

## IMPROVED INTERCONNECT ASSEMBLY STRUCTURES FOR HIGH-SPEED DATA TRANSMISSIONS

*Palo Alto Research Center Incorporated*

### Initial Bidding Guidance: Low to Mid 6 Figures

This portfolio is directed to improved interconnect assembly structures that facilitate high-speed data transmissions in a communication system. Printed circuit board (PCB) structures may be formed using: (i) low-loss dielectric materials, (ii) flexible cables that are integrated into the PCB structures and bent to provide a continuous, smooth curve between the coupled circuit boards, and (iii) cable-to-cable interface structures that are transparent to the transmitted signal waves. Also included are methods for transferring pre-fabricated micro spring structures and a relatively simple and reliable process for mounting the spring structures to produce flexible cables. The interconnect assembly structures can offer improved board-to-board transmission speeds of 40 gigabit per second (Gbit/s) or more, thus exceeding the maximum sustainable transmission speeds supported by conventional printed circuit interconnect arrangements.

**Forward Citing Companies:** Advantest Corp., Freescale Semiconductor, Hitachi, IBM, Nippon Express Co., Princo Corp, Samsung, Seagate, TE Connectivity Ltd., Teradyne

**Priority Date:** 12-19-2003

**Representative Claim:** US 6,966,784 – Claim #1

An interconnect assembly for transmitting high-speed signals between circuit structures in a communication system, the assembly comprising: a first flexible flat cable having a first end connected to a first circuit structure and a second end extending from the first circuit structure, wherein the first flexible flat cable includes a first flexible conductor having a free end exposed on the second end of the first flexible flat cable, wherein the exposed free end defines a first longitudinal direction, and wherein the first flexible flat cable further includes a ground plane that is separated from the first flexible flat conductor by a first insulating layer; a second flexible flat cable having a first end connected to a second circuit structure and a second end extending from the second circuit structure, the second flexible flat cable including a second flexible conductor having a free end exposed on the second end of the second flexible flat cable, wherein the exposed free end of the second conductor defines a second longitudinal direction, and wherein the second flexible flat cable further includes a ground plane that is separated from the second flexible flat conductor by a second insulating layer; and a connector apparatus for detachably coupling the first flexible flat cable to the second flexible flat cable such that the exposed free end of the first conductor is electrically coupled to the exposed free end of the second conductor, such that the ground plane of the first flexible flat cable is electrically coupled to the ground plane of the second flexible flat cable, and such that the first longitudinal direction is aligned with the second longitudinal direction.

#### Contact:

For more information on the assets available for sale in this portfolio, contact Paul Greco.

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#### TECHNOLOGY

CONNECTIVITY/  
NETWORKING EQUIPMENT

#### NOVELTY

IMPROVED CIRCUIT  
STRUCTURES IN A  
COMMUNICATION  
SYSTEM

#### IMPORTANCE

A VALUABLE PORTFOLIO  
FOR COMPANIES  
PROVIDING ELECTRONIC  
COMMUNICATION  
SYSTEMS AND  
NETWORKING EQUIPMENT

#### NUMBER OF ASSETS

9

#### PATENTS (9)

US 6,966,784  
US 7,121,859  
US 7,410,590  
US 7,985,081  
DE 602004041759.9  
EP 1544948  
FR 1544948  
GB 1544948  
JP 4874542