising multiple packet radio units is setup, the microprocessor controller associated the sender’s packet radio can send messages to the next downstream packet radio unit (e.g., not the ultimate destination). Ex. 1002, pp. 1477, 1490. These messages are effectively commands requesting that a packet be sent to the next packet radio unit along the route. Ex. 1002, pp. 1477, 1490. Each packet radio unit on the route sends acknowledgement messages when a packet is correctly received. Ex. 1002, pp. 1477, 1490. Because an acknowledgement message is a message sent in response to another message, and because messages

in Kahn are preformatted in that they use the format depicted in Fig. 8, these acknowledgement messages correspond to the claimed preformatted response messages.

**Claim 2**

**[2a] The system of claim 1, wherein the plurality of transceivers further comprise at least one integrated transceiver, wherein the integrated transceiver comprises:**

Kahn discloses that the plurality of transceivers comprises at least one integrated transceiver. See limitations [2b] and [2c] below.

**[2b] one of the plurality of transceivers; and**

Kahn discloses that measurement facilities are built into the packet radio and station software. Ex. 1002, p. 1495. As previously noted, each packet radio unit and station has an associated transceiver. Each of these transceivers and corresponding measurement facilities correspond to the claimed integrated transceiver. Note that because measurement data is delivered “over the radio channel,” a transceiver exists in the integrated transceiver. *See also*, Ex. 1004, ¶ 88.

**[2c] a sensor detecting a condition and outputting a sensed data signal to the transceiver.**

As noted above, packet radio units and stations in Kahn have built-in

“measurement facilities” that “provide for the collection and delivery of measurement data over the radio channel in real-time while an experiment is being run.” Ex. 1002, p. 1495. These measurement facilities act as a sensor in that they measure the state or status of a parameter or condition and provide information concerning the parameter or condition. Exemplary measured parameters and conditions are collected by the PRU measurement software and the station measurement software as described on p. 1495 of Kahn. Thus, Kahn discloses an integrated transceiver with a sensor that detects a condition and outputs a sensed data signal to the transceiver. *See also*, Ex. 1004, ¶¶ 90, 91. The sensor is communicatively coupled to the transceiver, because the data collected by the “measurement facilities” are sent to the transceiver for further transmission to a remote packet radio unit.

### **Claim 10**

**[10a] The system of claim 1, wherein the plurality of transceivers further comprise at least one actuated transceiver, wherein the actuated transceiver comprises:**

Kahn discloses that the plurality of transceivers further comprises at least one actuated transceiver. See limitations [10b]-[10d] below.

### **[10b] one of the plurality of transceivers;**

Each one of Kahn’s packet radio units has a transceiver. Ex. 1002, p. 1477.

As noted above, Kahn discloses that measurement facilities “built into” packet radios “provide for the collection and delivery of measurement data over the radio channel in real-time while an experiment is being run.” Ex. 1002, p. 1495.

Because measurement data is delivered “over the radio channel,” a transceiver exists in the actuated transceiver. *See also*, Ex. 1004, ¶ 95.

**[10c] a sensor detecting a second condition and outputting a sensed data signal to the transceiver; and**

Neither claim 1 nor claim 10 recite a “first condition.” Thus, solely for purposes of this petition, Petitioner understands “second condition” refer to a first condition, and understands “third condition” to refer to a second condition.

As noted above [2b, 2c], each packet radio unit has “measurement facilities” that provide for the collection and delivery of measurement data over the radio channel in real-time, establishing the existence of a sensor that detects a condition and outputs a sensed data signal to the transceiver. Ex. 1002, p. 1495; *see also*, Ex. 1004, ¶ 97.

**[10d] an actuator controlling a third condition and receiving control signals from the transceiver.**

Kahn discloses traffic sources can be remotely turned on or off. Ex. 1002, p. 1495 (“From the station, parameters in each PR and terminal device in the network can be set remotely, selected elements can be halted, if appropriate, the collection



of statistical data from selected devices may be enabled, traffic sources may be turned on or off, and data collection may be initiated.”). In order for traffic sources to be remotely turned on or off, there is an actuator associated with the traffic source that controls the on/off operation (third condition). Because the on/off operation can be controlled remotely from a station, a POSITA would understand that the actuator is associated with a transceiver and receive control signals from that transceiver. The “on or off” state of the “traffic sources” corresponds to the claimed “third condition.” See also, Ex. 1004 ¶¶ 93, 99-101.

A packet radio unit also generates traffic as perceived by at least the “downstream” PR units along a route between a source and a destination. The transceiver, which generates the RF signal comprising an RF packet, is “actuated” by the microprocessor controller in the digital portion of the PR unit. In the case of a PR unit being used as a repeater, the microprocessor receives the command signal to actuate the transmit side of the transceiver via the receive side of the transceiver (i.e., commanding the message retransmission). Each PR unit, as explained above in [10c], also has functionality that corresponds to the claimed sensor. This sensor capability, coupled with the actuator capability discussed above, establishes that packet radio units in Kahn can be an actuated transceiver as claimed. *See also*, Ex. 1004, ¶¶ 93, 99-101.

### **Claim 37**

**[37a] A method of communicating between geographically remote devices, the method comprising:**

Kahn discloses a method of communicating between geographically remote devices. Ex. 1004, ¶ 105. For example, Kahn discloses a plurality of geographically distributed packet radios, each of which is capable of communicating packets to some subset of radio within line of sight propagation range. Ex. 1002, p. 1481; *see also* Ex. 1002, p. 1477, 79, 88, 89. The packet radios are geographically remote from each other because they are separately located devices. *See* Ex. 1005, pp. 6-11.

**[37b] sending a message;**

Kahn discloses “sending a message.” Ex. 1004, ¶ 109. For example, Kahn discloses that a packet radio unit can transmit packets to a nearby repeater identified in the packet. Ex. 1002, p. 1477; *see also* Figs. 9 and 12.

**[37c] receiving the message at one or more of the remote devices;**

Kahn discloses “receiving the message at one or more of the remote devices.” Ex. 1004, ¶ 112. For example, Kahn discloses that a repeater may receive a packet from another repeater or the sender’s packet radio unit. Ex. 1002, p. 1477; *see also* Figs. 9 and 12. The repeater that receives the packet is one of the aforementioned geographically distributed packet radios and therefore qualifies as one of the claimed remote devices. Ex. 1002, p. 1477; *see also* Figs. 9 and 12.

**[37d] processing the message;**

Kahn discloses “processing the message.” Ex. 1004, ¶ 116. For example, Kahn discloses, among other things, that a repeater (which qualifies as one of the claimed remote devices) processes a received packet to determine what the repeater should do with the packet. Ex. 1002, p. 1477.

**[37e] preparing a response message;**

Kahn discloses “preparing a response message.” Ex. 1004, ¶¶ 118, 119. For example, Kahn teaches that packet radio units send acknowledgement messages upon successfully receiving a packet (e.g., whether it should relay the packet, deliver it to an attached device, or discard it). Ex. 1002, pp. 1477, 90. Because an acknowledgement message is a message sent in response to another message, these acknowledgements correspond to the claimed response messages.

**[37f] receiving the response message;**

Kahn discloses “receiving the response message.” Ex. 1004, ¶¶ 122. For example, Kahn discloses that each repeater stores a packet in memory until a positive acknowledgment is received from the next downstream repeater. Ex. 1002, p. 1477. As noted above, an acknowledgement is a response message. Therefore, the repeater that receives an acknowledgement is “receiving the response message.”

**[37g] processing the response message**

Kahn discloses “processing the response message.” Ex. 1004, ¶¶ 123. For example, as noted above in [37f], Kahn discloses that each repeater can store a packet until a positive acknowledgment is received from the next downstream repeater. Ex. 1002, p. 1477. In order for the repeater to determine whether or not a positive acknowledgement has been received, thereby keeping the packet in memory, the response message is processed like all other messages received by a packet radio. *Id.*

**[37h] wherein all messages comprise at least one packet, the packet having a predetermined format;**

Kahn discloses that all messages comprise at least one packet, the packet having a predetermined format. Ex. 1004, ¶ 126. For example, Kahn indicates that packets have a structure as shown in Fig. 8. Ex. 1002, p. 1478.

**[37i] wherein the predetermined format comprises:**

**[37i.a] a receiver address comprising a scalable address of the at least one of the intended receiving remote devices;**

Kahn discloses that the predetermined format includes a receiver address comprising a scalable address of the at least one of the intended receiving remote devices. Ex. 1004, ¶ 127. For example, each packet in Kahn includes a destination identifier. Ex. 1002, p. 1479. The destination identifier is part of the packet’s header, which is disclosed as being variable in length. Ex. 1002, p. 1478. A

packet can include the destination identifier for a single packet radio unit or for multiple packet radio units in the route from the source to the destination (in either a route setup packet or otherwise), making the address scalable. Ex. 1002, p. 1479.

The aforementioned scalable address in Kahn varies depending on the size and complexity of the network. Ex. 1004, ¶ 64. If the network only has four packet radio units, there can only be a maximum of two intermediate stations identified in a packet. *Id.* Whereas if the network has, for example, ten packet radio units, there could be a maximum of eight intermediate stations identified in a packet. *Id.*

**[37i.b] a sender address comprising an unique address of the sender;**

Kahn discloses that the predetermined format includes a sender address comprising a unique address of the sender. Ex. 1004, ¶ 128. For example, packets in Kahn may include the source selector. Ex. 1002, p. 1484. The source selector is a unique address that corresponds to the sending transceiver. Ex. 1002, p. 1479.

In addition, in discussing point-to-point routing from a source packet radio (“PR”) to a destination, Kahn uses a definite article to refer to the source PR. Ex. 1002, p. 1480. One of ordinary skill in the art would appreciate that the use of this definite article indicates that the source PR has a unique ID. This unique address is the “sender address” of the packet which was sent to the station.

**[37i.c] a command indicator comprising a command code;**

Kahn discloses that the predetermined format includes a command indicator comprising a command code. Ex. 1004, ¶ 129. For example, packets in Kahn include control information in the packet header. Ex. 1002, pp. 1468, 77. This control information in the packet header causes the unit that receives the packet to perform different actions depending on the content of that information. For example, a packet radio unit, upon correct receipt of a packet, processes the header to determine if it should relay the packet, deliver it to an attached device, or discard it. Ex. 1002, p. 1477. Therefore, the header includes a command indicator comprising a command code.

Kahn provides additional evidence that its packets include a command indicator comprising a command code. For example, a station can use an X-RAY debugger to remotely examine the memory of packet radios throughout the network. Ex. 1002, p. 1494. To do so, the station commands the remote packet radio unit to report certain portions of its memory. Ex. 1004, ¶ 75. And because the station communicates with remote packet radio units using packets, such as those depicted in Fig. 8 or 15, one of ordinary skill in the art would understand that a packet that initiates the X-RAY process includes a command indicator comprising a command code. Ex. 1004, ¶ 75

Moreover, Kahn discloses that a packet known as a route setup packet can

be used to setup a route between a source and a destination. Ex. 1002, p. 1482. A packet radio unit identifies a packet as a route setup packet through a special bit in the packet header. Ex. 1002, p. 1482. A packet radio unit that receives a route setup packet from another packet radio unit performs specific actions (extracts renewal table information from a list of selectors in the packet and writes it into the renewal table) when it detects this special bit in the packet header. Ex. 1002, p. 1482. Thus, one of ordinary skill in the art would view the special bit in the header as a command indicator comprising a command code.

**[37i.d] a scalable data value comprising a scalable message; and**

Kahn discloses that the predetermined format includes a scalable data value comprising a scalable message. Ex. 1004, ¶ 131, 132. For example, Fig. 8 of Kahn shows that the header and text section of a packet can be a maximum of 2048 bits. Conversely, the preamble and checksum sections of the packet are indicated as being specific, fixed sizes. Because the header and text are only indicated as having a *maximum* total size, one of ordinary skill in the art would understand that each of the header and text can be variable in size. If the text section of a packet in Kahn were intended to have a fixed size, then Kahn would have disclosed that fixed size, as was done for the preamble and checksum sections. The text of the packet in Kahn thus corresponds to the claimed scalable data value comprising a scalable message. Kahn also expressly refers to “variable length packet sizes”

which again suggests a variable length message. Ex. 1002, p. 1470.

**[37i.e] an error detector that is a redundancy check error**

**detector; and**

Kahn discloses that the predetermined format includes an error detector that is a redundancy check error detector. Ex. 1004, ¶ 133. For example, Kahn discloses that “[t]he radio unit completes the packet format previously illustrated in Fig. 8 by adding a 32-bit cyclic redundancy checksum (CRC).” Ex. 1002, p. 1490.

**[37j] wherein the steps of sending and receiving are repeated until the message is received by the intended receiver.**

Kahn discloses this limitation. Ex. 1004, ¶ 135, 136. For example, Kahn discloses, among other things, that a packet is relayed from repeater to repeater until it arrives at the packet’s final destination. Ex. 1002, p. 1477. At each repeater, the packet is stored in memory until a positive acknowledgement is received from the next downstream repeater. Ex. 1002, p. 1477. When a packet is correctly received, the repeater determines whether it should relay the packet, deliver it to an attached device, or discard it. Ex. 1002, p. 1477. Kahn also states that “CAP [*i.e.*, channel access protocol] is responsible for ... retransmission of nonacknowledged packets ....” Ex. 1002, p. 1490. In other words, Kahn discloses that the steps of sending a packet and receiving an acknowledgement are repeated until the packet is received at its final destination. Accordingly, Kahn discloses the



steps of “sending and receiving are repeated until the message is received by the intended receiver.”

**B. Claim 10 of the '893 Patent Is Obvious Over Kahn in View of Kantronics and the Admitted Prior Art**

**Claim 10**

**The system of claim 1, wherein the plurality of transceivers further comprise at least one actuated transceiver, wherein the actuated transceiver comprises: one of the plurality of transceivers; a sensor detecting a second condition and outputting a sensed data signal to the transceiver; and an actuator controlling a third condition and receiving control signals from the transceiver.**

See analysis of claim 10 above in section VI.A.

Should Kahn be interpreted to not disclose an actuated transceiver that comprises a transceiver, sensor, and actuator as claimed, Kantronics discloses that feature as described below in section VI.C with respect to claim 10. In addition, APA discloses that systems for monitoring and controlling conditions using hard-wired sensors/actuators are well known. Ex. 1001, 1:54-65, 5:32-44. Kahn and Kantronics are both directed to wireless systems that include a plurality of transceivers which communicate using packet-switching technology. One of ordinary skill in the art would have been prompted to combine the wireless system

disclosed by Kahn with the actuated transceiver of Kantronics to result in the claimed system because it is desirable to “use remote sensors and controllers to monitor and automatically respond to system parameters to reach desired results,” as taught by APA. Ex. 1001, 1:36-2:26. The combination of Kahn and Kantronics results in a wireless control system that solves the problems that APA discloses with wired sensors and actuators. Moreover, one of ordinary skill in the art could have combined the wireless system of Kahn with the actuated transceiver concept of Kantronics by known methods with no change in their respective functions (Kahn’s packet radio units would still transmit and receive information; Kantronic’s sensors and actuators would still monitor and control conditions), yielding nothing more than predictable results. *See also*, Ex. 1004, ¶ 102.

Moreover, the Applicant admitted that it was known to use sensors and actuators to monitor and control automated systems. Ex. 1001, 1:55-65, Fig. 1. A first sensor from APA detects the claimed “second condition.” One of the actuators from APA controls the claimed “third condition.” APA explains that it was known to deliver control signals to prior art actuators. Ex. 1001, 2:4-8.

Kahn represents a computer network that can support real-time interactive communications between computer resources (hosts) connected to the network. Ex. 1002, p. 1469. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the PSTN, and the central and local

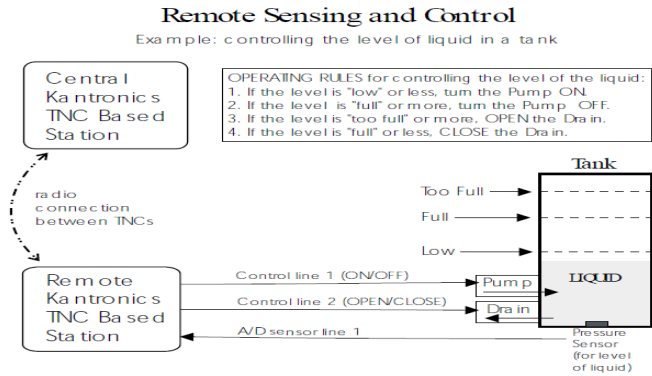
controller of the '893 patent, with the packet radio network of Kahn, in order to support sensors and actuators, thereby achieving the claimed benefits of the '893 patent. *See also*, Ex. 1004, ¶ 103.

### **C. Kantronics Anticipates Claims 1, 2, 10, and 37 of the '893 Patent**

#### **Claim 1**

**[1a] A system for communicating commands and sensed data between remote devices, the system comprising:**

Kantronics discloses a system for communicating commands and sensed data between remote devices. Ex. 1004, ¶¶ 29, 30. For example, Kantronics discloses a system for communication between remote devices by way of a packet radio station that includes a transceiver, a terminal node controller (i.e. "TNC"), and a station that includes a general purpose computer. Ex. 1003, p. 18. A user may "use two (or more) packet radio stations, each containing a Kantronics KPC-3 Plus TNC, to implement remote sensing and/or remote control." Kantronics at p. 166. Kantronics provides an example of how these features could be used to control the level of liquid in a tank (Ex. 1003, p. 167, illustrated below). The figure below shows two such stations that are remote from each other. Sensed pressure data from the remote station can flow to the central station in response to an ANALOG command issued by the central station. The figure also shows pump and drain commands flowing from the central station to the remote station.



**[1b] a plurality of transceivers, each transceiver being in communication with at least one other of the plurality of transceivers, wherein each transceiver has a unique address, wherein the unique address identifies an individual transceiver, wherein each transceiver is geographically remote from the other of the plurality of transceivers, wherein each transceiver communicates with each of the other transceivers via preformatted messages;**

Kantronics discloses a plurality of transceivers which are geographically remote from each other, each transceiver being in communication with at least one other of the plurality of transceivers. Ex. 1004, ¶¶ 36-41. For example, Kantronics discloses a plurality of packet radio stations at different locations (dispersed geographically), including, for example, a source, destination, and intermediate relay, where the amateur operating the source station knows that his signal might not reach the destination station directly. Ex. 1003, pp. 18-24, 101-106. Each packet radio station has a transceiver. Ex. 1003, p. 18, 19. Each of the packet radio stations can communicate with at least one of the other packet radio stations.

Ex. 1003, pp. 19-24, 101-106. Therefore, each transceiver in the packet radio stations can communicate with at least one of the other transceivers. The packet radios stations are geographically remote from each other because they are separately located. *See* Ex. 1005, pp. 6-11.

In addition to these general teachings in Kantronics, the “Remote Sensing and Control” example disclosed by Kantronics provides further proof that Kantronics discloses a plurality of transceivers which are geographically remote from each other, each transceiver being in communication with at least one other of the plurality of transceivers. This example discloses two or more TNC-based stations that are remote from other. Ex. 1003, pp., 166, 167. Each of these stations includes a transceiver that is in communication with a transceiver in another TNC-based station. Ex. 1003, pp. 18, 19, 166, 167.

Each transceiver disclosed in Kantronics has a unique address, called a callsign, used to identify an individual transceiver. Ex. 1003, p. 20. For example, the installation and configuration procedure requires an amateur operator to enter his/her callsign, which are unique worldwide, to prepare the TNC for use; *see also* the MYCALL command at Ex. 1003, p. 223. The MYCALL command automatically configures the station ID as the amateur’s callsign with a “substation ID” of 0. It also configures the associated ID for the personal bulletin board system resident in the TNC (MYPBBS); and the associated ID of the KA-Node

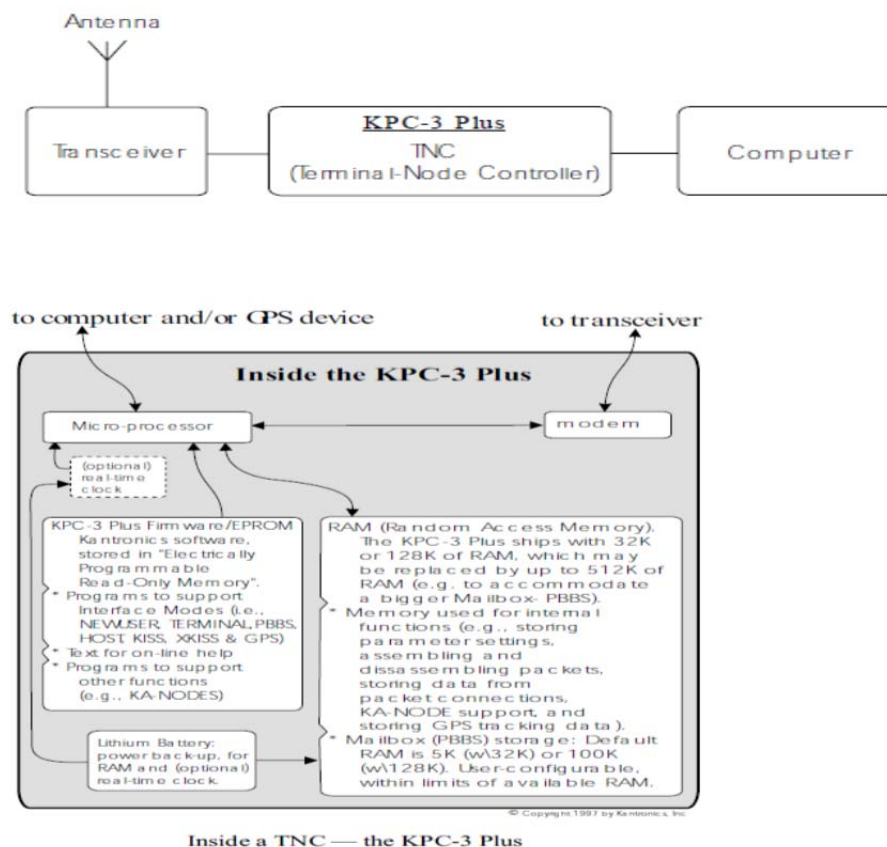
feature of the TNC (MYNODE). *See, e.g.*, Ex. 1003, p. 224.

Moreover, the transceivers in Kantronics communicate with each other using preformatted messages. Specifically, Kantronics discloses the use of the AX.25 Level 2 Version 2 packet protocol. Ex. 1003, p. 28. The diagram from p. 27 of Kantronics shows the organization of information packets for use in the Kantronics system. These packets correspond to the claimed preformatted messages.

**[1c] a controller, connected to one of the plurality of transceivers, the controller being in communications with each of the plurality of transceivers via a controller transceiver, the controller communicating via preformatted messages;**

Kantronics discloses a controller connected to one of the plurality of transceivers, the controller being in communications with each of the plurality of transceivers via a controller transceiver. Ex. 1004, ¶¶ 49-51. For example, Kantronics indicates that each packet radio station includes a device called a Terminal Node Controller (“TNC”). Ex. 1003, pp. 18, 19. A TNC corresponds to the claimed controller. Even more specifically, each TNC includes a microprocessor (as shown below: “Inside a TNC – the KPC-3 Plus”) which performs the control function of the TNC. Ex. 1003, p. 30. Each TNC has a transceiver with which it is associated (as shown below) and communicates with different transceivers in the system via its transceiver. Ex. 1003, pp. 19-24. The

computer attached to the TNC (also shown below) also qualifies as a “controller” with an associated transceiver. Ex. 1004, ¶ 50.



In addition, the central station depicted in the “Remote Sensing and Control” example (Ex. 1003, pp. 166-167) comprises a “controller” since it controls the operation of its local packet radio station, as well as e.g. the peripheral functions of the remote station (i.e., the pump and drain functions). The claimed controller is required to be in communication with each of the plurality of transceivers via a controller transceiver, suggesting that at least three transceivers are required (the controller transceiver and at least two other transceivers). Kantronics indicates that “two (or more) packet radio stations” can be used to implement remote sensing

and/or remote control. Ex. 1003, p. 166. This recitation makes it clear that more than two packet radio stations, each containing a TNC, can be used, instead of just two (as depicted in the figure on p. 167 of Kantronics). Thus, the central station depicted in the figure on page 167 corresponds to the claimed “controller.” The claimed plurality of transceivers correspond to two or more Kantronics remote stations, only one of which is expressly disclosed in the figure on page 167. However, page 166 expressly states that “two (or more)” TNCs can be used in a “remote sensing and control” application. The central station is in communication with the plurality of remote transceivers via its own transceiver.

Each of the aforementioned modules which qualify as a controller communicates using the preformatted message scheme shown on p. 27 of Kantronics.

**[1d] wherein the preformatted messages comprises at least one packet, wherein the packet comprises:**

Kantronics discloses that the preformatted messages comprise at least one packet. Ex. 1004, ¶ 58. For example, as noted above, the system of Kantronics communicates using packets organized as shown on p. 27 of Kantronics.

**[1e] a receiver address comprising a scalable address of the at least one of the intended receiving transceivers;**

Kantronics discloses that the packet includes a receiver address comprising a



scalable address of the at least one of the intended receiving transceivers. Ex. 1004, ¶¶ 60, 61. For example, the packet depicted on p. 27 of Kantronics has an address section that includes the destination station and up to 8 intermediate stations. Ex. 1003, p. 27. Because the address section can list *up to* 8 intermediate stations that are used to reach the ultimate destination, the destination address is a scalable address. If the network only has four stations, there only can be a maximum of two intermediate stations. Whereas, if the network has ten stations, there could be a maximum of eight intermediate stations. Thus, the aforementioned scalable address varies depending on the size and complexity of the network. Ex. 1004, ¶ 60.

**[1f] sender address comprising the unique address of the sending transceiver;**

Kantronics discloses that the packet includes a sender address comprising the unique address of the sending transceiver. Ex. 1004, ¶¶ 65, 66. For example, the packet depicted on p. 27 of Kantronics has an address section that includes the source station. Ex. 1003, p. 27. This source station address corresponds to the claimed sender address.

Even more specifically, as noted above, the station address, the unique address of the sending transceiver, is the amateur's callsign which is unique worldwide, plus an SSID. All packets originated by the TNC contain this callsign

in the FROM address field. Ex. 1003, p. 223.

**[1g] a command indicator comprising a command code;**

Kantronics discloses that the packet includes a command indicator comprising a command code. Ex. 1004, ¶¶ 69-71. For example, the packet depicted on p. 27 of Kantronics has a control section that indicates the kind of packet, packet number, and other control information. Ex. 1003, p. 27. This control section corresponds to the claimed command indicator.

Kantronics discloses several additional examples of command indicators. For example, the “Remote Sensing and Control” example discloses control of a pump and drain using the CNTL command (Ex. 1003, pp. 166-167, 199).

In addition, the poll command sent to a station in connected mode is a command indicator comprising a command code. Ex. 1003, p. 102; Ex. 1004, ¶ 70.

Furthermore, when the system of Kantronics is “digipeating” packets, a receiving station parses a destination address field of a packet looking for its own station ID. If it is required to retransmit the packet (this determination is based on finding its own station ID in the list, and verifying that any previously-listed stations have already retransmitted the packet), it will retransmit. Thus, the presence of a station ID in the extended destination address field is a command indicator comprising a command code. Ex. 1004, ¶ 71.

**[1h] at least one data value comprising a scalable message; and**

Kantronics discloses that the packet includes at least one data value comprising a scalable message. Ex. 1004, ¶ 76. For example, the packet depicted on p. 27 of Kantronics has a data section that can vary in size from 1 to 256 bytes. Ex. 1003, p. 27. This data section corresponds to the claimed data value that comprises a scalable message.

**[1i] an error detector comprising a redundancy check error detector; and**

Kantronics discloses that the packet includes an error detector comprising a redundancy check error detector. Ex. 1004, ¶¶ 79, 80. For example, the packet depicted on p. 27 of Kantronics has a checksum section that is used to check for errors in transmission. Ex. 1003, p. 27. Specifically, Kantronics' checksum error detection is based on the combination of characters that are in the packet. Ex. 1003, p. 101. The checksum is checked by every receiving station – a process involving recalculation and comparison to the checksum in the packet. Ex. 1004, ¶ 79. Thus, Kantronics discloses an error detector comprising a redundancy check error detector.

**[1j] wherein the controller sends preformatted command messages via the controller transceiver, and the plurality of transceivers send preformatted response messages.**

Kantronics discloses that the controller sends preformatted command messages via the controller transceiver, and the plurality of transceivers send preformatted response messages. Ex. 1004, ¶¶ 82, 83. First, as noted above in [1c], Kantronics discloses several examples of “controllers,” including a TNC, each of which has an associated transceiver. Kantronics also discloses that all communication occurs using the AX.25 protocol. Ex. 1003, p. 28. All messages using the AX.25 protocol are “preformatted,” because they conform to a convention, protocol or standard. Ex. 1004, ¶ 82.

In the “Remote Sensing and Control” example on pages 166 and 167, Kantronics discloses that a TNC (which is a controller) can use the ANALOG command to gather and report the status of one or two analog input lines in a remote TNC. Ex. 1003, pp. 166, 184, 185. The ANALOG command is an example of a “preformatted command message.” The TNC that sends the ANALOG command to a remote TNC does so via a transceiver (e.g., “controller transceiver”) that corresponds to the TNC, as evidenced by the diagram on page 167, which shows a radio connection between TNCs. Ex. 1003, p. 167.

The remote TNC that receives the ANALOG command returns a decimal number in the range of 0-255 for each of eight analog-to-digital lines. Ex. 1003, pp. 166, 184, 185. These returned decimal numbers correspond to the claimed “preformatted response messages.”

An additional example of sending preformatted command messages includes when the TNC sends a “request to connect” message via its transceiver. Ex. 1003, p. 21. To confirm a connection, a destination station sends a message back to the originating TNC, which corresponds to sending “preformatted response messages” required by the claim. Ex. 1003, p. 21.

Yet another example disclosed by Kantronics relates to the connected mode. Kantronics discloses acknowledgments in the “connected” mode, including forced acknowledgments using a “poll”. Ex. 1003, pp. 23, 102. The poll represents a preformatted command message, and the acknowledgments (whether explicitly commanded or not) represent preformatted response messages.

Moreover, because Kantronics teaches networks made up of three or more transceivers (each associated with a TNC), when a TNC sends any of the aforementioned examples of preformatted command messages to multiple other TNCs, the transceivers associated with those other TNCs each send preformatted response messages, as explained above.

### **Claim 2**

**[2a] The system of claim 1, wherein the plurality of transceivers further comprise at least one integrated transceiver, wherein the integrated transceiver comprises:**

Kantronics discloses that the plurality of transceivers further comprises at

least one integrated transceiver. See limitations [2b] and [2c].

**[2b] one of the plurality of transceivers; and**

The “integrated transceiver” is one of the transceivers depicted in the “Remote Sensing and Control” example on p. 167. Ex. 1003, p. 167; *see also*, Ex. 1004, ¶ 87. This example explains that one can use two or more packet radio stations, each containing a Kantronics TNC, to implement remote sensing and/or remote control. Ex. 1003, p. 166.

**[2c] a sensor detecting a condition and outputting a sensed data signal to the transceiver.**

Kantronics discloses an integrated transceiver with a “sensor detecting a condition and outputting a sensed data signal to the transceiver.” For example, the sensor detects a fluid level (a “condition”) and outputs a digital representation of the fluid level (a “sensed data signal”) to the transceiver. *See also*, Ex. 1004, ¶ 89. The sensor is communicatively coupled to the transceiver, because the fluid level data is sent from the sensor to the transceiver associated with the remote packet radio station for further transmission to the central packet radio station. Ex. 1003, pp. 166, 167.

**Claim 10**

**[10a] The system of claim 1, wherein the plurality of transceivers further comprise at least one actuated transceiver, wherein the actuated**

**transceiver comprises:**

Kantronics discloses that the plurality of transceivers further comprise at least one actuated transceiver. The radio station associated with the tank of fluid in the “Remote Sensing and Control” example comprises an “actuated transceiver” with two “actuators” (a pump and a drain). Ex. 1003, p. 167; *see also*, Ex. 1004, ¶¶ 99, 98. See limitations [10b]-[10d] below.

**[10b] one of the plurality of transceivers;**

As noted above, Kantronics discloses the use of “two (or more) packet radio stations” for the “Remote Sensing and Control” example. Thus, the “actuated transceiver” associated with the tank of fluid, the fluid level sensor, and the pump and drain, is one of the plurality of a transceivers described in Kantronics. *See also*, Ex. 1004, ¶ 94.

**[10c] a sensor detecting a second condition and outputting a sensed data signal to the transceiver; and**

Neither claim 1 nor claim 10 recite a “first condition.” Thus, solely for purposes of this petition, Petitioner understands “second condition” refer to a first condition, and understands “third condition” to refer to a second condition.

Kantronics discloses an actuated transceiver that includes a sensor that detects a first condition (*i.e.*, the claimed “second condition”) and outputs a sensed data signal to the transceiver. For example, Kantronics teaches, in the “remote

Sensing and Control” example, a sensor for detecting a fluid level and outputting a sensed data signal which is sent to a transceiver. Ex. 1003, pp. 166, 167. The sensed data signal corresponds to the detected fluid level. Ex. 1003, pp. 166, 167. *See also*, Ex. 1004, ¶ 96.

**[10d] an actuator controlling a third condition and receiving control signals from the transceiver.**

Kantronics discloses an actuated transceiver that includes an actuator that controls a second condition (*i.e.*, the claimed “third condition”) and receives control signals from the transceiver. For example, Kantronics discloses a pump and a drain (which each are actuators) controlling the fluid level in the tank. Ex. 1003, pp. 166, 167. This pump and drain receive control signals from the transceiver. Ex. 1003, pp. 167, 167. *See also*, Ex. 1004, ¶¶ 93, 98.

**Claim 37**

**[37a] A method of communicating between geographically remote devices, the method comprising:**

Kantronics discloses a method of communicating between geographically remote devices. Ex. 1004, ¶ 104. For example, Kantronics discloses a plurality of packet radio stations at different locations (dispersed geographically). Ex. 1003, pp. 18-24, 101-106. Each packet radio station has a transceiver. Ex. 1003, p. 18, 19. Each of the packet radio stations can communicate with at least one of the



other packet radio stations. Ex. 1003, pp. 19-24, 101-106. Therefore, each transceiver in the packet radio stations can communicate with at least one of the other transceivers. The packet radios stations are geographically remote from each other because they are separately located. *See* Ex. 1005, pp. 6-11.

**[37b] sending a message;**

Kantronics discloses “sending a message.” Ex. 1004, ¶¶ 106-108. Several examples are disclosed by Kantronics. For the “connected” mode of operation discussed at Ex. 1003, pp. 101-104, Kantronics teaches that a user can establish a connection (p. 102) by issuing a connect request (p. 103). Thereafter, the TNC will send packets to that specific station and expects acknowledgements in return. Ex. 1003, p. 102.

In the “Remote Sensing and Control” example, the user can send a message to the remote station using the ANALOG command in order to gather and report the status of one or two analog input lines in the remote TNC. Ex. 1003, pp. 166, 184, 185.

**[37c] receiving the message at one or more of the remote devices;**

Kantronics discloses “receiving the message at one or more of the remote devices.” Ex. 1004, ¶¶ 110, 111. For example, in the connected mode, a TNC can send packets to a specific station and expects acknowledgments in return. Ex. 1003, p. 102). The acknowledgment can only occur if the message is received by

the destination station. *See also*, Ex. 1004, 110.

In the “Remote Sensing and Control” example, a remote station is operable to receive an ANALOG message, and thereafter responds with data representing a fluid level. Ex. 1004, 111.

**[37d] processing the message;**

Kantronics discloses “processing the message.” Ex. 1004, ¶¶ 113-115. For example, the messages generated by a user on his/her computer are “processed” prior to transmission and also after reception at the receiving station(s). Ex. 1003, p. 19. Specific examples of “processing” include processing messages in a monitor mode. Ex. 1004, 113.

Receiver processing in connected mode includes error-checking, parsing of the destination address field to determine if the message is addressed to the local station, and acknowledgments. Ex. 1004, ¶ 114. In addition, receiver processing also determines if the packets need to be resent. Ex. 1003, p. 101.

In the “Remote Sensing and Control” example, the remote station, in response to the ANALOG command received from the central station, reads the voltage from the fluid level sensor. Ex. 1003, pp. 166, 167, 184, 185; Ex. 1004, ¶ 115. This operation is another example of an operation that corresponds to the claimed “processing the message.”

**[37e] preparing a response message;**

Kantronics discloses “preparing a response message.” Ex. 1004, ¶ 117. For example, in reference to the discussion above, acknowledgments generated by a station operating in “connected” mode satisfy the limitation of “preparing a response message.” Furthermore, in the ‘remote sensing and control’ example, preparing the message that reports the fluid level satisfies this limitation. *See* Ex. 1003, pp. 166-167, 185.

**[37f] receiving the response message;**

Kantronics discloses “receiving the response message.” Ex. 1004, ¶¶ 120, 121. For example, in “connected” mode, a station sending a message must receive an acknowledgment to maintain the connection. If an acknowledgment is not received within a certain time frame, the message will be resent. *See* Ex. 1003, pp. 102-104 and p. 237. See also the discussion of the AX2512V2 command, and differences between V1 and V2 in relation to handling of “poll” commands, at p. 186.

In the “Remote Sensing and Control” example disclosed at pages 167 and 167, a control station receives a response message containing the sensed fluid level in order to determine the proper course of action. Ex. 1004, ¶ 121.

**[37g] processing the response message**

Kantronics discloses “processing the response message.” Ex. 1004, ¶ 124. In the “connected” mode, the processing of the acknowledgment satisfies this

limitation. Ex. 1003, p. 24. For example, a source station that sends a packet to a destination station can process an acknowledgement message sent to it by the destination station (and rest easy knowing that the sent data was properly received). Ex. 1003, p. 24. In the “Remote Sensing and Control” example, processing the message containing the sensed fluid level (i.e., in accordance with the operating rules noted above) also satisfies this limitation.

**[37h] wherein all messages comprise at least one packet, the packet having a predetermined format;**

Kantronics discloses that all messages comprise at least one packet, the packet having a predetermined format. Ex. 1004, ¶ 125. For example, Kantronics discloses the use of the AX.25 protocol. Ex. 1003, p. 28. The diagram from p. 27 of Kantronics shows the organization of information packets for use in the Kantronics system. These packets correspond to the claimed packet having a predetermined format.

**[37i] wherein the predetermined format comprises:**

**[37i.a] a receiver address comprising a scalable address of the at least one of the intended receiving remote devices;**

Kantronics discloses that the predetermined format comprises a receiver address comprising a scalable address of the at least one of the intended receiving remote devices. Ex. 1004, ¶ 127. For example, the packet depicted on p. 27 of

Kantronics has an address section that includes the destination station and up to 8 intermediate stations. Ex. 1003, p. 27. Because the address section can list *up to* 8 intermediate stations that are used to reach the ultimate destination, the destination address is a scalable address. If the network only has four stations, there only can be a maximum of two intermediate stations. Whereas, if the network has ten stations, there could be a maximum of eight intermediate stations. Thus, the aforementioned scalable address varies depending on the size and complexity of the network. Ex. 1004, ¶ 60.

**[37i.b] a sender address comprising a unique address of the sender;**

Kantronics discloses that the predetermined format includes a sender address comprising the unique address of the sending transceiver. Ex. 1004, ¶¶ 128. For example, the packet depicted on p. 27 of Kantronics has an address section that includes the source station. Ex. 1003, p. 27. This source station address corresponds to the claimed sender address.

Even more specifically, as noted above, the station address, the unique address of the sending transceiver, is the amateur's callsign which is unique worldwide, plus an SSID. All packets originated by the TNC contain this callsign in the FROM address field. Ex. 1003, p. 223.

**[37i.c] a command indicator comprising a command code;**

Kantronics discloses that the predetermined format includes a command indicator comprising a command code. Ex. 1004, ¶¶ 129. For example, the packet depicted on p. 27 of Kantronics has a control section that indicates the kind of packet, packet number, and other control information. Ex. 1003, p. 27. This control section corresponds to the claimed command indicator.

Kantronics discloses several additional examples of command indicators. For example, the “Remote Sensing and Control” example discloses control of a pump and drain using the CNTL command (Ex. 1003, pp. 166-167, 199).

In addition, the poll command sent to a station in connected mode is a command indicator comprising a command code. Ex. 1003, p. 102; Ex. 1004, ¶ 70.

Furthermore, when the system of Kantronics is “digipeating” packets, a receiving station parses a destination address field of a packet looking for its own station ID. If it is required to retransmit the packet (this determination is based on finding its own station ID in the list, and verifying that any previously-listed stations have already retransmitted the packet), it will retransmit. Thus, the presence of a station ID in the extended destination address field is a command indicator comprising a command code. Ex. 1004, ¶ 71.

**[37i.d] a scalable data value comprising a scalable message; and**

Kantronics discloses that the predetermined format includes a scalable data

value comprising a scalable message. Ex. 1004, ¶¶ 130. For example, the packet depicted on p. 27 of Kantronics has a data section that can vary in size from 1 to 256 bytes. Ex. 1003, p. 27. This data section corresponds to the claimed scalable data value that comprises a scalable message.

**[37i.e] an error detector that is a redundancy check error**

**detector; and**

Kantronics discloses that the predetermined format includes an error detector comprising a redundancy check error detector. Ex. 1004, ¶ 133. For example, the packet depicted on p. 27 of Kantronics has a checksum section that is used to check for errors in transmission. Ex. 1003, p. 27. Specifically, Kantronics' checksum error detection is based on the combination of characters that are in the packet. Ex. 1003, p. 101. The checksum is checked by every receiving station – a process involving recalculation and comparison to the checksum in the packet. Ex. 1004, ¶¶ 79, 133. Thus, Kantronics discloses an error detector comprising a redundancy check error detector.

**[37j] wherein the steps of sending and receiving are repeated until the message is received by the intended receiver.**

Kantronics discloses that the steps of sending and receiving are repeated until the message is received by the intended receiver. Ex. 1004, ¶ 134. For example, in a “connected” mode of operation, a message can be repeated a set

number of times if acknowledgment is not received. Ex. 1003, p. 237. This number is set using the RETRY command. Ex. 1003, p. 237.

## **VII. CONCLUSION**

For the foregoing reasons, Petitioner respectfully requests that the *inter partes* review of the '893 Patent be instituted as the Petition establishes a reasonable likelihood of prevailing with respect to the challenged claims. Petitioner further respectfully requests that Claims 1, 2, 10, and 37 be cancelled as unpatentable under 35 U.S.C. § 318(b).

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

The undersigned certifies that a true and correct copy of the Petition together with all exhibits has been served on the Patent Owner's attorneys via Federal Express overnight delivery on the 13th day of July, 2015 at the following addresses:

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