US009972944B1

(12) **United States Patent**
Long et al.

(10) **Patent No.: US 9,972,944 B1**
(45) **Date of Patent: May 15, 2018**

(54) **PLUGGABLE MODULE HAVING A SEAM COVER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. days.

(21) Appl. No.: **15/807,703**

(22) Filed: **Nov. 9, 2017**

(51) **Int. Cl.**

G02B 6/42	(2006.01)
H01R 13/6581	(2011.01)
H01R 24/30	(2011.01)
H01R 13/6594	(2011.01)
H01R 12/71	(2011.01)

(52) **U.S. Cl.**
CPC ***H01R 13/6581*** (2013.01); ***G02B 6/4277*** (2013.01); ***G02B 6/4292*** (2013.01); ***H01R 24/30*** (2013.01); *H01R 12/716* (2013.01); *H01R 13/6594* (2013.01)

(58) **Field of Classification Search**
CPC H01R 13/6581; H01R 24/30; H01R 13/6594; H01R 12/716; G02B 6/4292; G02B 6/4277
See application file for complete search history.

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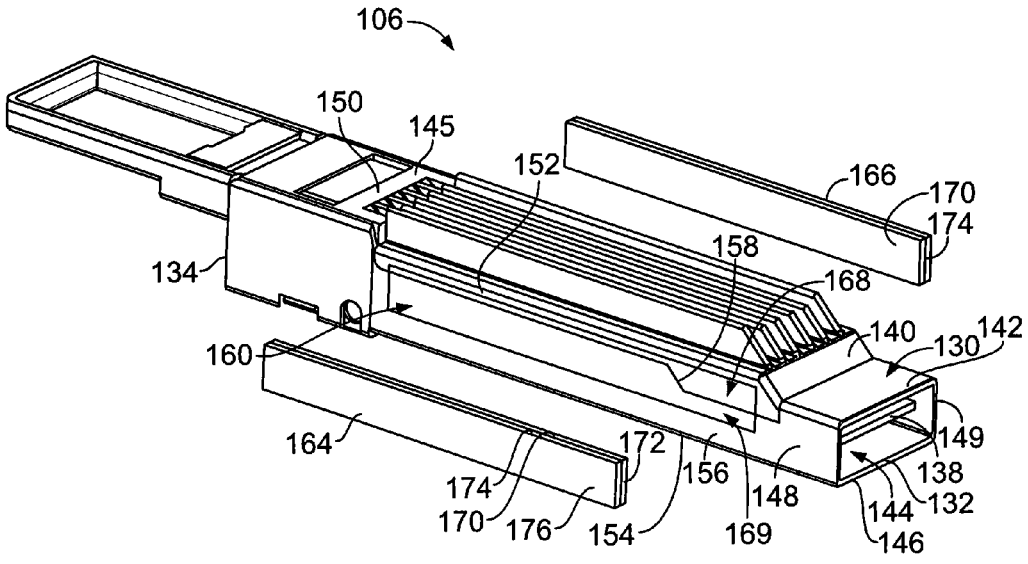
Primary Examiner — John M Bedtelyon

(57) **ABSTRACT**

A pluggable module includes a pluggable body extending between a front end and a mating end receivable in a module cavity of a receptacle assembly to mate with a communication connector. The pluggable body has a top, a bottom, a first side wall and a second side wall between the top and the bottom and has an upper shell defining the top and a lower shell defining the bottom coupled together at a seam. A seam cover is coupled to the pluggable body at the first side wall covering the seam between the upper shell and the lower shell on the first side wall. The seam cover is conductive and provides EMI shielding at the seam for a communication circuit board held in the pluggable body.

20 Claims, 3 Drawing Sheets



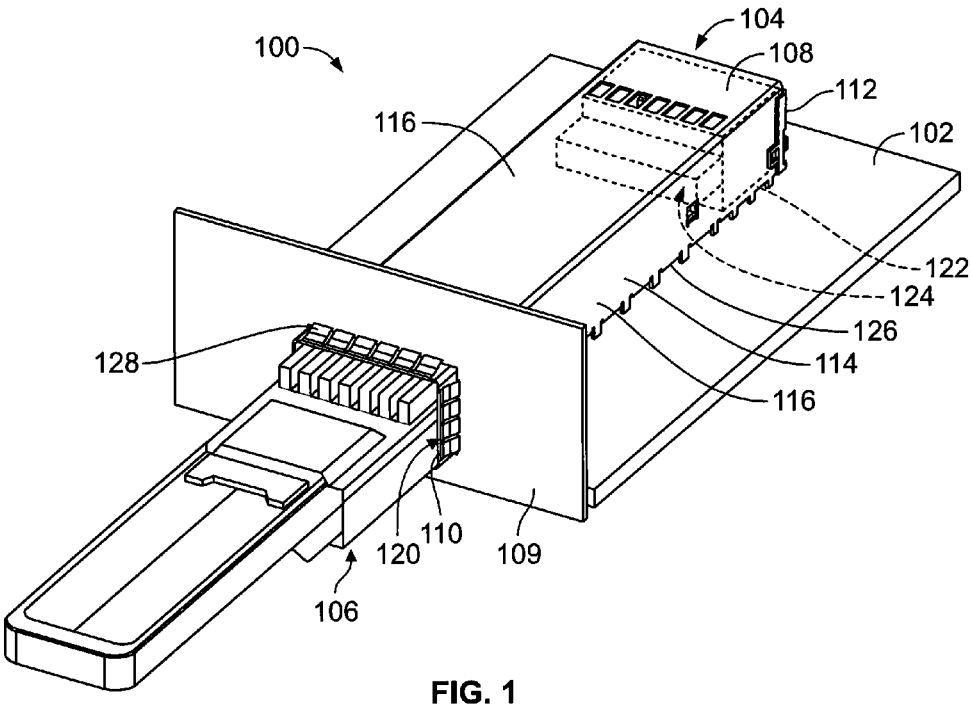

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FIG. 1

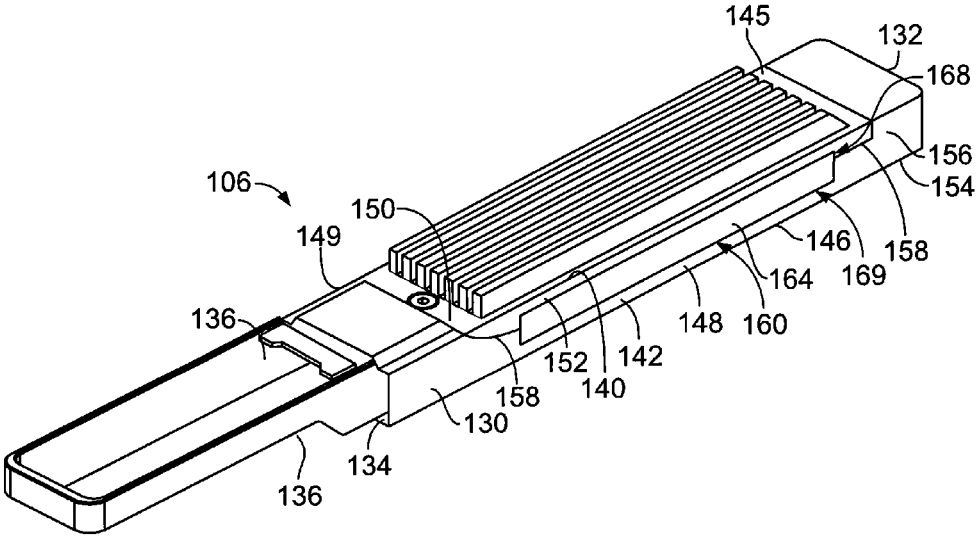
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FIG. 2

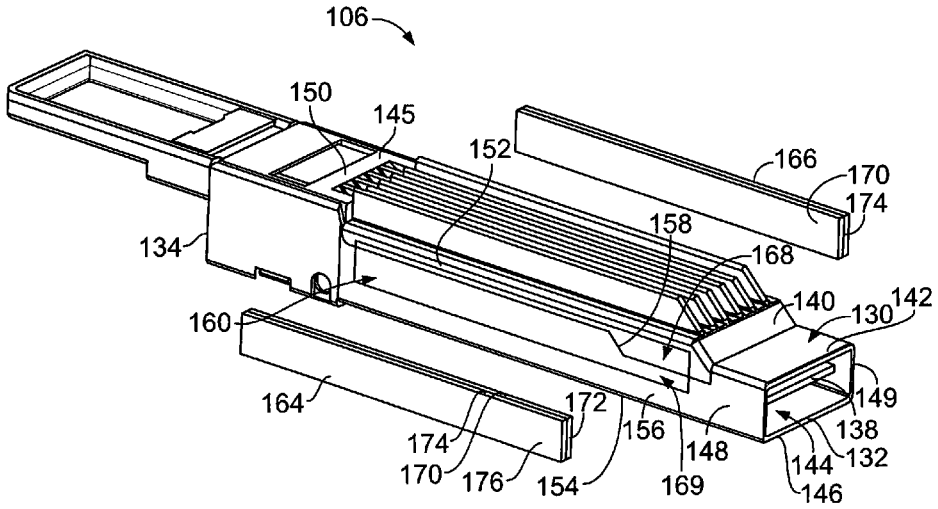
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FIG. 3

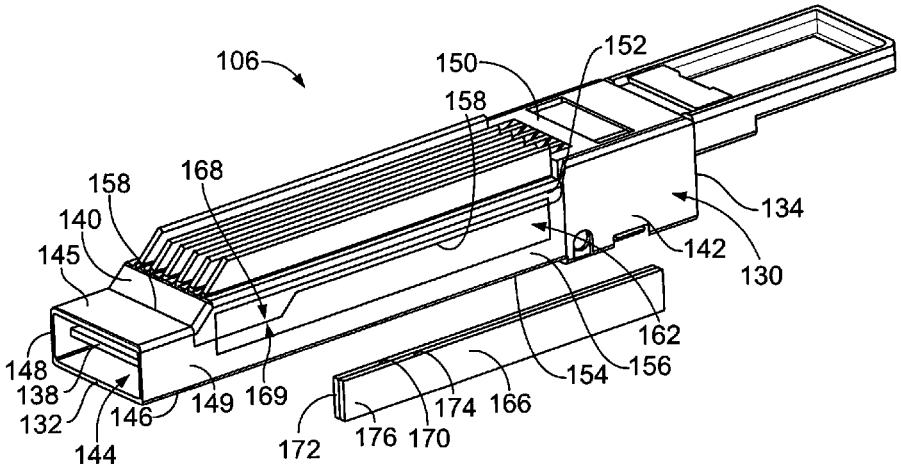
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FIG. 4

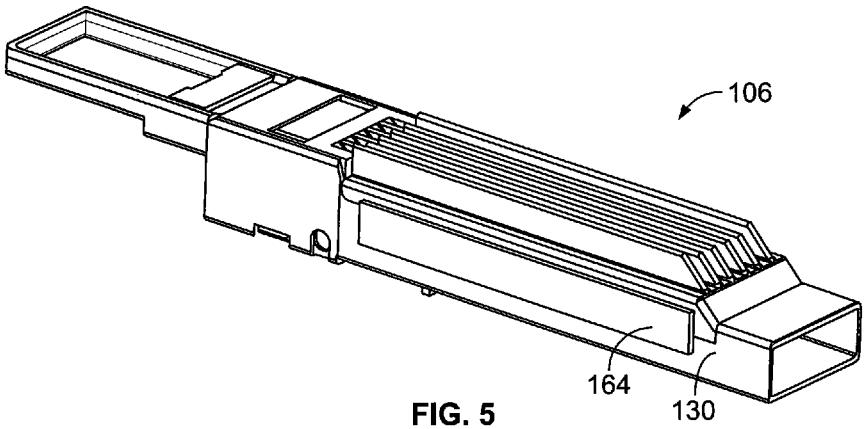

FIG. 5

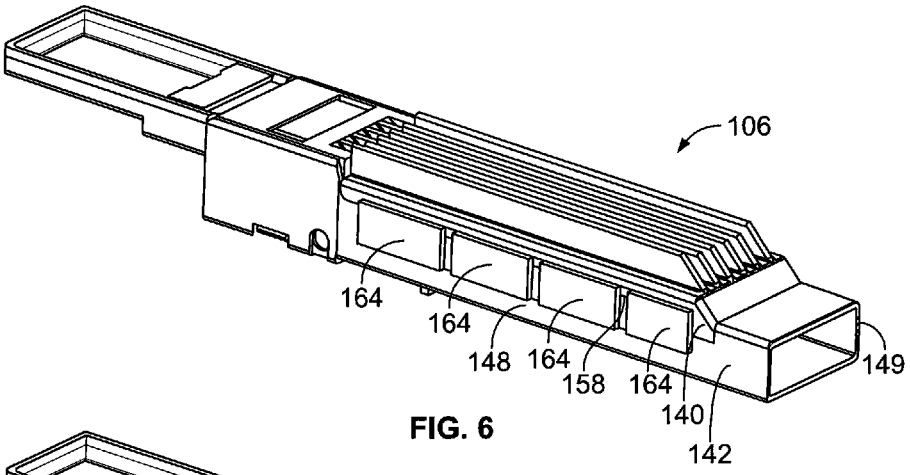

FIG. 6

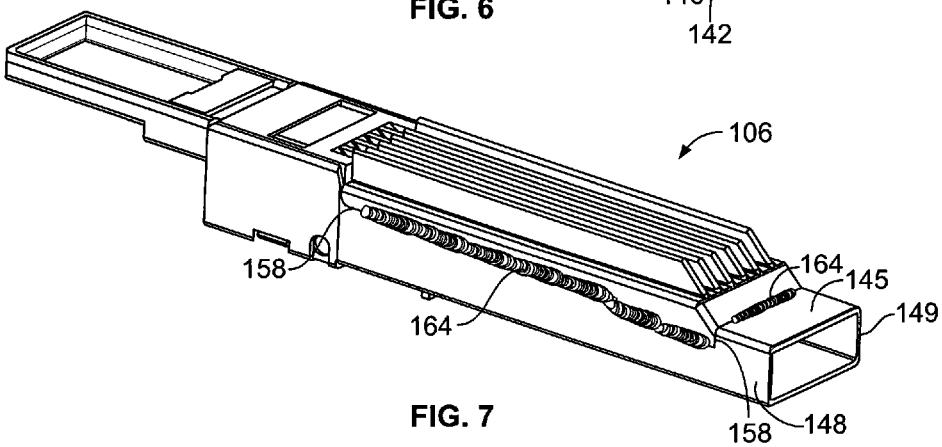

FIG. 7

PLUGGABLE MODULE HAVING A SEAM COVER

BACKGROUND OF THE INVENTION

The subject matter herein relates generally to pluggable modules.

At least some known communication systems include receptacle assemblies, such as input/output (I/O) connector assemblies, that are configured to receive a pluggable module and establish a communicative connection between the pluggable module and an electrical communication connector of the receptacle assembly. As one example, a known receptacle assembly includes a cage member that is mounted to a circuit board and configured to receive a pluggable transceiver in an elongated cavity of the cage member. The pluggable module and the electrical connector have respective electrical contacts that engage one another to establish a communicative connection.

Electrical shielding of the components of the communication system is typically provided to prevent signal interference. For example, electrical shielding is provided using a receptacle housing or cage that provides shielding around the module cavity that receives the pluggable module. Gaskets are provided in the opening to interface with the pluggable module. Such shielding provides shielding around the outside of the pluggable module but the pluggable module is still susceptible to EMI leakage through unshielded portions of the pluggable module itself. For example, EMI leakage may occur at the seam between the upper shell and the lower shell of the body of the pluggable module.

Accordingly, there is a need for a pluggable module having sufficient EMI shielding.

BRIEF DESCRIPTION OF THE INVENTION

In one embodiment, a pluggable module is provided including a pluggable body extending between a front end and a mating end receivable in a module cavity of a receptacle assembly to mate with a communication connector. The pluggable body has a top, a bottom, a first side wall and a second side wall between the top and the bottom and has an upper shell defining the top and a lower shell defining the bottom coupled together at a seam. A communication circuit board is held in the pluggable body and exposed at the mating end where the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly. A seam cover is coupled to the pluggable body at the first side wall covering the seam between the upper shell and the lower shell on the first side wall. The seam cover is conductive and provides EMI shielding at the seam for the communication circuit board.

In another embodiment, a pluggable module is provided including a pluggable body extending between a front end and a mating end receivable in a module cavity of a receptacle assembly to mate with a communication connector. The pluggable body has a top, a bottom, a first side wall and a second side wall between the top and the bottom and has an upper shell defining the top and a lower shell defining the bottom coupled together at a seam. The upper shell has an upper pocket in the upper shell along the first side wall and the lower shell having a lower pocket in the lower shell along the first side wall aligned with the upper pocket. A communication circuit board is held in the pluggable body and exposed at the mating end where the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly. A seam cover is received in the upper pocket and the lower pocket and spanning across the seam between the upper shell and the lower shell on the first side wall. The seam cover is conductive and provides EMI shielding at the seam for the communication circuit board.

In a further embodiment, a pluggable module is provided including a pluggable body extending between a front end and a mating end receivable in a module cavity of a receptacle assembly to mate with a communication connector. The pluggable body has a top, a bottom, a first side wall and a second side wall between the top and the bottom and has an upper shell defining the top and a lower shell defining the bottom coupled together at a seam. A communication circuit board is held in the pluggable body and exposed at the mating end where the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly. A seam cover is coupled to the pluggable body at the first side wall covering the seam between the upper shell and the lower shell on the first side wall. The seam cover includes a conductive tape having a conductive layer and an adhesive layer applied to the upper shell and the lower shell to span the seam. The conductive layer provides EMI shielding at the seam for the communication circuit board.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front perspective view of a communication system in accordance with an embodiment.

FIG. **2** is a front perspective view of a pluggable module of the communication system in accordance with an exemplary embodiment.

FIG. **3** is a rear perspective view of the pluggable module in accordance with an exemplary embodiment.

FIG. **4** is a rear perspective view of the pluggable module in accordance with an exemplary embodiment.

FIG. **5** is a perspective view of the pluggable module in accordance with an exemplary embodiment.

FIG. **6** is a perspective view of the pluggable module in accordance with an exemplary embodiment.

FIG. **7** is a perspective view of the pluggable module in accordance with an exemplary embodiment.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** is a front perspective view of a communication system **100** in accordance with an embodiment. The communication system **100** includes a circuit board **102**, a receptacle assembly **104** mounted to the circuit board **102**, and a pluggable module **106** that is configured to be received in the receptacle assembly **104**. The circuit board **102** may be a daughter card or a mother board and include conductive traces (not shown) extending therethrough. Optionally, the pluggable module **106** may be communicatively coupled to the receptacle assembly **104**, such as to a communication connector, to send and/or receive data signals with components of the communication system **100**.

The communication system **100** may be part of or used with telecommunication systems or devices. For example, the communication system **100** may be part of or include a switch, router, server, hub, network interface card, or storage

system. In the illustrated embodiment, the pluggable module **106** is configured to transmit data signals in the form of electrical signals. In other embodiments, the pluggable module **106** may be configured to transmit data signals in the form of optical signals. The circuit board **102** may be a daughter card or a mother board and include conductive traces (not shown) extending therethrough.

In the illustrated embodiment, the receptacle assembly **104** is illustrated as a single port receptacle assembly configured to receive a single pluggable module **106**; however, the receptacle assembly **104** may be a multi-port receptacle assembly in other embodiments configured to receive pluggable modules **106** in multiple ports. For example, the multiple ports of the receptacle assembly **104** may be ganged side-by-side and/or stacked in addition to, or alternative to, ganged ports.

The pluggable module **106** is an input/output (I/O) module configured to be inserted into and removed from the receptacle assembly **104**. For example, the pluggable module **106** may be a small form-factor pluggable (SFP) transceiver or quad small form-factor pluggable (QSFP) transceiver, such as those satisfying certain technical specifications for SFP or QSFP transceivers, such as Small-Form Factor (SFF)-8431. By way of example, the pluggable module **106** may be used in place of transceivers which are part of the SFP+ product family available from TE Connectivity.

The receptacle assembly **104** includes a cage member **108** that is mounted to the circuit board **102**. The cage member **108** may be arranged at a bezel or panel **109** of a chassis of the system or device, such as through an opening in the panel **109**. As such, the cage member **108** is interior of the device and corresponding panel **109** and the pluggable module(s) **106** is loaded into the cage member **108** from outside or exterior of the device and corresponding panel **109**. Optionally, the panel **109** may include a plurality of openings each configured to receive a corresponding pluggable module **106**. In other various embodiments, the opening in the panel **109** may be sized to receive multiple pluggable modules **106**, such as when a multi-port receptacle assembly **104** is used.

The cage member **108** includes a front end **110** and an opposite rear end **112**. The front end **110** may be provided at, and extend through an opening in, the panel **109**. Relative or spatial terms such as "front," "rear," "top," or "bottom" are only used to distinguish the referenced elements and do not necessarily require particular positions or orientations in the communication system **100** or in the surrounding environment of the communication system **100**. For example, the front end **110** may be located in or facing a back portion of a larger telecommunication system. In many applications, the front end **110** is viewable to a user when the user is inserting the pluggable module **106** into the receptacle assembly **104**. The pluggable module **106** is accessible to the user and viewable to the user when the pluggable module **106** is inserted into the receptacle assembly **104**.

The cage member **108** is configured to contain or block interference, such as electromagnetic interference (EMI), and guide the pluggable module(s) **106** during a mating operation. To this end, the cage member **108** includes multiple pieces assembled together to enclose the pluggable module **106**. For example, the pieces may be snap-fit together and/or welded together. When the cage member **108** is mounted to the circuit board **102**, the cage member **108** is electrically coupled to the circuit board **102** and, in particular, to ground planes (not shown) within the circuit board **102** to electrically ground the cage member **108**. As such, the receptacle assembly **104** may reduce EMI that may negatively affect electrical performance of the communication system **100**. The pluggable module **106** may be electrically commoned with or grounded to the cage member **108**, such as for EMI containment and/or shielding. For example, the pluggable module **106** may directly engage a portion of the cage member **108**, such as an EMI gasket at the opening to the cage member **108**.

In an exemplary embodiment, the cage member **108** includes a receptacle housing **114** defined by a plurality of housing panels or walls **116**, which may be formed from one or more pieces. The various walls **116** provide shielding for vulnerable areas of other components, such as by covering or shielding openings in walls of the other components. The receptacle housing **114** extends between the front end **110** and the rear end **112**. The walls **116** are formed from conductive material, such as sheet metal and/or a polymer having conductive particles. In the illustrated embodiment, the pieces are stamped and formed from sheet metal. In some embodiments, the cage member **108** is configured to facilitate airflow through the cage member **108** to transfer heat (or thermal energy) away from the receptacle assembly **104** and the pluggable module(s) **106**. The air may flow from inside the cage member **108** (for example, behind the panel **109**) to the external environment (for example, forward of the panel **109**) or from outside the cage member **108** into the interior of the cage member **108**. Fans or other air moving devices may be used to increase airflow through the cage member **108** and over the pluggable module(s) **106**.

The receptacle housing **114** defines a module cavity **120** extending between the front and rear ends **110**, **112**. The module cavity **120** receives the pluggable module **106**. The module cavity **120** extends lengthwise in a direction that is parallel to the plugging axis of the pluggable module **106**. For a multi-port receptacle assembly **104**, multiple module cavities **120** or ports are defined for receiving multiple pluggable modules **106**. In such embodiments, the module cavities **120** may be stacked vertically and/or ganged horizontally. Separator panels may be provided between the module cavities **120** to provide shielding between the module cavities **120**.

The receptacle assembly **104** includes a communication connector **122** (shown in phantom in FIG. **1**) having a mating interface **124** for mating with the pluggable module **106**. The communication connector **122** may have multiple mating interfaces when configured to mate with multiple pluggable modules **106**, such as when used in a stacked cage member. The communication connector **122** is disposed at the rear end of the module cavity **120**. In an exemplary embodiment, the communication connector **122** is provided at or near the rear end **112** of the cage member **108**. The communication connector **122** includes electrical contacts (not shown) that are configured to be mated with the pluggable module **106**. The communication connector **122** is configured to be mounted to the circuit board **102**. The communication connector **122** is configured to be received in the cage member **108** through a bottom **126** of the cage member **108**. For example, the cage member **108** is configured to be mounted to the circuit board **102** over the communication connector **122** such that the communication connector **122** passes through an opening in the bottom **126** as the cage member **108** is mounted to the circuit board **102**.

In an exemplary embodiment, the receptacle assembly **104** includes an EMI gasket **128** at the front end **110** of the receptacle housing **114**. The EMI gasket **128** interfaces with the panel **109**, such as within the opening in the panel **109** that receives the receptacle assembly **104**. The EMI gasket

128 may be one or more separate pieces, which may be attached to the receptacle housing 114, such as by clipping onto the receptacle housing 114, welding to the receptacle housing 114 or otherwise being secured to the receptacle housing 114. In other various embodiments, the EMI gasket 128 may be integral with the receptacle housing 114, such as being stamped and formed out of or extending from the walls 116 of the receptacle housing 114. The EMI gasket 128 may extend into the module cavity 120 to engage the pluggable module 106.

FIG. 2 is a front perspective view of the pluggable module 106 in accordance with an exemplary embodiment. FIG. 3 is a rear perspective view of the pluggable module 106 in accordance with an exemplary embodiment. FIG. 4 is another rear perspective view of the pluggable module 106 in accordance with an exemplary embodiment. The pluggable module 106 has a pluggable body 130, which may be defined by one or more shells. For example, in the illustrated embodiment, the pluggable body 130 includes an upper shell 140 and a lower shell 142. The pluggable body 130 may be thermally conductive and/or may be electrically conductive, such as to provide EMI shielding for the pluggable module 106. The pluggable body 130 includes a rear end or mating end 132 and an opposite front end 134. The mating end 132 is configured to be inserted into the module cavity 120 (shown in FIG. 1) for mating with the communication connector 122 (shown in FIG. 1). The front end 134 is typically a cable end having one or more cables 136 extending to another component within the system. The front end 134 is exposed forward of the panel 109 from the exterior of the receptacle assembly 104.

The pluggable body 130 includes a communication circuit board 138 held within the pluggable body 130, such as in a cavity 144 defined by the upper and lower shells 140, 142. The communication circuit board 138 is configured to be communicatively coupled to the communication connector 122 (shown in FIG. 1). The communication circuit board 138 may be accessible or exposed at the mating end 132. The cables 136 are terminated to the communication circuit board 138, such as directly or through a connector on the communication circuit board 138. The cables 136 may be copper wires transmitting electrical signals or may be fiber optic cables transmitting optical signals. The communication circuit board 138 has communication components (not shown) connected thereto for transmitting the signals between the cables 136 and the mating end of the communication circuit board 138. For example, the communication circuit board 138 may have conductors, traces, pads, electronics, optical modules, sensors, controllers, switches, inputs, outputs, and the like associated with the communication circuit board 138, which may be mounted to the communication circuit board 138, to form circuits and to control operation of the pluggable module 106.

The pluggable module 106 includes an outer perimeter defining an exterior of the pluggable body 130. The exterior extends between the mating end 132 and the front end 134 of the pluggable module 106. The exterior is defined by one or more surfaces of the pluggable body 130. For example, the exterior may be defined by a top 145, a bottom 146 and opposite first and second side walls 148, 149 of the pluggable body 130.

In an exemplary embodiment, the pluggable body 130 provides heat transfer for the communication circuit board 138, such as for the electronic components on the communication circuit board 138. For example, the communication circuit board 138 is in thermal communication with the pluggable body 130 and the pluggable body 130 transfers heat from the communication circuit board 138.

The upper and lower shells 140, 142 are coupled together to form the pluggable body 130. The upper shell 140 has an upper wall 150 and upper side walls 152 and the lower shell 142 has a lower wall 154 and lower side walls 156. The lower wall 154, the upper wall 150, the lower side walls 156 and the upper side walls 152 form the cavity 144. The side walls 152, 156 may be coupled together to form the pluggable body 130. For example, the side walls 152, 156 may meet at a seam 158 around the exterior. The side walls 152, 156 may have similar heights such that the seam 158 is approximately centered between the top 145 and the bottom 146. In an exemplary embodiment, the upper shell 140 and the lower shell 142 are die cast components manufactured from metal materials using dies or tools to cast the parts; however, the shells 140, 142 may be manufactured by other processes in alternative embodiments, such as molding, milling, machining, extruding, stamping, forming, and the like.

In an exemplary embodiment, the first and second side walls 148, 149 have pockets 160, 162, respectively. The pockets 160, 162 receive corresponding first and second seam covers 164, 166. FIG. 3 illustrates the first and second seam covers 164, 166 exploded from the pluggable body 130 and poised for mounting to the pluggable body 130. FIG. 4 illustrates the second seam cover 166 exploded from the pluggable body 130 and poised for mounting to the pluggable body 130. The seam covers 164, 166 cover portions of the seam 158 to provide EMI shielding for the seam 158. The seam covers 164, 166 are conductive and span across the seam 158. For example, an upper portion of each seam cover 164, 166 extends along the upper side walls 152 and a lower portion of each seam cover 164, 166 extends along the lower side walls 156. In an exemplary embodiment, the upper shell 140 includes upper pockets 168 along the side walls 148, 149 and the lower shell 142 includes lower pockets 169 along the side walls 148, 149 aligned with the upper pocket 168. The seam covers 164, 166 are received in the upper pockets 168 and the lower pockets 169 and span across the seam 158 between the upper shell 140 and the lower shell 142. Optionally, the pockets 160, 162 are deep enough such that the seam covers 164, 166 are flush with or recessed inward from the outer perimeter of the pluggable body 130 so as to not increase the width of the pluggable body 130. In alternative embodiments, the pluggable body 130 is provided without the pockets 160, 162, but rather the seam covers 164, 166 are attached to the outer perimeter of the pluggable body 130 and protrude outward from the outer perimeter.

In an exemplary embodiment, the seam covers 164, 166 are separate components from the pluggable body 130 (for example, manufactured separately) and coupled thereto. The seam covers 164, 166 may be secured to the pluggable body 130 by adhesive. In other various embodiments, the seam covers 164, 166 may be secured by other means, such as by welding, soldering, using fasteners, and the like. In an exemplary embodiment, the seam covers 164, 166 are conductive tapes having an adhesive layer 170 at an interior surface 172 thereof and a conductive layer 174 at an exterior surface 176 thereof. The interior surface 172 may face the pluggable body 130. Optionally, the interior surface 172 may directly engage the corresponding side wall 148, 149 and may be electrically connected to the side wall 148, 149.

In other various embodiments, the seam covers 164, 166 are a conductive foil, a conductive mesh, or another type of thin, planar conductive structure. In alternative embodi-

ments, rather than being a pre-shaped structure, the seam covers **164**, **166** may be a coating layer applied to the pluggable body **130**, such as in the pockets **160**, **162**. For example, the seam covers **164**, **166** may be a conductive gel or epoxy applied to the pluggable body **130** over the seam **158**. In other various embodiments, the seam covers **164**, **166** may be solder or weld material applied over the seam **158**. Optionally, the seam covers **164**, **166** may change at least one physical characteristic after application. For example, the seam covers **164**, **166** may be applied and then cure. The seam covers **164**, **166** may be applied and then harden. The seam covers **164**, **166** may be applied and then transform state, such as from liquid to solid. The seam covers **164**, **166** may be changed by application of heat, chemical reactants, ultraviolet light, and the like.

In an exemplary embodiment, the seam covers **164**, **166** cover a significant portion of the seam **158** along the side walls **148**, **149**. For example, the seam covers **164**, **166** may cover a majority of the seam **158** along the side walls **148**,**149**. The seam covers **164**, **166** may cover a majority of the entire seam **158**, such as along the top, at the rear end, and the like. Optionally, seam covers may be applied to other portions of the pluggable body **130** in addition to the side walls **148**, **149**. In the illustrated embodiment, the seam covers **164**, **166** are long continuous strips with one seam cover **164**, **166** at each side wall **148**, **149**. However, in alternative embodiments, multiple seam covers **164** may be provided at the first side wall **148** and/or multiple seam covers **166** may be provided at the second side wall **149**. The multiple seam covers **164**, **166** may overlap adjacent sections. Alternatively, the seam covers **164**, **166** may be separated from each other with short sections of the seam **158** exposed therebetween. For example, the side walls **148**, **149** may include multiple pockets **160**, **162** receiving corresponding seam covers **164**, **166**; however the side walls **148**, **149** may be thicker between the pockets **160**, **162** to add structural strength and rigidity to the side walls **148**, **149**.

FIG. **5** is a perspective view of the pluggable module **106** in accordance with an exemplary embodiment. The pluggable module **106** is similar to the embodiment shown in FIGS. **2-4**; however, in the illustrated embodiment, the pluggable module **106** does not include the pockets **160**, **162** (shown in FIGS. **3** and **4**). The seam covers **164**, **166** (shown in FIGS. **3** and **4**) are applied to the outer perimeter of the pluggable body **130** and protrude from the outer perimeter of the pluggable body **130**.

FIG. **6** is a perspective view of the pluggable module **106** in accordance with an exemplary embodiment. The pluggable module **106** is similar to the embodiment shown in FIGS. **2-4**; however, in the illustrated embodiment, the pluggable module **106** includes multiple seam covers **164** and multiple seam covers **166** (shown in FIGS. **3** and **4**). The seam covers **164** do not overlap in the illustrated embodiment; however, the seam covers **164** may overlap in alternative embodiments. Portions of the seams **158** are exposed between the seam covers **164**; however, such portions may be relatively short to limit the chance of or amount of EMI leakage through such exposed portions. Portions of the upper shell **140** and the lower shell **142** extend between the seam covers **164** to increase the strength and rigidity of the side walls **148**, **149**.

FIG. **7** is a perspective view of the pluggable module **106** in accordance with an exemplary embodiment. The pluggable module **106** is similar to the embodiment shown in FIGS. **2-4**; however, in the illustrated embodiment, the seam covers **164** are coating layers applied directly to the pluggable body **130** at the seam **158**. For example, the coating layers may be conductive epoxy, welding material, and the like. The seam covers **164** may be applied across the top **145** in addition to the side walls **148**, **149**.

It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-described embodiments (and/or aspects thereof) may be used in combination with each other. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from its scope. Dimensions, types of materials, orientations of the various components, and the number and positions of the various components described herein are intended to define parameters of certain embodiments, and are by no means limiting and are merely exemplary embodiments. Many other embodiments and modifications within the spirit and scope of the claims will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein." Moreover, in the following claims, the terms "first," "second," and "third," etc. are used merely as labels, and are not intended to impose numerical requirements on their objects. Further, the limitations of the following claims are not written in means-plus-function format and are not intended to be interpreted based on 35 U.S.C. § 112(f), unless and until such claim limitations expressly use the phrase "means for" followed by a statement of function void of further structure.

What is claimed is:

1. A pluggable module comprising:

a pluggable body extending between a front end and a mating end, the mating end being receivable in a module cavity of a receptacle assembly to mate with a communication connector, the pluggable body having a top, a bottom, a first side wall and a second side wall between the top and the bottom, the pluggable body having an upper shell defining the top and a lower shell defining the bottom, the upper shell being coupled to the lower shell at a seam, the pluggable body includes a pocket in the first side wall;

a communication circuit board held in the pluggable body and exposed at the mating end, wherein the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly; and

a seam cover coupled to the pluggable body and received in the pocket at the first side wall, the seam cover covering the seam between the upper shell and the lower shell on the first side wall, the seam cover being conductive and providing EMI shielding at the seam for the communication circuit board.

2. The pluggable module of claim **1**, wherein the seam cover comprises a conductive tape spanning the seam.

3. The pluggable module of claim **1**, wherein the seam cover includes an interior surface facing the pluggable body, the interior surface directly engaging the first side wall and being electrically connected to the first side wall.

4. The pluggable module of claim **1**, wherein the seam cover has a seam cover length, the seam along the first side wall having a seam length, the seam cover length being at least half the seam length.

5. The pluggable module of claim **1**, wherein a majority of the seam is covered by the seam cover.

6. The pluggable module of claim 1, wherein the pluggable body includes a second pocket in the second side wall, a second seam cover being received in the second pocket.

7. The pluggable module of claim 1, wherein the upper shell includes an upper pocket along the first side wall and the lower shell includes a lower pocket along the first side wall aligned with the upper pocket, the seam cover being received in the upper pocket and the lower pocket and spanning across the seam between the upper shell and the lower shell on the first side wall.

8. The pluggable module of claim 1, wherein the seam cover includes an interior surface facing the pluggable body and an opposite exterior surface, the exterior surface being flush with or recessed inward of the first side wall.

9. The pluggable module of claim 1, further comprising a second seam cover on the second side wall covering at least a portion of the seam at the second side wall.

10. The pluggable module of claim 1, wherein the seam cover is a first seam cover, the pluggable module further comprising at least a second seam cover coupled to the pluggable body at the first side wall separated from the first seam cover with a portion of the seam exposed between the first seam cover and the second seam cover.

11. The pluggable module of claim 1, wherein the seam cover includes a conductive layer and an adhesive layer, the adhesive layer being applied to the upper shell and the lower shell to secure the seam cover to the upper shell and the lower shell, the conductive layer providing EMI shielding at the seam for the communication circuit board.

12. The pluggable module of claim 1, wherein the seam cover comprises a coating layer applied in place over the seam.

13. The pluggable module of claim 1, wherein the seam cover changes at least one physical characteristic after application to the first side wall.

14. The pluggable module of claim 13, wherein the seam cover hardens in place over the seam.

15. A pluggable module comprising:

a pluggable body extending between a front end and a mating end, the mating end being receivable in a module cavity of a receptacle assembly to mate with a communication connector, the pluggable body having a top, a bottom, a first side wall and a second side wall between the top and the bottom, the pluggable body having an upper shell defining the top and a lower shell defining the bottom, the upper shell being coupled to the lower shell at a seam, the upper shell having an upper pocket in the upper shell along the first side wall, the lower shell having a lower pocket in the lower shell along the first side wall aligned with the upper pocket;

a communication circuit board held in the pluggable body and exposed at the mating end, wherein the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly; and

a seam cover received in the upper pocket and the lower pocket and spanning across the seam between the upper shell and the lower shell on the first side wall, the seam cover being conductive and providing EMI shielding at the seam for the communication circuit board.

16. The pluggable module of claim 15, wherein the seam cover comprises a conductive tape spanning the seam.

17. The pluggable module of claim 15, wherein the seam cover includes an interior surface facing the pluggable body, the interior surface directly engaging the first side wall and being electrically connected to the first side wall.

18. The pluggable module of claim 15, wherein the seam cover includes an interior surface facing the pluggable body and an opposite exterior surface, the exterior surface being flush with or recessed inward of the first side wall.

19. A pluggable module comprising:

a pluggable body extending between a front end and a mating end, the mating end being receivable in a module cavity of a receptacle assembly to mate with a communication connector, the pluggable body having a top, a bottom, a first side wall and a second side wall between the top and the bottom, the pluggable body having an upper shell defining the top and a lower shell defining the bottom, the upper shell being coupled to the lower shell at a seam;

a communication circuit board held in the pluggable body and exposed at the mating end, wherein the pluggable body is configured to be plugged into the receptacle assembly such that the communication circuit board is communicatively coupled to the communication connector of the receptacle assembly; and

a seam cover coupled to the pluggable body at the first side wall covering the seam between the upper shell and the lower shell on the first side wall, the seam cover comprising a conductive tape having a conductive layer and an adhesive layer applied to the upper shell and the lower shell to span the seam, the conductive layer providing EMI shielding at the seam for the communication circuit board.

20. The pluggable module of claim 19, wherein the pluggable body includes a pocket in the first side wall, the seam cover being received in the pocket.

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