IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Request for *Ex Parte* Reexamination of:	Group Art Unit: Not Yet Assigned
U.S. Patent No. 8,232,766	Examiner: Not Yet Assigned
Inventor: Fischer, et al.	Customer No. 34313
Assignee: Fundamental Innovation Systems International LLC	Confirmation No.: Not Yet Assigned
Filed: July 1, 2011	
Issued: July 31, 2012	
For: **Multifunctional Charger System and Method**	

REQUEST FOR *EX PARTE* REEXAMINATION OF UNITED STATES PATENT NO. 8,232,766

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TABLE OF EXHIBITS

List of Exhibits

The Exhibits to the present Request are arranged in four groups: prior art ("PA"), relevant patent prosecution file history (including patents) ("PAT"), claim charts ("CC"), and other documents ("OTH")

A. PRIOR ART (PA)

PA-SB/08A	USPTO Form SB/08A
PA-A	U.S. Patent No. 6,904,488 ("Matsumoto")
PA-B	China Patent No. CN2410806Y ("Yang") and Certified Translation.
PA-C	U.S. Patent No. 7,766,698 ("De Iuliis")
PA-D	Japan Patent Application Publication No. 2000-165513A ("Morita") and Certified Translation
PA-E	U.S. Patent No. 7,360,004 ("Dougherty")
PA-F	U.S. Patent No. 6,625,738 ("Shiga")
PA-G	U.S. Provisional Application No. 60/345,252 ("De Iuliis Provisional")
PA-H	Universal Serial Bus Specification 2.0
PA-I	U.S. Patent No. 6,184,652 ("Yang '652")
PA-J	USB Serial Bus Specification 1.1

B. RELEVANT PATENT MATERIALS (PAT)

PAT-A	U.S. Patent No. 8,232,766 ("'766 Patent")
PAT-B	File History for the '766 Patent
PAT-C	U.S. Provisional Patent Application No. 60/273,021 ("'021 Provisional")
PAT-D	U.S. Provisional Patent Application No. 60/330,486 ("'486 Provisional")

C. CLAIM CHARTS (CC)

CC-A	Claim Chart demonstrating substantial new question of patentability for Claims 1-6, 9-14, and 17-21 based on Matsumoto in view of Yang.

CC-B Claim Chart demonstrating substantial new question of patentability for Claims 1-5, 9-13, and 17-20 based on Matsumoto in view of De Iuliis.

CC-C Claim Chart demonstrating substantial new question of patentability for Claims 1-2, 4-6, 8-10, 12-14, 16-21, and 23 based on Morita in view of Shiga

CC-D Claim Chart demonstrating substantial new question of patentability for Claims 1-2, 4-10, and 12-23 based on Dougherty in view of Shiga.

D. OTHER DOCUMENTS (OTH)

OTH-A Declaration of R. Jacob Baker, Ph. D.

OTH-B *Fundamental Innovation Systems International LLC v. LG Electronics, Inc., et al.*, Case No. 2:16-cv-01425 (E.D. Texas), Dkt. No. 123 (Plaintiff FISI's Opening Claim Construction Brief).

OTH-C *Fundamental Innovation Systems International LLC v. LG Electronics, Inc., et al.*, Case No. 2:16-cv-01425 (E.D. Texas), Dkt. No. 146 (Claim Construction Memorandum and Order).

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Dear Sir:

Pursuant to 35 U.S.C. §§ 302 *et seq.* and 37 C.F.R. § 1.510, the anonymous requestors ("Requestors") hereby request *ex parte* reexamination of United States Patent No. 8,232,766 ("The '766 Patent."). The undersigned is counsel of record and represents that he is authorized to act in a representative capacity for Requestors under 37 C.F.R. § 1.34.

I. INTRODUCTION

The '766 Patent discloses "Multifunctional Charger System and Method." Ex. PAT-A ('766 Patent) at Title. Specifically, the claims cover a "mobile device" that can be used with the disclosed "Charger System," which comprises an adapter for powering the mobile device from a

wall outlet or other power source. The mobile device comprises a "charging subsystem" that can draw current from the charger in response to an "abnormal USB data condition" that is detected on the data lines of the USB connector. *See id.*, Claims 1 and 9. The '766 Patent explains that this "abnormal USB data condition" can be used to distinguish between the charger/adapter and a different type of USB device.

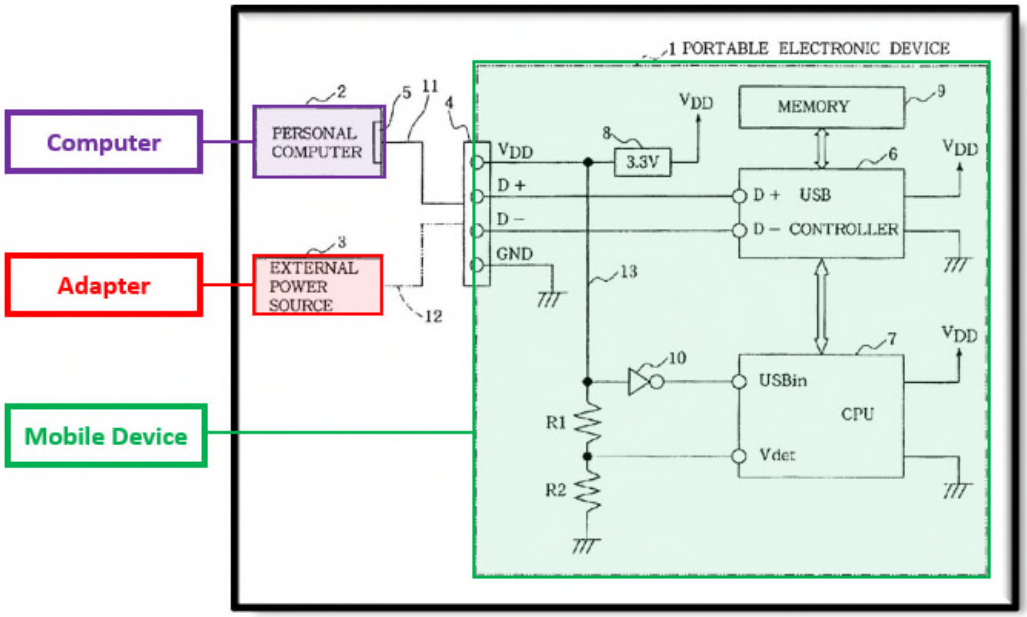
There is no dispute that USB devices were capable of drawing power through a USB connection as of the priority date of the '766 Patent (2001). Indeed, one of the touted benefits of the USB standard is that USB connectors are capable of exchanging both data and power across a USB connection. But the '766 Patent claims that, at the time, there were no USB adapters that simply provided power from a wall outlet or other power source through a USB connection. The '766 Patent explains that this was because such adapter devices would not comply with the USB Specification which required, among other things, that a USB devices (1) engage in a specific handshaking protocol called "enumeration" before supplying/drawing power to/from each other and (2) require that power be supplied/drawn under specific conditions/limitations (*e.g.*, allowing only certain amounts of current, at certain times, in certain directions). *See e.g.*, *id.* at 1:66-2:3 ("In accordance with the USB specification, typical USB power source devices, such as hubs and hosts, require that a USB device participate in a host-initiated process called enumeration in order to be compliant with the current USB specification in drawing power from the USB interface.") Drawing power from a USB adapter (as opposed to a USB compliant host or hub) would generally require disregarding the conditions/limitations of the USB Specification.

Accordingly, the '766 Patent teaches that the mobile device will comprise a USB connector (which includes a power (VBUS) line, ground line, and two data lines) and will draw current through the USB connection unrestricted by at least one condition/limitation in the USB Specification (Claims 9 & 10). The '766 Patent also teaches that, in order to supply current in a

manner that is outside the USB Specification, the adapter and the device it is charging will require means to recognize when the device is connected to the adapter (as opposed to a typical USB host or hub, e.g., a computer). The '766 Patent claims that this can be done using an "abnormal USB data condition," *i.e.*, a condition that the devices would not typically expect during normal USB enumeration/operation. (Claims 1 and 9). This "abnormal" condition allows the devices to distinguish between a connection to a typical USB devices/operation (which would require compliance with the USB Specification) and a connection to an adapter (which would just involve powering the device). As patentee has noted in prior litigation, the "abnormal USB data condition" "need not be defined as illegal or invalid by USB 2.0, it only needs to be one that is not expected from a USB hub/host, *i.e.,* that the USB specification does not define as valid or legal." OTH-B (*Fundamental Innovation Systems International, LLC v. LG Electronics, Inc. et al*, Case No. 2:16-cv-01425 (E.D. Tex.) at Dkt. No. 123 (FISI Opening Claim Construction Brief)) at 10.

The Challenged Claims of the '766 Patent are obvious because, as of the priority date of the '766 Patent, charging a device through a USB connection using a USB adapter was known and obvious. Moreover, it was further known and obvious that such adapters/devices (1) would supply/draw current in a way that was inconsistent with the USB specification (e.g., at an improper time, in an incorrect amount, or in an incorrect direction) and (2) would require means for distinguishing between a typical USB connection and a connection to a USB adapter.

U.S. Patent No. 6,904,488 (Matsumoto), for example, discloses a system and method for implementing USB devices and associated power adapters. Ex. PA-A (Matsumoto), Abstract. Specifically, Matsumoto teaches "portable electronic devices" (mobile devices) that can be charged through a USB port by connecting the device to either (1) a computer or (2) an adapter. *Id.*



Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)); *id.*, 3:41-47 ("FIG. 1 shows a portable electronic device 1 of the invention, which has a USB connector 4. A USB connector 5 of a personal computer 2 serving as a host can be connected to the USB connector 4 by a USB cable 11, or an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12.").

Like the '766 Patent, Matsumoto teaches that the mobile device should be able to determine when it is connected to the adapter (as opposed to the computer) and thus, discloses using "discriminating means" for distinguishing between the two power sources. *Id.*, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."). Also like the '766 Patent, Matsumoto discloses that, once the discriminating means determine that the mobile device is attached to an adapter, it will charge the device while avoiding the typical USB enumeration and communication process. *Id.* at 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source,

or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.")

Moreover, each of CN2410806Y (Yang) and US Patent No. 7,766,698 (De Iuliis) discloses an adapter that can supply current to a mobile device through a USB connection and that can be recognized as an adapter (as opposed to typical USB device) because of an "abnormal USB data condition." Yang, for example, discloses an adapter that can be connected to various power supplies (*e.g.*, a wall outlet or a car socket) and provide power to a mobile device through, for example, a USB connection. Yang teaches that the charger comprises two pull-up resistors on the data lines in the USB connection, which is abnormal for a USB device. This results in a high/high (or "SE1") signal on those data lines at attachment, which is an "abnormal USB data condition" that can be used to distinguish the adapter of Yang from typical USB devices.

De Iuliis also discloses a USB adapter that can be connected to a wall outlet and provide power to a mobile device through a USB connection. De Iuliis, however, discloses that the adapter maintains an SE0 signal (low/low signal) on the data lines for an extended period of time even after the devices have been connected. Maintaining an SE0 signal for that period of time is also not a valid USB data condition when connecting devices (the USB specification indicates that connected devices must apply voltage to one of the data lines (i.e., either high/low or low/high) within 100ms of the devices being connected to signal an "attachment"). Accordingly, De Iuliis also discloses using an "abnormal USB data condition" that can be used to distinguish the adapter from a typical USB device.

U.S. Patent No. 6,625,738 ("Shiga") also discloses means for powering devices using abnormal USB data conditions. Specifically, Shiga discloses that a USB peripheral device such as a keyboard can be implemented with a power-on and power-off switch to turn a host device

on and off without having to physically access the host device. Shiga, Abstract. The disclosed peripheral keyboard instructs the host computer to power-on or power-off using extended SE1 signals and SE0 signals, respectively. *Id.* at 2:4-8 ("There has been a demand for adding value to such computers connected with the USB interface by providing a function that the USB does not have, that is, by providing a key called a power-on key, which allows the host computer to be started by a key input operation at a keyboard."); *id.* at 7:46-55 ("When a predetermined key on the keyboard 11 is operated . . . the main power is turned off."). Once the host is powered on in response to the abnormal USB data condition, it will draw power from any adapter it is connected to.

Morita and Dougherty, for example, each disclose adapters that can be used in conjunction with a peripheral keyboard like the one disclosed in Shiga (i.e., the adapters provide both (1) a connection to a wall outlet for power and (2) additional USB connections for peripheral devices (e.g., mouse and keyboard)). In such systems, Shiga teaches that the peripheral keyboard can be used to power-on a docked device (*e.g.*, a laptop computer) by sending an extended SE1 signal to the dock which, in turn, sends the SE1 signal to the host device. In response, the host device is powered on and starts drawing current from the dock. Accordingly, these references also disclose adapters (docks) that power USB powered devices in response to abnormal USB data conditions.

As discussed in more detail herein, these references raise substantial new questions of patentability as to Claims 1-23 of the '766 Patent. Accordingly, Requestors request that the examiner institute reexamination of those claims.

II. REQUIREMENTS FOR *EX PARTE* REEXAMINATION UNDER 37 C.F.R. § 1.510

Pursuant to 37 C.F.R. § 1.510, this request satisfies each requirement for *ex parte* reexamination of the '766 Patent.

A. Payment of Fees (37 C.F.R. § 1.510(a))

Requestors authorize the Patent Office to charge Deposit Account No. 15-0665 for the fee set forth in 37 CFR § 1.20(c)(1) for reexamination. The fee for reexamination is **$12,600**. Requestors further authorize the Patent Office to charge Deposit Account No. 15-0665 for any other fees necessary in connection with this request for reexamination.

B. Statement Pointing out Each Substantial New Question of Patentability (37 C.F.R. § 1.510(b)(1))

The '766 Patent Application was filed on July 1, 2011. It claims priority to two provisional applications: (1) Provisional Application No. 60/273,021, filed on March 1, 2001 and (2) Provisional Application No. 60/330,4846, filed on October 23, 2001. As explained herein, however, the challenged claims are entitled only to a priority date of October 23, 2001 because the substance of the challenged claims is not disclosed in the March 2, 2001 provisional application. Pre-AIA 35 U.S.C. section 102 applies to the '766 Patent.

As set forth below, substantial new questions of patentability exist as to Claims 1-23 of the '766 Patent in view of the following references.

1. **Exhibit PA-A**: U.S. Patent No. 6,904,488 ("Matsumoto"): Matsumoto is a patent titled "Portable Electronic Device Comprising Common Serial Bus Connector." The Matsumoto application was filed on December 21, 2000 and published on June 28, 2001. The Matsumoto patent issued on June 7, 2005. Matsumoto constitutes prior art to the '766 Patent under at least pre-AIA 35 U.S.C. §§ 102(a) and (e).

2. **Exhibit PA-B**: China Patent No. CN2410806Y ("Yang"): Yang is a Chinese Patent titled "Mobile Phone Charger with Multiple Power Supply Inputs." The Yang application was filed on December 2, 1999 and issued on December 13, 2000. Yang constitutes prior art to the '766 Patent under at least pre-AIA 35 U.S.C. § 102(a).

3. **Exhibit PA-C**: U.S. Patent No. 7,766,698 ("De Iuliis"): De Iuliis is a patent titled "Power Adapters for Powering and/or Charging Peripheral Devices." The De Iuliis application was filed on January 26, 2007 and claims priority to U.S. Provisional Application No. 60/345,252, which was filed on October 22, 2001. De Iuliis constitutes prior art to the '766 Patent under pre-AIA 35 U.S.C §§ 102(a) and (e).

4. **Exhibit PA-D**: Japan Patent Application Publication No. 2000-165513 ("Morita"): Morita is a Japanese Patent titled "Charger." Morita was published on June 16, 2000. Morita constitutes prior art to the '766 Patent under at least pre-AIA 35 U.S.C. §§ 102(a) and (b).

5. **Exhibit PA-E**: U.S. Patent No. 7,360,004 ("Dougherty"): Dougherty is a patent titled "Powering a Notebook Across a USB Interface." The Dougherty application was filed on September 30, 2003. It claims priority to U.S. Patent Application No. 09/608,802, which was filed on June 30, 2000. Dougherty constitutes prior art to the '766 Patent under at least pre-AIA 35 U.S.C. §§ 102 (a) and (e).

6. **Exhibit PA-F**: U.S. Patent No. 6,625,738 ("Shiga"): Shiga is a patent titled "USB Apparatus That Turns On Computer Power Supply Using Signals Substantially Longer Than Information Conveying Pulse Widths When Predetermined Operation Is Performed on Input Device." The Shiga application was filed on December 6, 1999. Shiga constitutes prior art to the '766 Patent under at least pre-AIA 35 U.S.C. §§ 102 (a) and (e).

7. **Exhibits PA-G** through **PA-J** are various patent documents and publications that were all filed or published prior to the priority date of the '766 Patent and thus constitute prior art under at least 35 U.S.C. §§ 102(a).

C. Identification of Claims for Reexamination and Detailed Explanation of the Pertinency and Manner of Applying Prior Art to Requested Claims (37 C.F.R. § 1.510(b)(2))

Requestors Request reexamination of Claims 1-23 of the '766 Patent on the following grounds:

1. Matsumoto, when considered in view of Yang and the knowledge of those skilled in the art, renders obvious Claims 1-6, 9-14, and 17-21 under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Matsumoto in view of Yang to Claims 1-6, 9-14, and 17-21 is attached hereto as **Exhibit CC-A**.

2. Matsumoto, when considered in view of De Iuliis and the knowledge of those skilled in the art, renders Claims 1-5, 9-13, and 17-20 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Matsumoto in view of De Iuliis to Claims 1-5, 9-13, and 17-20 is attached hereto as **Exhibit CC-B**.

3. Morita, when considered in view of Shiga and the knowledge of those skilled in the art, renders Claims 1-2, 4-6, 8-10, 12-14, 16-21, and 23 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Morita in view of Shiga to Claims 1-2, 4-6, 8-10, 12-14, 16-21, and 23 is attached hereto as **Exhibit CC-C**.

4. Dougherty, when considered in view of Shiga and the knowledge of those skilled in the art, renders Claims 1-2, 4-10, and 12-23 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Dougherty in view of Shiga to Claims 1-2, 4-10, and 12-23 is attached hereto as **Exhibit CC-D**.

In addition to the disclosures in Exhibits **CC-A** through **CC-D**, a detailed explanation of the pertinency and manner of applying the prior art cited above to the claims for which reexamination is requested is provided in **Section IV** below.

D. Copies Prior Art and Translations (37 C.F.R. § 1.510(b)(3))

Requestors have attached a copy of each prior art patent and printed publication, including translation of foreign patents and publications, relied upon in this Request as **Exhibits PA-A** through **PA-J**.

E. Copy of U.S. Patent No. 9,451,161 (37 C.F.R. § 1.510(b)(4))

Requestors have attached a copy of the '766 Patent as **Exhibit PAT-A** and a copy of the file history of the '766 Patent as **Exhibit PAT-B**.

F. Certification of Service on Patent Owner (37 C.F.R. § 1.510(b)(5))

The undersigned certifies that a complete and entire copy of this request for *ex parte* reexamination and all supporting documents have been provided to the Patent Owner by serving the attorneys of record at the Patent Office for the '766 Patent as set forth in 37 C.F.R. § 1.33(c):

Richard Botos
Botos Churchill IP Law LLP
430 Mountain Avenue, Suite 401
New Providence, NJ 07974

G. Certification That Estoppel Does Not Apply (37 C.F.R. § 1.510(b)(6))

The undersigned certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(1) do not prohibit Requestors from filing this *ex parte* reexamination request.

H. Representative Capacity (37 C.F.R. § 1.510(f))

The undersigned is counsel of record and represents that he is authorized to act in a representative capacity for Requestors under 37 C.F.R. § 1.34.

III. OVERVIEW OF THE '766 PATENT AND RELEVANT PRIOR ART

A. USB Specification

The Universal Serial Bus (USB) Specification is a standardized data and power connection for connecting electronic devices. Baker Decl., ¶ 47. Revision 1.1 of the USB Specification was

published by the USB Implementers Forum, Inc. on September 23, 1998. Ex. PA-J; Baker Decl., ¶ 47. It is prior art to the '766 Patent under at least 35 U.S.C. §§ 102(a) and (b). Revision 2.0 of the Specification ("USB 2.0") was published on April 27, 2000. Ex. PA-H; Baker Decl., ¶ 48. It is prior art to the challenged claims of the '766 Patent under at least 35 U.S.C. §§ 102(a) and (b).

Moreover, because the '766 Patent incorporates the conditions and limitations of the USB Specification, a person of ordinary skill in the art to which the '766 Patent claims are directed would have been knowledgeable about the USB Specifications. Baker Decl., ¶ 48.

1. Configuration of a USB Network

Figure 4-1, below, shows the bus topology for a USB system. Generally, each USB network requires a "host" with a "root hub" for purposes of communication. USB 2.0 at 16. Without such a hub, there will be no communication among the devices. Baker Decl., ¶ 49. For example, connecting, Hub 1 to a node (a node is a connected device, also called a "function") or Hub 2 without connecting Hub 1 to the Host via the Root Hub will not result in a functioning/communicating, USB system. Baker Decl., ¶ 50.

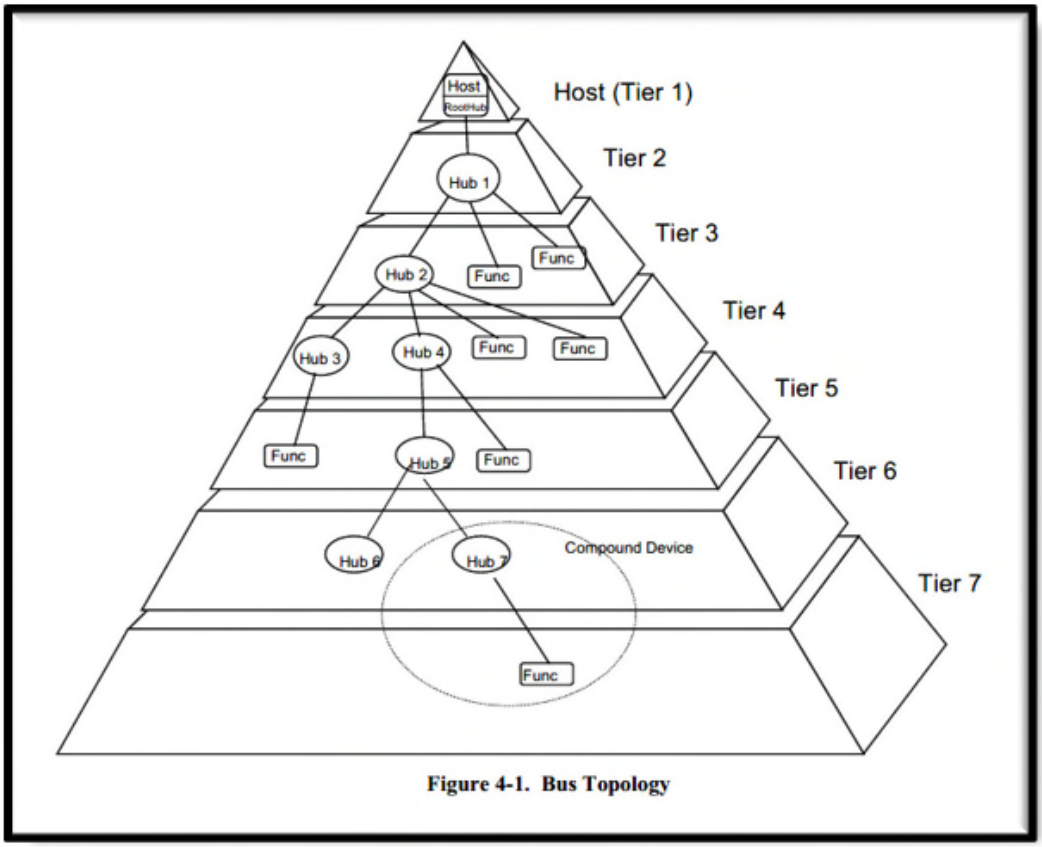


Figure 4-1. Bus Topology

USB 2.0 at 16.

The device acting as the host must have certain functionality. Baker Decl., ¶ 51. It must, for example, have a CPU and a USB Controller for controlling the connected hubs and devices. USB 2.0 at 6 ("Host" means "The host computer system where the USB Host Controller is installed. This includes the host hardware platform (CPU, bus, etc.) and the operating system in use.") (emphasis added); USB 2.0 at 27 (Section 5.2.1 USB Host) ("The USB host occupies a unique position as the coordinating entity for the USB. In addition to its special physical position, the host has specific responsibilities with regard to the USB and its attached devices. The host controls all access to the USB. A USB device gains access to the bus only by being granted access by the host. The host is also responsible for monitoring the topology of the USB.") (emphasis added).

Generally, the USB Specification instructs that a USB device (*i.e.*, node or function) is plugged into a port on a hub using a cable. The cable is connected between a USB connector on a USB device and a USB connector on a host or hub.

Figure 4-4 illustrates how hubs provide connectivity in a typical computer environment.

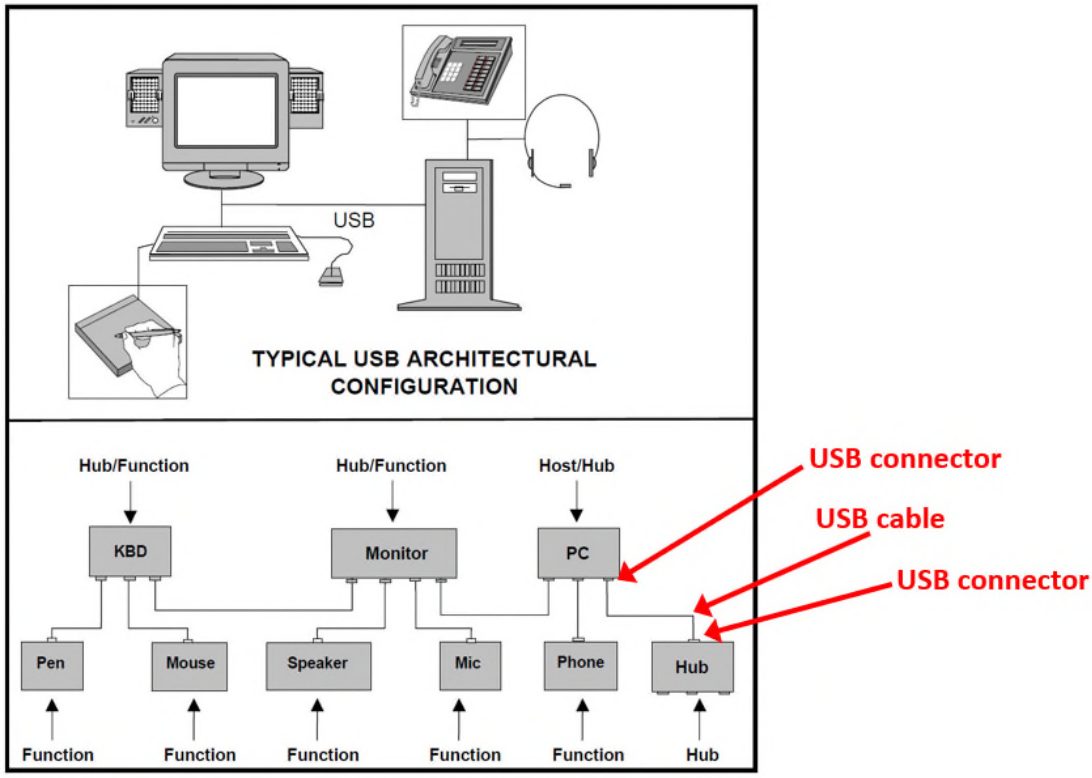


Figure 4-4. Hubs in a Desktop Computer Environment

USB 2.0 at 23 (annotated); Baker Decl., ¶ 52.

The USB Specification defines ports that are facing the direction of a host as "Upstream" ports. USB 2.0 at 10 ("Upstream" means "The direction of data flow towards the host. An upstream port is the port on a device electrically closest to the host that generates upstream data traffic from the hub. Upstream ports receive downstream data traffic."); *id.* at 298 (Section 11.1.2.1 Packet Signaling Connectivity) ("Upstream connectivity is defined as being towards the host, and downstream connectivity is defined as being towards the device."). In contrast, the USB Specification defines ports that are facing away from the host device to be "Downstream" Ports. *Id.* at 5 ("Downstream" means "[t]he direction of data flow from the host or away from the host. A

downstream port is the port on a hub electrically farthest from the host that generates downstream data traffic from the hub. Downstream ports receive upstream data traffic.")

2. Configuration of USB Connectors

The USB Specification teaches a person of ordinary skill in the art how to implement USB Connectors, which require four contacts: A power contact (V_{BUS}), a ground contact (Gnd), and two data lines (D+ and D-):

Table 6-1. USB Connector Termination Assignment

Contact Number	Signal Name	Typical Wiring Assignment
1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black
Shell	Shield	Drain Wire

USB 2.0 at 94.

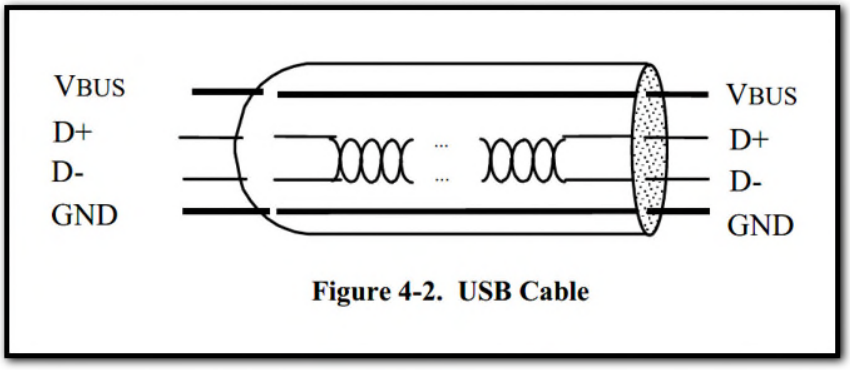


Figure 4-2. USB Cable

USB 2.0 at 17.

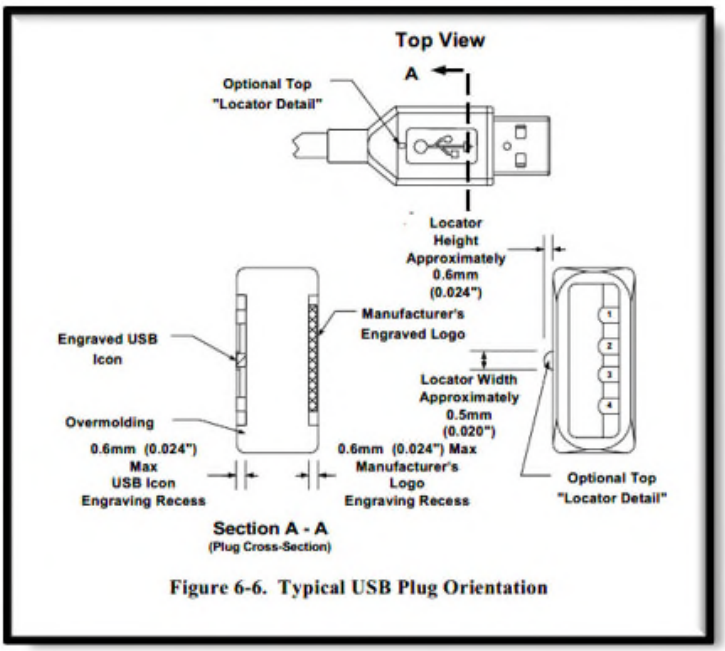


Figure 6-6. Typical USB Plug Orientation

USB 2.0 at 93.

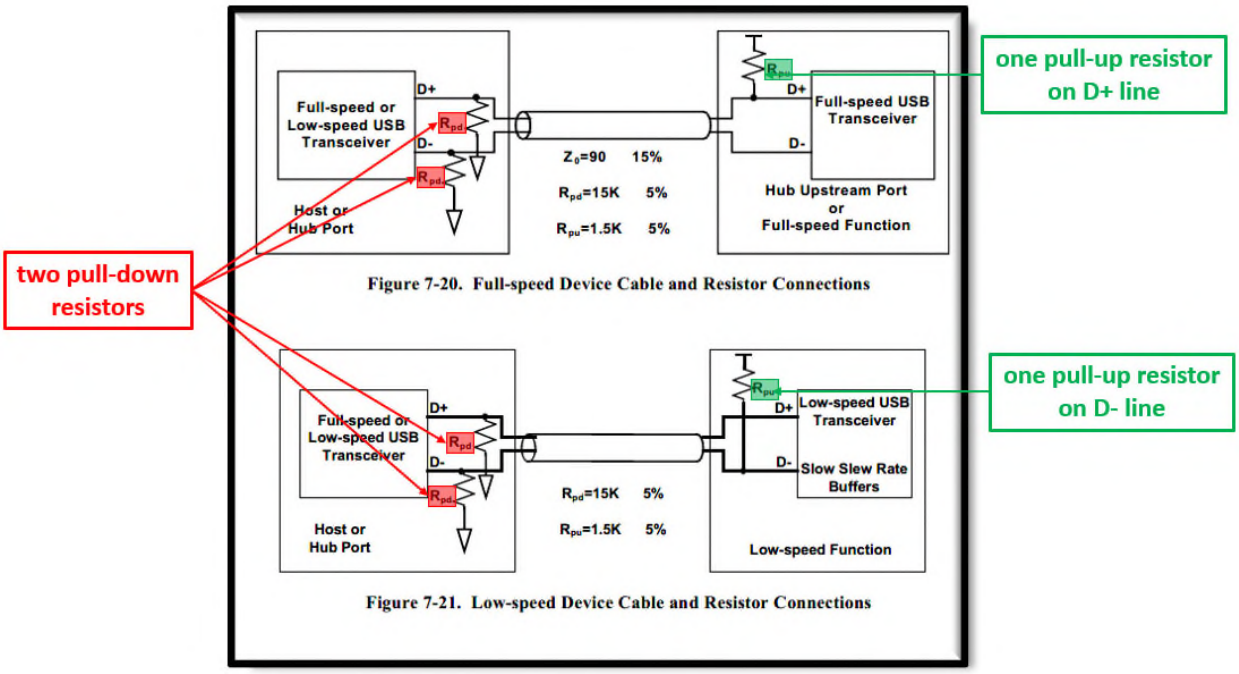
A person of ordinary skill in the art would thus have understood that a device with a USB connector comprises at least four lines: a VBUS (power/voltage line), a D+ line, a D- line, and a ground line. Baker Decl., ¶ 54.

3. USB Specification for Communicating Between Devices.

The USB Specification also dictates how USB devices in a USB network can communicate with each other. In order for a host or hub to communicate with a function (device), it must first determine whether the device is a low-speed device, a full-speed device, or a high-speed device. Baker Decl., ¶ 55. Low-speed devices communicate at 1.5 Mb/s, full-speed devices communicate at 12 Mb/s, and high-speed devices communicate at 480 Mb/s. USB 2.0 at 6-7 and 17.

A device indicates whether it is a hub, a low-speed device, or a full-/high-speed device using termination resistors within the device. USB 2.0 at 242 ("The speed selection for low- and full-speed is determined by the device termination resistors."); Baker Decl., ¶ 56. Specifically, USB hubs and hosts have two pull-down resistors attached to the data lines of a downstream port; full-

speed and high-speed devices (and upstream hub ports) have one pull-up resistor attached to the D+ line; and low-speed devices have one pull-up resistor on the D- line. USB 2.0 at 141 (Section 7.1.5.1 Low-/Full-Speed Device Speed Identification) ("The USB is terminated at the hub and function ends as shown in Figure 7-20 and Figure 7-21. Full-speed and low-speed devices are differentiated by the position of the pull-up resistor on the downstream end of the cable: Full-speed devices are terminated as shown in Figure 7-20 with the pull-up resistor on the D+ line. Low-speed devices are terminated as shown in Figure 7-21 with the pull-up resistor on the D- line.").

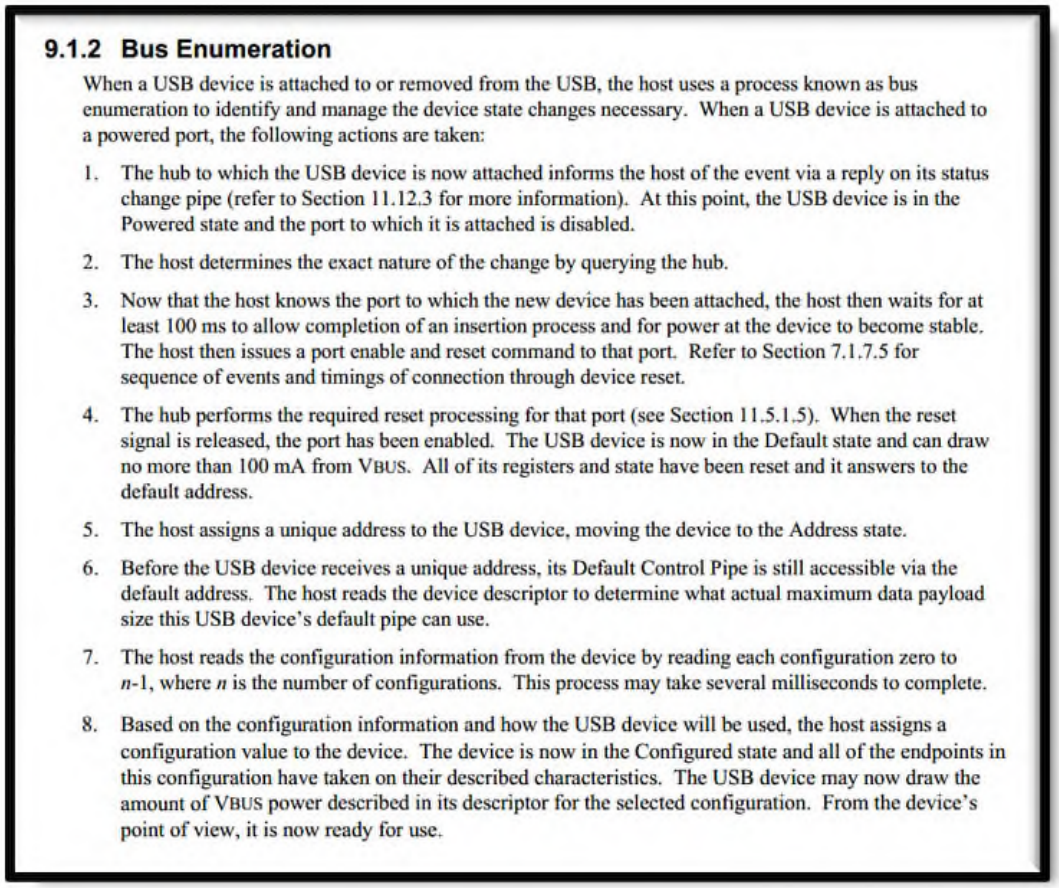


USB 2.0 at Figures 7-20 and 7-21 (annotated) (showing that typical USB hubs and hosts will have two pull down resistors and typical USB functions/devices will have one pull-up resistor to signal either low-speed or full-speed). Baker Decl., ¶ 56. Accordingly, prior to enumeration, full-speed devices and upstream hub ports will signal a default (idle) high/low on the D+/D- lines and low-speed devices will signal a default (idle) low/high signal on the D+/D- lines. Baker Decl., ¶ 57. When no pull-up resistor is present on D+ and/or D- lines and no voltage has been applied to the VBUS line, it signals that no device is connected:

D+	D-	Port configuration
Low	Low	No device connected
High	Low	Full-speed
Low	High	Low-speed

Baker Decl., ¶ 57.

Once the devices have been connected, they must undergo a process called enumeration. USB 2.0 at 243 ("When a USB device is attached to or removed from the USB, the host uses a process known as bus enumeration to identify and manage the device state changes necessary."). Enumeration involves a number of steps and states, during which the device is configured and assigned an address. *Id.* at 243-244.



9.1.2 Bus Enumeration

When a USB device is attached to or removed from the USB, the host uses a process known as bus enumeration to identify and manage the device state changes necessary. When a USB device is attached to a powered port, the following actions are taken:

1. The hub to which the USB device is now attached informs the host of the event via a reply on its status change pipe (refer to Section 11.12.3 for more information). At this point, the USB device is in the Powered state and the port to which it is attached is disabled.
2. The host determines the exact nature of the change by querying the hub.
3. Now that the host knows the port to which the new device has been attached, the host then waits for at least 100 ms to allow completion of an insertion process and for power at the device to become stable. The host then issues a port enable and reset command to that port. Refer to Section 7.1.7.5 for sequence of events and timings of connection through device reset.
4. The hub performs the required reset processing for that port (see Section 11.5.1.5). When the reset signal is released, the port has been enabled. The USB device is now in the Default state and can draw no more than 100 mA from VBUS. All of its registers and state have been reset and it answers to the default address.
5. The host assigns a unique address to the USB device, moving the device to the Address state.
6. Before the USB device receives a unique address, its Default Control Pipe is still accessible via the default address. The host reads the device descriptor to determine what actual maximum data payload size this USB device's default pipe can use.
7. The host reads the configuration information from the device by reading each configuration zero to *n*-1, where *n* is the number of configurations. This process may take several milliseconds to complete.
8. Based on the configuration information and how the USB device will be used, the host assigns a configuration value to the device. The device is now in the Configured state and all of the endpoints in this configuration have taken on their described characteristics. The USB device may now draw the amount of VBUS power described in its descriptor for the selected configuration. From the device's point of view, it is now ready for use.

USB 2.0 at 243-244 (describing steps of enumeration).

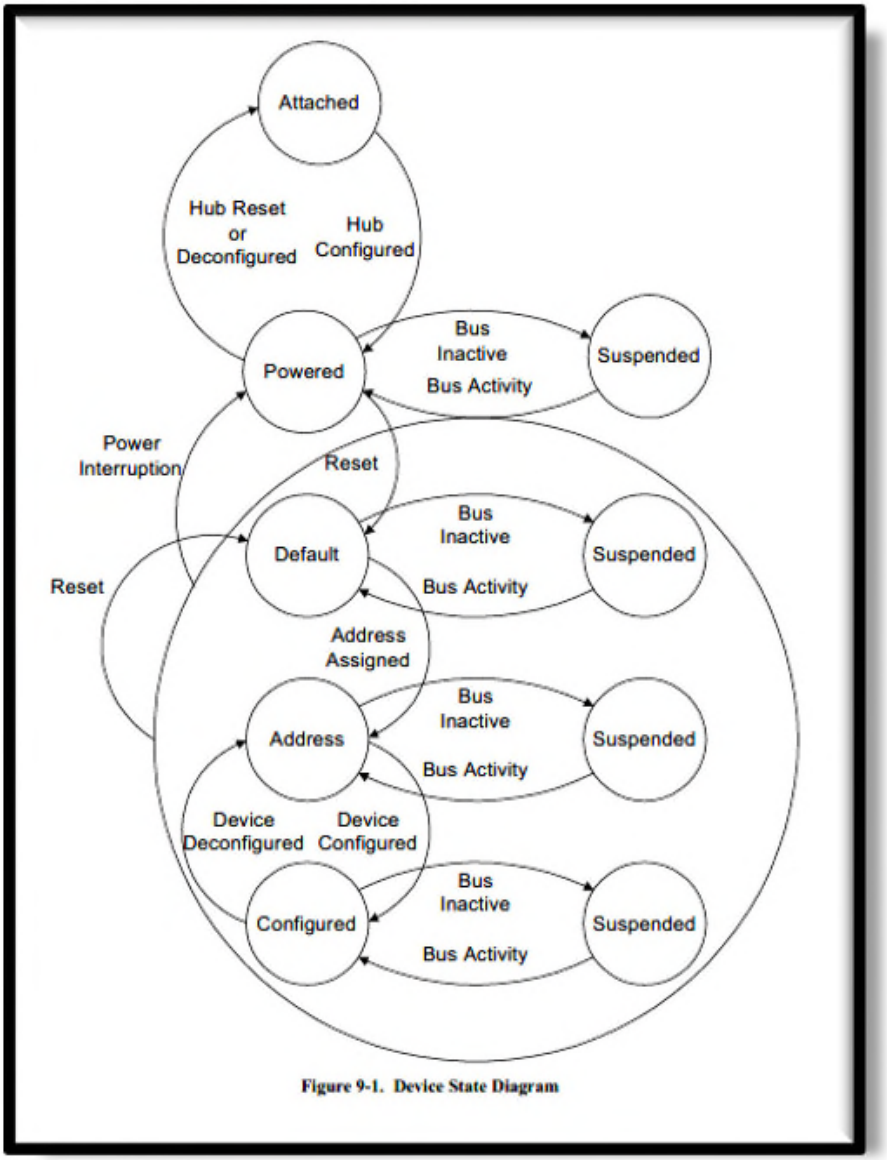


Figure 9-1. Device State Diagram

USB 2.0 at 240 (Figure 9-1) (describing states during enumeration).

In the first step, the USB devices are attached and enter the "Attached" state. Baker Decl., ¶ 59. Then, from this state, the VBUS line is pulled up to the required voltage level (powered) and, within 100ms, the device must signal attachment with a high signal on either the D+ line or D- line (depending on the speed of the device and the state of the pull up resistor, see above); USB 2.0 at 150 (Section 7.1.7.3 Connect and Disconnect Signaling) ("Δt2 (T_{SIGATT}) This is the maximum time from when VBUS is up to valid level (4.01 V) to when a device has to signal attach. Δt2 represents

the time required for the device's internal power rail to stabilize and for D+ or D- to reach VIH (min) at the hub. Δt2 must be less than 100 ms for all hub and device implementations. (This requirement only applies if the device is drawing power from the bus.)").

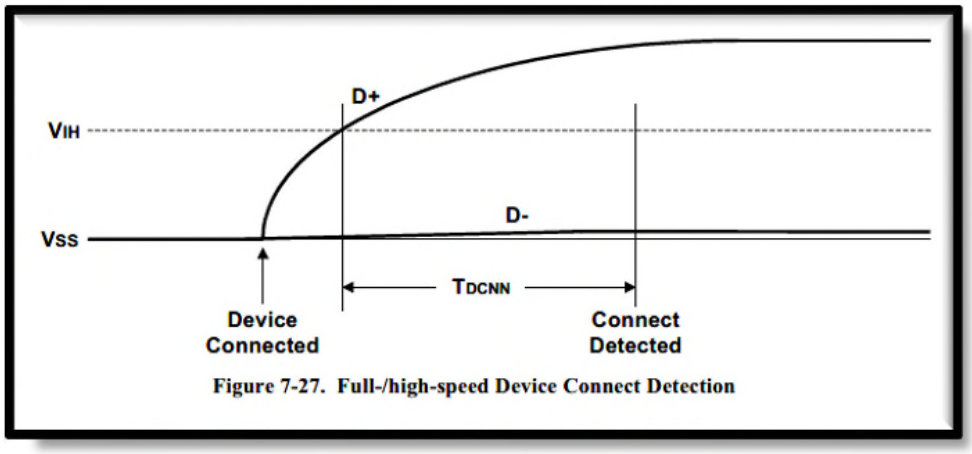


Figure 7-27. Full-/high-speed Device Connect Detection

USB 2.0 at 149 (Figure 7-27) (showing high/low on the D+/D- lines for full-speed and high-speed devices).

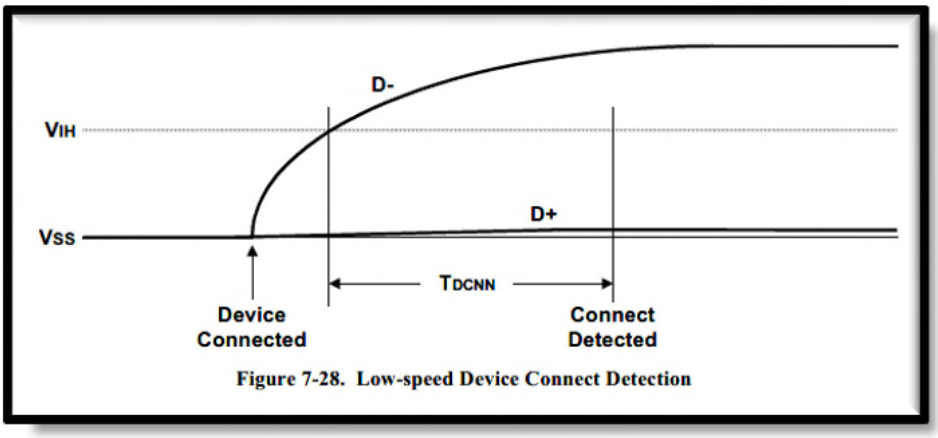


Figure 7-28. Low-speed Device Connect Detection

USB 2.0 at 50 (Figure 7-28) (showing low/high on the D+/D- lines for low-speed devices).

Table 7-14. Device Event Timings

Parameter	Symbol	Conditions	Min	Max	Units
Time from internal power good to device pulling D+/D- beyond VIHZ (min) (signaling attach)	TSIGATT	Figure 7-29		100	ms

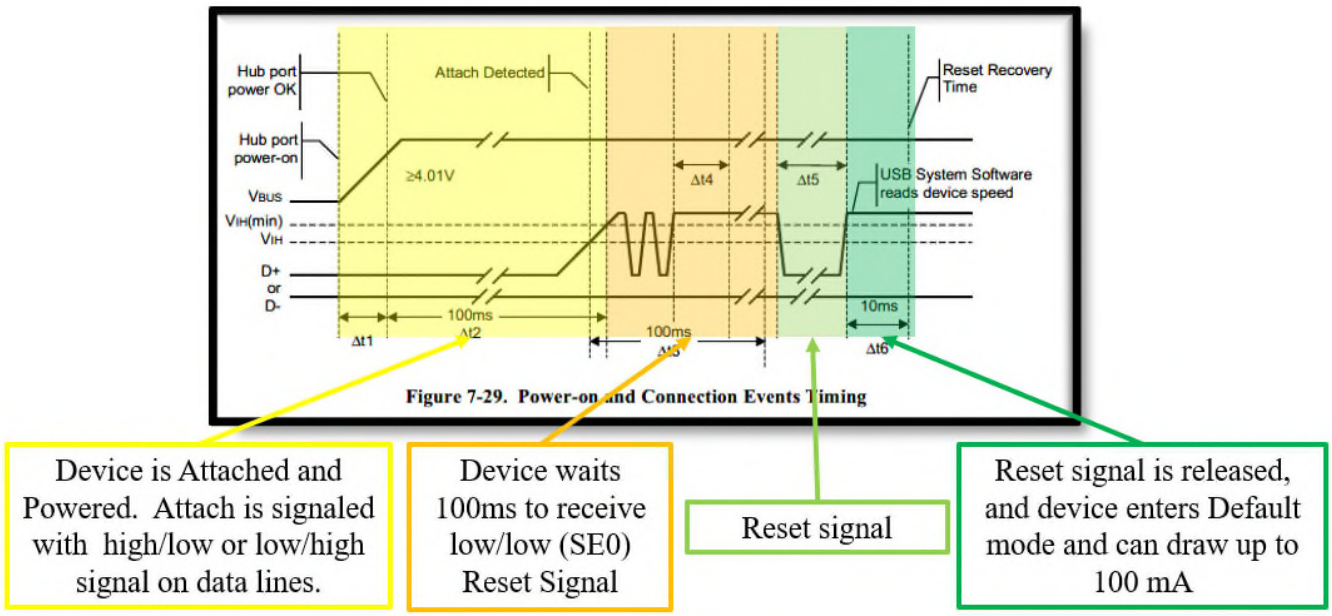
USB 2.0 at 188 (Table 7-14 Device Event Timings) (annotated).

The devices are now in the "Powered" state. Baker Decl., ¶ 60. The devices maintain an idle state (either high/low or low/high on the D+/D- lines, depending on the speed of the device) until the host or hub issues a "reset" command. *Id.* The reset command is a low/low signal on the D+/D- line (SE0) for at 10 ms to 20 ms. USB 2.0 at 313 (Section 11.5.1.5 Resetting) ("The hub drives SE0 on the port during this timed interval. The duration of the Resetting state is nominally 10 ms to 20 ms (10 ms is preferred)."). Once the "reset" signal is released (*i.e.*, the data lines go back to the idle high/low or low/high state), the port is enabled and the device is in the "Default" state. Baker Decl., ¶ 60. As discussed in the following section, the device can now draw up to 100 mA of current.

Table 9-1. Visible Device States

Attached	Powered	Default	Address	Configured	Suspended	State
No	--	--	--	--	--	Device is not attached to the USB. Other attributes are not significant.
Yes	No	--	--	--	--	Device is attached to the USB, but is not powered. Other attributes are not significant.
Yes	Yes	No	--	--	--	Device is attached to the USB and powered, but has not been reset.
Yes	Yes	Yes	No	--	--	Device is attached to the USB and powered and has been reset, but has not been assigned a unique address. Device responds at the default address.

USB 2.0 at 241.



USB 2.0 at 150 (Figure 2-29) (annotated).

4. USB Specification for Supplying and Drawing Power.

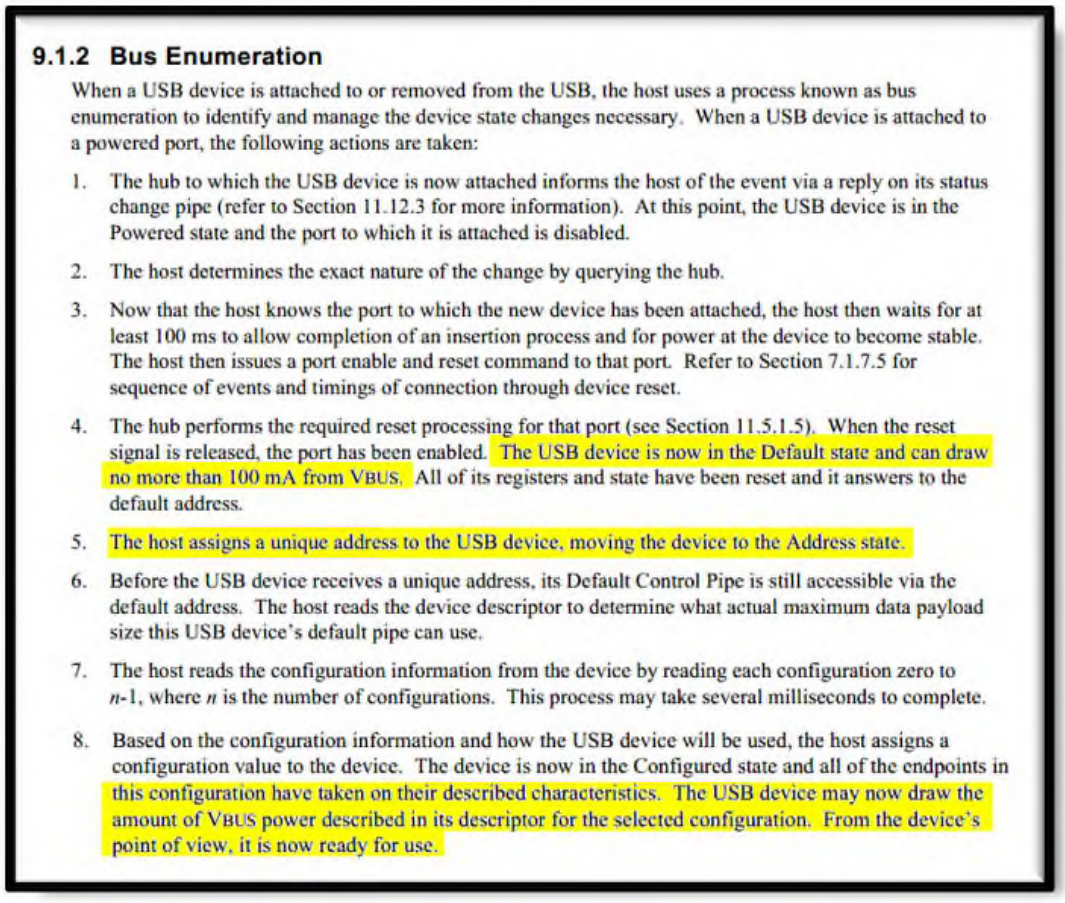
The Specification also sets forth limits on the manner in which USB devices can supply/draw power on the V_{BUS} line. The USB Specification indicates, for example, that that the host is responsible for providing power to an attached USB device and that power must only be supplied in the downstream direction (*i.e.*, supplied at downstream ports) never in the upstream direction (*i.e.* not supplied at upstream ports). USB 2.0 at 24 ("The host is responsible for . . . [p]roviding power to the attached USB devices."); USB 2.0 at 171 (Section 7.2.1) ("No device shall supply (source) current on VBUS at its upstream facing port at any time."). Baker Decl., ¶ 61.

The specification also describes how much power a device may supply or draw and when such devices may supply or draw that power. The Specification describes this in terms of milliamps (mA) of current and in terms of "unit loads." USB 2.0 at 171. "A unit load is defined to be 100mA" of current. *Id.* Notably, the USB Specification includes the following current conditions/limitations:

- Devices cannot supply/draw any current until after entering the "Default" state;

- Devices cannot supply/draw more than 100 mA of current until after entering the "Configured" state;
- A "low-power" device/function draws a maximum of 100mA of current
- A "high-power" device/function draws a maximum of 500 mA of current

Baker Decl., ¶ 62. As noted below, for example, the USB Specification indicates that a no current (0 mA) should be supplied or drawn until a "port enable" and "reset" command has been issued and processed, and the device is in the "Default" state. Once in the default state, only 100 mA of current can be supplied/drawn until the device is configured. Once the device is configured it may draw more current (*e.g.*, up to 500 mA for a high-power device).



9.1.2 Bus Enumeration

When a USB device is attached to or removed from the USB, the host uses a process known as bus enumeration to identify and manage the device state changes necessary. When a USB device is attached to a powered port, the following actions are taken:

1. The hub to which the USB device is now attached informs the host of the event via a reply on its status change pipe (refer to Section 11.12.3 for more information). At this point, the USB device is in the Powered state and the port to which it is attached is disabled.
2. The host determines the exact nature of the change by querying the hub.
3. Now that the host knows the port to which the new device has been attached, the host then waits for at least 100 ms to allow completion of an insertion process and for power at the device to become stable. The host then issues a port enable and reset command to that port. Refer to Section 7.1.7.5 for sequence of events and timings of connection through device reset.
4. The hub performs the required reset processing for that port (see Section 11.5.1.5). When the reset signal is released, the port has been enabled. The USB device is now in the Default state and can draw no more than 100 mA from VBUS. All of its registers and state have been reset and it answers to the default address.
5. The host assigns a unique address to the USB device, moving the device to the Address state.
6. Before the USB device receives a unique address, its Default Control Pipe is still accessible via the default address. The host reads the device descriptor to determine what actual maximum data payload size this USB device's default pipe can use.
7. The host reads the configuration information from the device by reading each configuration zero to *n*-1, where *n* is the number of configurations. This process may take several milliseconds to complete.
8. Based on the configuration information and how the USB device will be used, the host assigns a configuration value to the device. The device is now in the Configured state and all of the endpoints in this configuration have taken on their described characteristics. The USB device may now draw the amount of VBUS power described in its descriptor for the selected configuration. From the device's point of view, it is now ready for use.

USB 2.0 at 243-244 (annotated). Baker Decl., ¶ 63. Certain of these conditions/limitations are also listed in table 7-5 of the USB 2.0 Specification:

Table 7-7. DC Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Supply Voltage:					
High-power Port	VBUS	Note 2, Section 7.2.1	4.75	5.25	V
Low-power Port	VBUS	Note 2, Section 7.2.1	4.40	5.25	V
Supply Current:					
High-power Hub Port (out)	ICCPRT	Section 7.2.1	500		mA
Low-power Hub Port (out)	ICCUPT	Section 7.2.1	100		mA
High-power Function (in)	ICCHPF	Section 7.2.1		500	mA
Low-power Function (in)	ICCLPF	Section 7.2.1		100	mA
Unconfigured Function/Hub (in)	ICCINIT	Section 7.2.1.4		100	mA
Suspended High-power Device	ICCSH	Section 7.2.3; Note 15		2.5	mA
Suspended Low-power Device	ICCSL	Section 7.2.3		500	µA

USB 2.0 at 178 (annotated).

B. The ’766 Patent

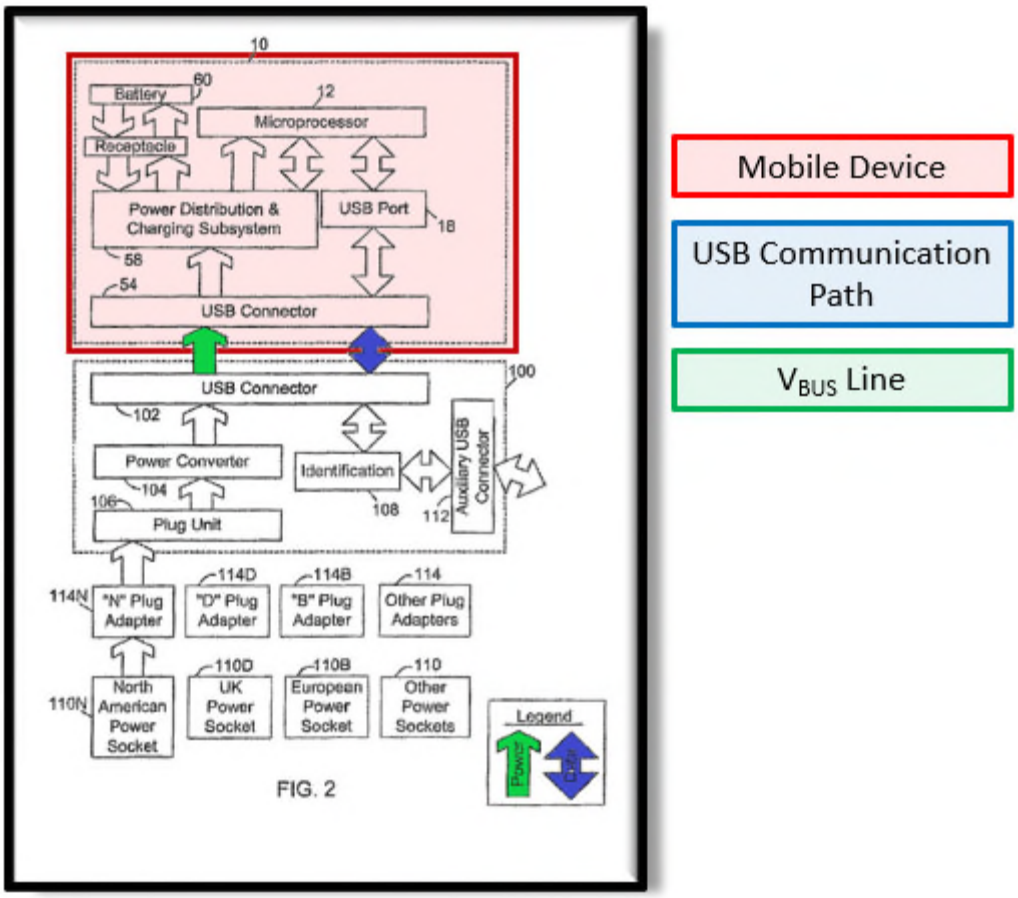
1. Disclosure and Claims of the ’766 Patent

The ’766 Patent is directed to a “Multifunctional Charger System and Method.” Ex. PA-A (’766 Patent) at Title. It discloses “a USB adapter for providing a source of power to a mobile device through a USB port.” *Id.* at 2:45-46. The ’766 Patent explains that, in the prior art, it was common for mobile devices to include two separate interfaces, *i.e.*, one that provided power only (*e.g.*, from an adapter through a “barrel connector”) and one for communicating with other devices (*e.g.*, a USB interface). *Id.* at 1:50-56. The ’766 Patent notes that some prior art devices did include “combined power and data interfaces,” but explains that such devices typically used non-standard and sometimes proprietary interfaces.” *Id.* at 1:57-60. Accordingly, the patent proposes using the standardized USB interface for this purpose.

The ’766 Patent concedes that USB devices could already draw power and communicate with other devices through a USB connection. It notes, however, that the connection typically required a separate hub or host USB device (*i.e.*, it could not be used with an adapter) because

the USB specification required a handshaking protocol called "enumeration" before power could be exchanged before the two devices. *Id.* at 1:66-2:3 ("In accordance with the USB specification, typical USB power source devices, such as hubs and hosts, require that a USB device participate in a host-initiated process called enumeration in order to be compliant with the current USB specification in drawing power from the USB interface.") The '766 Patent thus proposes using a USB adapter to provide access to other sources of power, *e.g.*, wall outlets and car sockets. *Id.* at 2:5-11 ("[I]t would be preferable in many situations, such as when a host would not be available, as often happens during normal use of a mobile device, to be able to utilize alternate power sources such as conventional AC outlets and DC car sockets that are not capable of participating in enumeration to supply power to the mobile device via a USB interface.").

The claims of the '766 Patent claim a mobile device that can operate with the disclosed adapter. Figure 2 of the '766 patent, reproduced below, is a schematic diagram of the mobile device and the associated adapter.



'766 Patent, Figure 2 (annotated).

Generally, the independent claims of the '766 Patent require that the mobile device comprise a charging subsystem. The charging subsystem draws power from the USB connector for purposes of charging the mobile devices battery or powering the device. *Id.*, 8:4-8. The claims also require a VBUS line and a USB Communication path. The USB Communication path refers to the two data lines (D+ and D-) and, as noted in Section III.A.2, these are the standard components of the USB Connector.

The claims further state that the charging subsystem is enabled to draw current unrestricted by at least one limit of the USB Specification (*e.g.*, by drawing current upstream as the host or drawing current in a way that is otherwise inconsistent with the protocols in the USB

Specification). *Id.* at Claims 1 and 9. Claims 2 and 10 specify that the USB limit is a "current limit." *Id.* at Claims 2 and 10.

The independent claims also require that the enablement to draw the current unrestricted by the USB Specification be "responsive to" an "abnormal USB data condition." *Id.* at Claims 1 and 9. The '766 Patent states that this abnormal USB data condition can be, for example, an "identification signal." '766 Patent, 9:8-13. As an example of such an identification signal, the '766 Patent states that "voltages on both the D+ and D- lines of the USB connector [that] are greater than 2 volts." '766 Patent, 9:35-43; *see also id.*, Claims 6, 14, 21.

2. Prosecution of the '766 Patent

The '766 Patent issued from U.S. Patent Application No. 13/175,509, which was filed on July 1, 2011 with 4 pending claims. On November 30, 2012, the Examiner issued a non-final rejection of all four claims based on a double patenting rejection. Ex. PAT-B ('766 File History) at 275-278. On February 13, 2012, the patentee amended the four pending claims and added 20 new claims. *Id.*, at 260-271. On March 12, 2012, the examiner issued a notice of allowance. *Id.* at 238-244

3. Priority of the '766 Patent.

The '766 patent claims priority through a series of continuations to two provisional applications: (1) U.S. Provisional Application 60/273,021 (the "'021 Application") (Ex. PAT-C), filed March 1, 2001; and (2) U.S. Provisional Application No. 60/330,486 (the "'486 Application") (Ex. PAT-D), filed October 23, 2001.

The '021 Application was filed on March 1, 2001. Ex. PAT-C. The '021 Application omits any discussion of drawing current in response to an "abnormal USB data condition" on the USB communication path or "identification signal" that comprises a "logic high signal on each of said D+ and D- lines," wherein "each said logic high signal is greater than 2V." *Id.* at 20-30

(discussing various embodiments); Baker Decl., ¶ 75. To the contrary, the application indicates that the mobile device is connected to a typical USB port (e.g., a standard hub that would send standard USB signals); it does not disclose connecting the mobile device to any other type of power source. *Id.* at 22 ("Typical means of providing a high-power USB port are ensuring that the invention is the only USB device to attach to the USB port of a desktop computer, a laptop computer, or a self-powered hub."). In other words, the application does not disclose receiving any type of abnormal USB data condition from a USB wall adapter (novel or otherwise) or enabling the mobile device to draw current in response to any such signal.

The '486 Application was filed on October 23, 2001. Ex. PAT-D ('486 Application). The application, for the first time, discussed "a USB power adapter that can provide power to charge a USB chargeable device via the device USB interface." *Id.* at 14. The application also discusses, again for the first time, the use of "abnormal USB data line conditions" including a signal in which D+ and D- are held high. *Id.* at 24-25.

Because the '021 Application does not describe various elements of the Challenged Claims, those claims are entitled to the October 23, 2001 priority date of the '486 Application at the earliest. Baker Decl., ¶¶ 74-78. Moreover, Patent Owner has asserted in litigation that the '766 Patent is entitled to an October 23, 2001 priority date only.

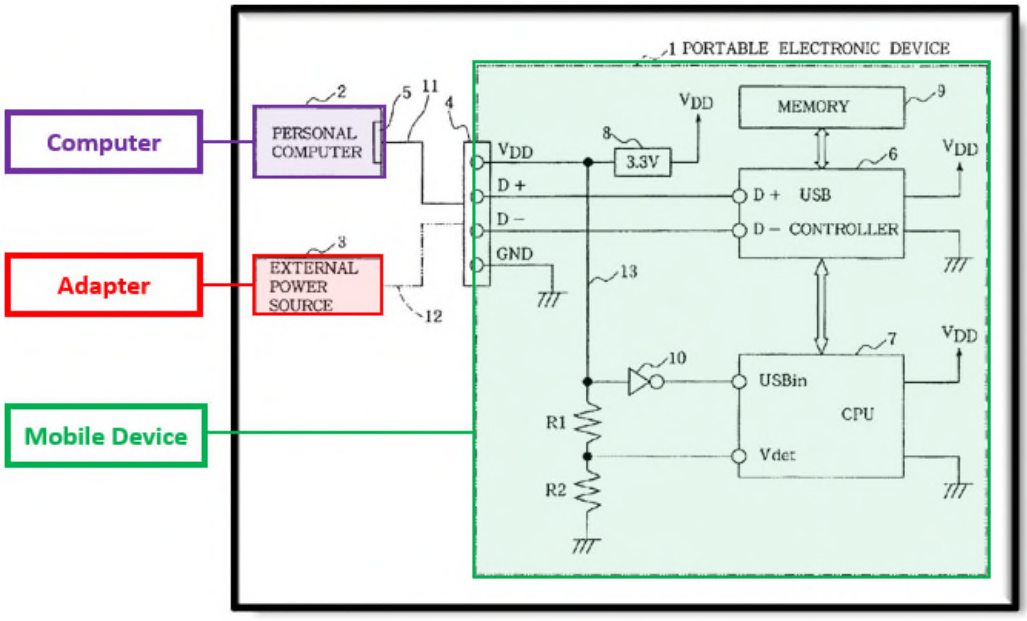
C. Summary of Relevant Prior Art

1. Matsumoto

Like the '766 Patent, Matsumoto discloses a system and method for implementing a USB device and associated adapter. Baker Decl., ¶ 79. Specifically, Matsumoto discloses that a USB device comprising a USB connector that can be connected either (1) a typical USB device (e.g., a computer) that will engage in typical USB communication and operations or (2) an adapter that will power the device from a convention wall outlet, but does not need to engage in

typical USB communication or operations. Matsumoto discloses that the device uses "discriminating means" to distinguish between the two power sources (*i.e.*, computer v. the adapter). Baker Decl., ¶¶ 80-83.

Specifically, Matsumoto explains that the USB device can be connected to either (1) a personal computer or (2) an external power source (*e.g.*, an AC outlet) through an adapter. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."); *id.*, 3:41-47 ("FIG. 1 shows a portable electronic device 1 of the invention, which has a USB connector 4. A USB connector 5 of a personal computer 2 serving as a host can be connected to the USB connector 4 by a USB cable 11, or an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12.").



Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)).

Matsumoto further discloses that—consistent with the USB Specification—the mobile device will typically engage in USB communication (e.g., enumeration) when connected to the personal computer. *Id.*, 1:54-2:1 ("When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer within a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller.") Matsumoto notes, however, that such communication slows down the operation of the mobile device. *Id.*, 1:60-64 ("This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction."); *id.* at 2:1-4 ("This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state."). Baker Decl., ¶ 81.

Because such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device, not communicate), Matsumoto discloses using "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a typical USB device). Matsumoto, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."); *id.* at 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . ."); *id.* at 2:13-27 ("The present invention provides a portable electronic device comprising . . . a

control circuit connected to the common serial bus controller . . . . The control circuit discriminates among the sources of supply of power.") (emphasis added); Baker Decl., ¶ 82.

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the "discriminating means" cause the device to avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.") This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed."); Baker Decl., ¶ 83.

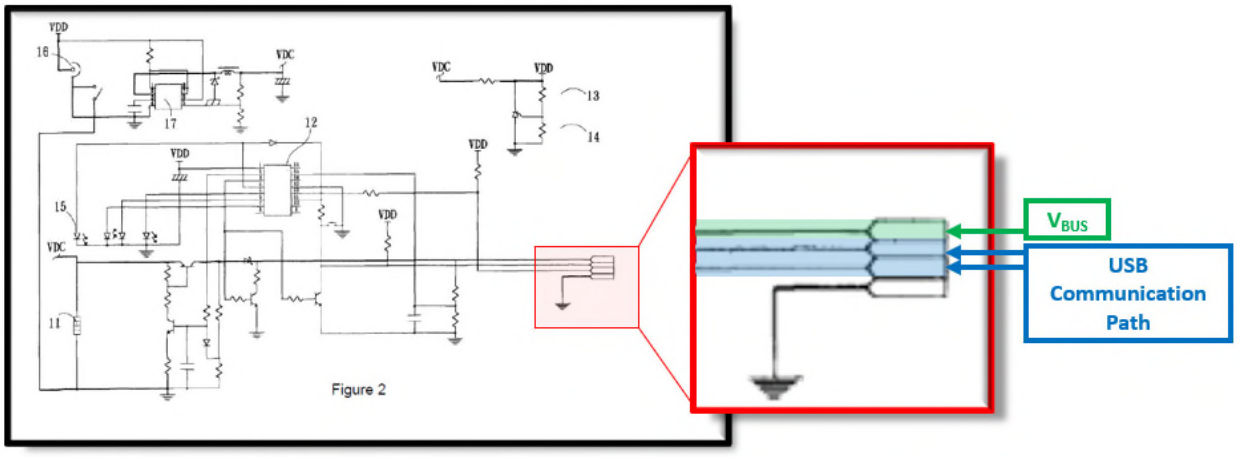
The examiner did not consider Matsumoto during prosecution of the '766 Patent.

2. Yang

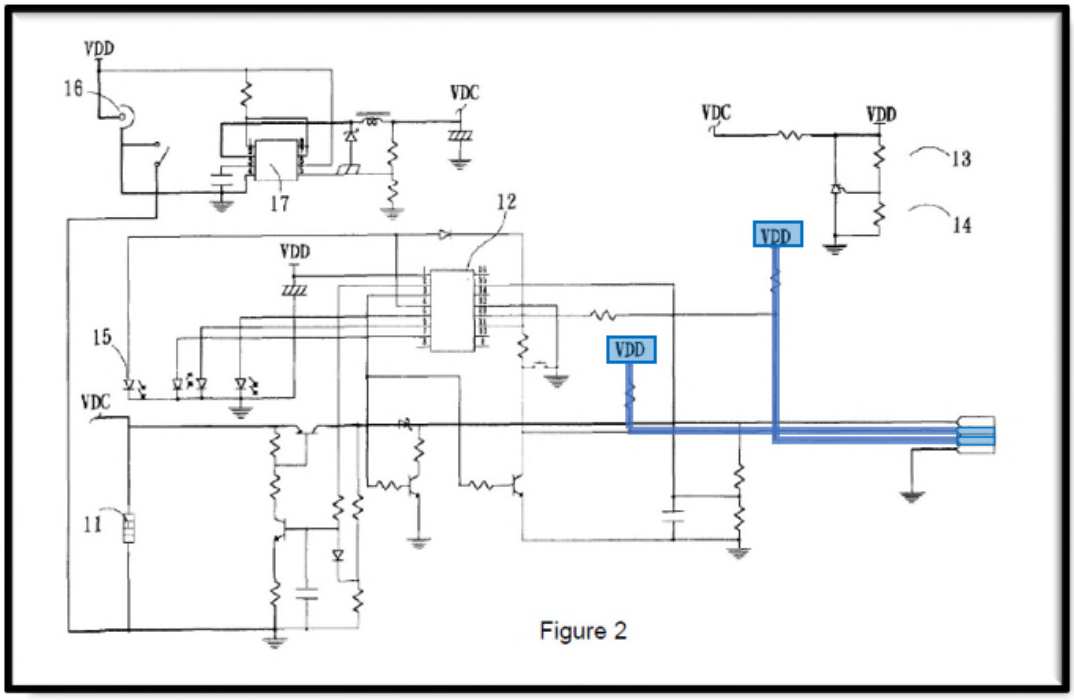
Yang is directed to a "Mobile Phone Charger with Multiple Power Supply Inputs." PA-B (Yang) at [54]. Yang teaches an adapter that can draw power from multiple power sources (including a wall outlet, a car socket, or a USB connection) and convert the power to be used a mobile device. *Id.*, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs."); *id.* at Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."); Baker Decl., ¶ 84.

If the power is drawn from a wall socket, it is (1) converted into the same voltage as the automobile power supply using an AC transformer then (2) converted to the same voltage as the USB interface using a DC voltage conversion circuit. *Id.*, Claim 1. If the power is drawn from the automobile power supply, it is simply converted to the USB voltage using the DC conversion circuit. The voltage can then be converted into the voltage required by a particular mobile device battery and provided to that mobile device through a connection such as a USB connection. *Id.*

Figure 2 of Yang discloses a schematic for the mobile device charger. Like the USB connector of Matsumoto, the connector includes four connections: power, ground, and two data lines.



Yang, Figure 2 (annotated). The schematic shows that the charger comprises two pull-up resistors attached to the data lines of the connection with the mobile device. *Id.* In other words, the default signal on the data lines is a high/high signal on the data lines:



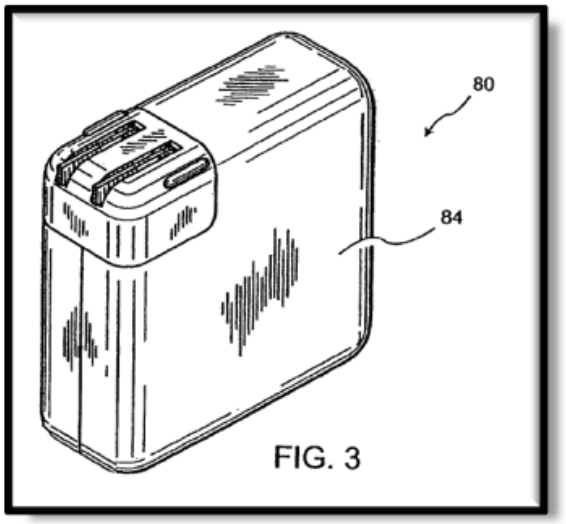
Yang, Figure 2 (annotated); Baker Decl., ¶ 87.

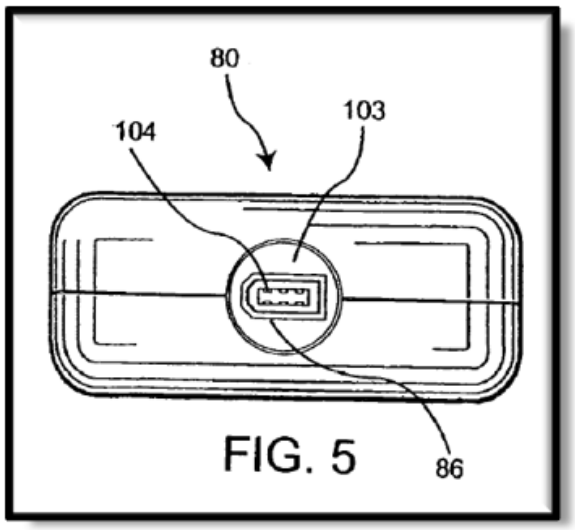
The examiner did not consider Yang during prosecution of the '766 Patent.[1]

[1] The '766 Patent lists U.S. Patent No. 6,184,652 to Yang ("'652 Patent") on the face of the patent. That patent, however, does not disclose an adapter that can convert power from a wall-socket to be used by a mobile device. PA-I ('652 Patent). Instead, that charger can only draw power from a USB port. And, in any event, the examiner does not appear to have discussed or considered the '652 Patent during prosecution. Accordingly, the examiner does not appear to have considered Yang during prosecution.

3. De Iuliis[2]

De Iuliis is directed to various "Power Adapters for Powering and/or Charging Peripheral Devices." Ex. PA-C ("De Iuliis"). It discloses an adapter that can (1) connect directly between a wall outlet and a mobile device and (2) that can provide power over a standardized data port such as a USB port. *Id.*, Abstract ("The power adapter includes a housing that contains electrical components associated with the power adapter" and "a data port . . . configured to provide external power to the peripheral device."); *id.* at 4:40-57 ("The data port 56 is arranged to receive one end of a data transmission line 58 . . . . By way of example, the data transmission line 58 may be a universal serial bus (USB) . . . ."); Baker Decl., ¶ 88.





De Iuliis at Figures 3 and 5 (showing adapter with connection for wall-socket and data port connection to power mobile device). De Iuliis discloses that while the charger comprises all of the connections/lines for the data port (e.g., VBUS and data lines), "the power adapter

[2] De Iuliis claims priority to U.S. Provisional Application No. 60/345,252, which is attached hereto as Exhibit PA-G. All of the substantive disclosures of De Iuliis relied on herein are also disclosed in the provisional application. *Id.*; *see also* CC-B (claim chart references De Iuliis and De Iuliis Provisional).

80 generally does not use the data contacts of the port 86 for transmitting data (*e.g.*, they act as dummy contacts)." In other words, unlike typcial USB devices, the charger of De Iuliis will not provide any signals on the D+ or D- lines or otherwise communicate with the mobie device once it is connected.

The examiner did not consider De Iuliis during prosecution of the'766 Patent.

4. Shiga

Shiga is directed to a system and method for a host device (e.g., a computer) and a peripheral device (e.g., a keyboard) that can be connected through a USB connection. Shiga, Abstract. The peripheral device is configured to send special signals that can be used to power-off and power-on the host device, and the host device is configured to receive and process those signals and to power-on or power-off in response. *Id.* Shiga discloses that this operation can be implemented, for example, using a "power-on" and "power-off" key on the disclosed keyboard. *Id.* at 2:4-8 ("There has been a demand for adding value to such computers connected with the USB interface by providing a function that the USB does not have, that is, by providing a key called a power-on key, which allows the host computer to be started by a key input operation at a keyboard."); *id.* at 7:46-55 ("When a predetermined key on the keyboard 11 is operated . . . the main power is turned off."); Baker Decl., ¶ 89.

Shiga further discloses that, in one embodiment, the "power-on" key will cause the keyboard to send a logic high signal on both of the data lines to the connected computer (a high/high signal). *Id.* ("An apparatus for turning on a computer power supply in which when an input operation of a predetermined key is carried out, predetermined H Signals are output to a first signal line and a second signal line of a USB chip provided in a keyboard."); *id.*at 3:36-37 ("the predetermined operation may be performed at the input device in order to output H signals of a predetermined pulse width to both the first Signal line and the second signal line"); *id.* at

6:34-47 ("When the power-on key on the keyboard 11 is operated . . . . The first signal line D+ and the second signal line D- are in a fourth mode in which both signal lines D+ and D- are in the H state. The pulse width and the pulse voltage of the predetermined Signals are, for example, 50 ms and 3 volts, respectively."); Baker Decl., ¶ 90.

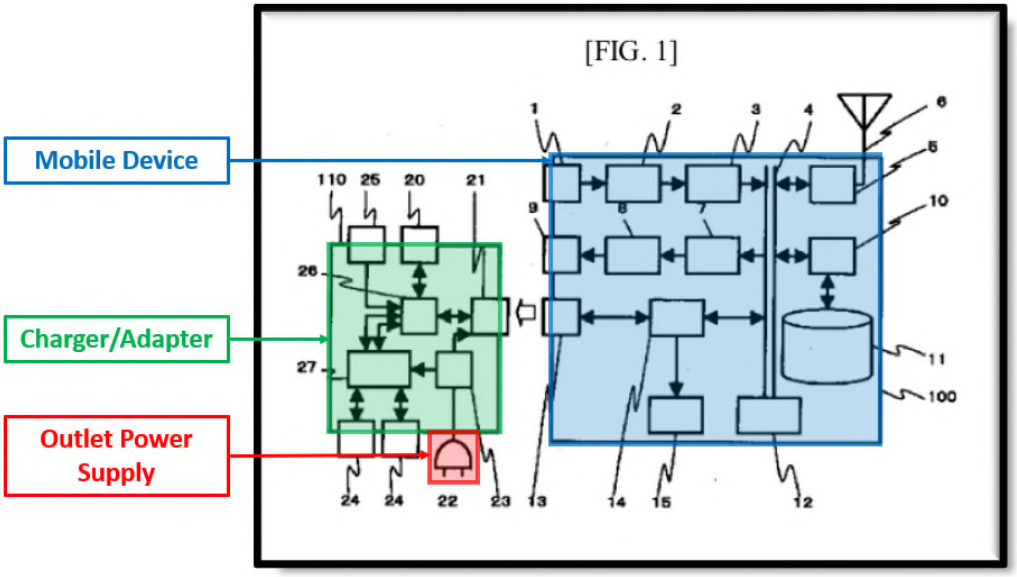
Like the '766 Patent, Shiga notes that this high/high signal is not a normal condition used by the USB specification and, thus, the computer can be configured to recognize the signal as something separate, *i.e.*, an instruction to "power on" the computer. *Id.*, Abstract ("Since this signal combination is not a USB standard signal combination, they can be distinguished from ordinary data signals. Since a wake-up device which has received these signals outputs predetermined start-up signals to a main power supply, the main power supply can be turned on."); *id.*, 6:47-58 ("The fourth mode of first signal line D+ and second signal line D- in which both of them are in the H level state is not shown in Table 1 because it is not a USB standard mode. Taking into account that the data transfer speed of the USB is measured in nanoseconds (nsec), it can be said that a pulse width of 50 ms is very large. Therefore, even when fourth mode signals (H level signals with a pulse width of 50 ms) are set as signals that are not USB Standard signals, and then transmitted to first signal line D+ and second signal line D-, they can be easily distinguished from USB standard data signals."); Baker Decl., ¶ 91.

The examiner did not consider Shiga during prosecution of the '766 Patent.

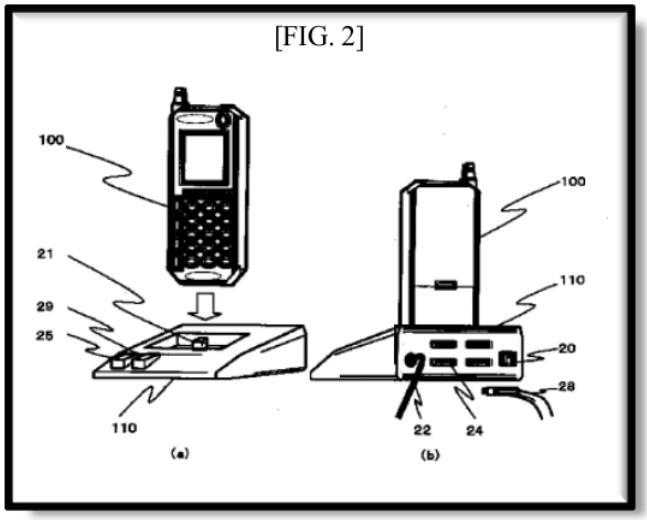
5. Morita

Morita is directed to a charger dock for a mobile videophone device. The charger dock connects directly between a wall outlet and the mobile videophone, and charges the videophone via a USB connection. Morita, ¶ 0012. Moreover, the charger dock can also connect to various other USB devices including a personal computer and numerous peripheral devices (*e.g.*, the keyboard of Shiga). Morita at Abstract ("To provide a hub-controllable charger capable of

accessing a plurality of external devices in a state wherein a mobile phone is coupled to the charger, and capable of managing transmission and branching of signals between each.")



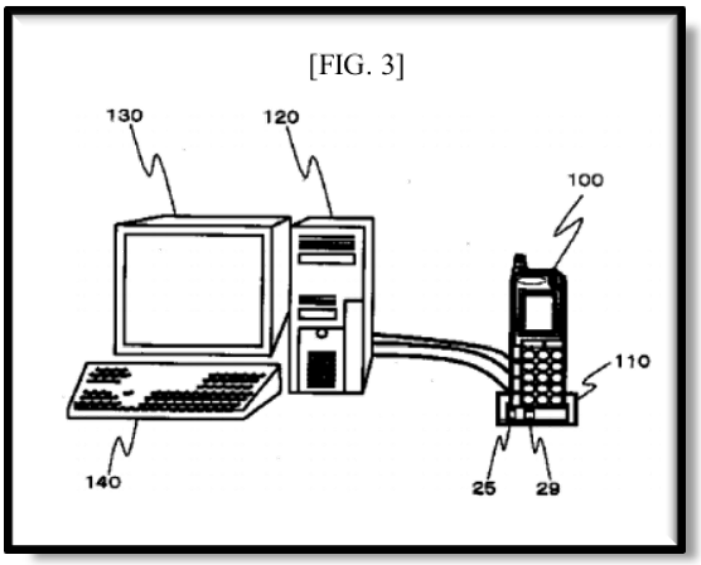
Morita, Figure 1 (annotated).



Morita, Figure 2; Morita, ¶ 0001 ("The present invention relates to a charger capable of charging a mobile phone and coupling to an external device and more specifically relates to a USB format charger provided with a HUB function capable of connecting a plurality of external devices.")

As the PTAB recently found, Morita discloses two modes of operation. PAT-B at 1-21 (*TCT Mobile (US), Inc. et al. v. Fundamental Innovation Systems International, LLC*, IPR2018-

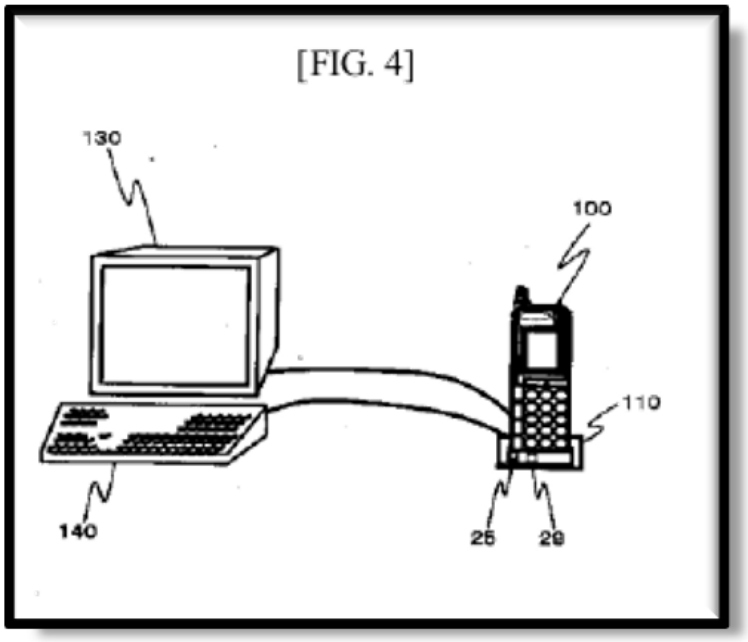
598, Paper 8 (Decision)) at 8-9. In the first mode the charger dock is connected from the wall outlet to (1) a personal computer, (2) the mobile videophone, and (3) peripheral devices (*e.g.*, keyboard and monitor). *Id.* In this mode, the personal computer acts as the host and accesses the mobile videophone and the peripherals as devices/functions. *Id.* ("In the first mode, the charger is connected to a personal computer through port 20, to the mobile device through port 21, and external peripherals such as a mouse and keyboard through port 24. In this first mode, USB hub control unit 27 sets the personal computer as a USB host and the mobile device as a device.").



Morita, Figure (shosing first mode in which the personal comptuer is host); *id.*, ¶ 0015 ("Normally, when connecting another host personal computer, the other host personal computer is connected to the first USB port 20 via a USB cable, the connection switching unit 26 connects the connection destination of the first USB port 20 to the USB hub control unit 27, the connection destination being the host end, and the mobile videophone device 100 connected to the second USB port 21 is connected to the USB hub control unit 27 as a device.").

In the second mode, no computer is connected; the charger dock is connected from the wall outlet to (1) the mobile videophone and (2) the peripheral devices. In this mode, the mobile videophone acts as the host to control the peripheral devices and continues to charge on the dock,

i.e., it draws power upstream to the host. Ex. PAT-B at 9 ("In the second mode . . . the mobile device is set as the UB host and port 20, connected to the personal computer, "becomes vacant" (i.e., disabled). In this second mode, the external peripherals, such as the keyboard and monitor, remain connected to port 24 as peripherals to the mobile device. According to Morita, 'the mobile phone always accesses the external device while receiving the supply of power from the charger, and thus the mobile phone can be used without worrying about battery consumption due to long-term and continuous use."):



Morita, Figure 4 (showing second mode in which no personal computer is connected and the mobile videophone acts as the host); Morita, ¶ 0015 ("On the other hand, when the mobile videophone device 100 is used as the host personal computer, the connection switching unit 26 connects the second USB port 21 to the USB hub control unit 27 as the host end, and the first USB port 20 is not connected to the USB hub control unit 27 and is in disconnected state. That is, in the USB hub control 27, one first USB port to be connected to the external device becomes vacant. Also external peripherals (devices) connected to the third USB port 24 are connected as

peripherals of the mobile videophone device 100. Note, when the connection is switched or when the mobile videophone device 100 is connected to the charger 110, the connection state due to the connection switching switch is sent to the mobile videophone device 100, and operation settings in the USB connection are changed and correspondingly operated by the CPU 14 inside the mobile videophone device 100.") (emphasis added). In other words, in this mode, the charger dock provides power to the host at its upstream port.

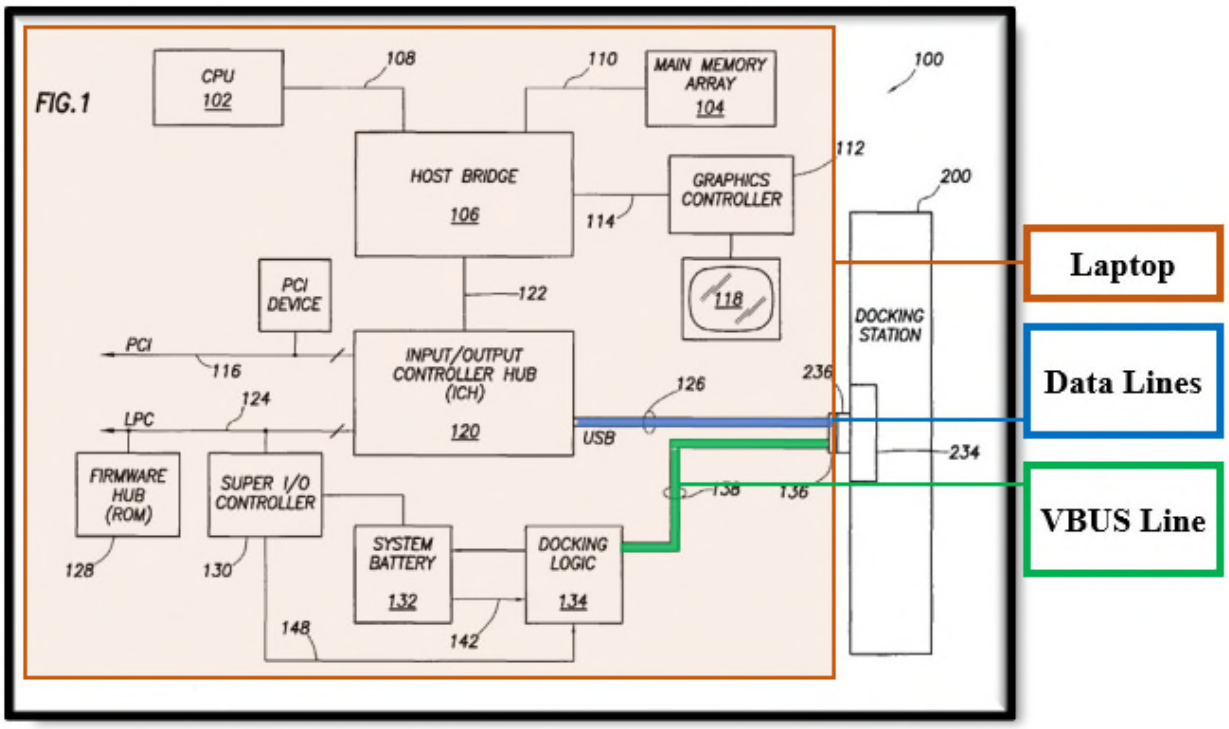
The examiner did not cite or consider Morita during prosecution of the'766 Patent.

6. Dougherty

Dougherty is directed to a system and method for "Powering a Notebook Across a USB interface." PA-E (Dougherty) at [54]. Specifically, Dougherty discloses a docking station that powers a laptop using a USB connection. *Id.* at 2:55-58 (disclosing "a laptop computer and related docking station adapted to supply power from the docking station to the laptop computer across the USB connection."); *see id.* at Figure 2. The laptop dock connects the laptop to power and to various peripheral devices (e.g., the keyboard of Shiga). *Id.*, 1:61-67 ("When the user returns to the home or office, the laptop is docked with a non-portable unit. Docking in this manner may expand the capabilities of the laptop computer to include a full size keyboard, a full size monitor, more serial ports, and other functionality typically associated only with desktop computing devices."); *id.* at 2:24-28 ("Another method of expanding the capabilities of a laptop may be a form of port replication across a USB port. A user connects a laptop, via a USB connection, to a port replication device which generates plurality of communication ports for use as described above.").

Dougherty refers to the lines in the connection as "USB power rails" and "serial communication conductors." *See e.g.*, *id.* at Abstract ("A laptop computer and mating docking station where the docking station provides power to the laptop computer over the power rails of the Universal Serial Bus (USB) interface.") and 5:26-37; Baker Decl., ¶ 96. As explained in

Section III.A, a person of ordinary skill would have understood this includes a VBUS line and a communication path including D+ and D- data lines; Baker Decl., ¶ 96.



Dougherty, Figure 1 (annotated).

In order to power the laptop, the system of Dougherty disregards a number of the conditions associated with the USB Specification. *See e.g.*, *id.* at 2:55-3:10; *id.* at 6:1 (disclosing that the system "breaks with standard USB protocol"); Baker Decl., ¶ 98. Among other things, the host laptop computer does not supply power as required by the USB Specification and, instead, draws power from the dock. *Id.* at 2:58-64 ("To accomplish this, the laptop computer is modified to have circuitry which is capable of being detected across USB power rails by the docking station and also capable of turning off the five volts typical supplied by the laptop onto the USB port, and instead, receiving power at 18.5 volts, from the docking station across the USB connections."). As a result of this connection, the dock supplies up to 2.5 Amps (2,500 mA) of current to the laptop over the USB connection at its upstream port. *Id.* at 7:47-51 ("When the dock station 200 provides power for full

operation of the laptop computer 100, as many as 2.5 amps of current may flow from the dock station 200 to the laptop computer 100 across the USB connectors 136,236."); Baker Decl., ¶ 98.

Dougherty does not appear to have been considered by the examiner during prosecution. As noted in Section III.E, *infra*, the PTAB considered certain grounds involving Dougherty but did not consider the reasoning disclosed herein.

D. Claim Construction

"During reexamination proceedings of unexpired patents . . . the Board uses the 'broadest reasonable interpretation consistent with the specification' standard, or BRI" when construing claim terms. *In re CSB-Sys. Int'l, Inc.*, 832 F.3d 1335, 1340 (Fed. Cir. 2016). "The rationale for permitting this broader standard in reexaminations is that a patent owner before the Patent and Trademark Office ('PTO') with an unexpired patent 'may amend claims to narrow their scope,' negating any unfairness that may otherwise result from adopting the BRI standard." *Id.* at 1340-41.

The '766 Patent will expire March 1, 2022. Accordingly, the Broadest Reasonable Interpretation applies.

1. "A mobile device" (All Claims) (Preamble)

In prior proceedings, Patent Owner argued—and the Court agreed—that a person of ordinary skill in the art would not have understood the preambles of the claims requiring "a mobile device" to be limiting. OTH-C ((*Fundamental Innovation Systems International, LLC v. LG Electronics, Inc. et al*, Case No. 2:16-cv-01425 (E.D. Tex.) at Dkt. No. 146 (Claim Construction Order)) at 35-36. Under the broadest reasonable interpretation, the claims must be at least this broad. Accordingly, under the broadest reasonable interpretation, the preambles are also not limiting.

2. "without USB enumeration" (Claims 3 and 12)

In prior proceedings, Patent Owner argued that this term "means that not all steps of enumeration are performed." OTH-B (*Fundamental Innovation Systems International, LLC v. LG Electronics, Inc. et al*, Case No. 2:16-cv-01425 (E.D. Tex.) at Dkt. No. 123 (FISI Opening Claim Construction Brief)) at 12. The court subsequently adopted patentee's argument and construed this term to mean "without the occurrence of all the steps of USB enumeration." OTH-C ((*Fundamental Innovation Systems International, LLC v. LG Electronics, Inc. et al*, Case No. 2:16-cv-01425 (E.D. Tex.) at Dkt. No. 146 (Claim Construction Order)) at 32.

Under the broadest reasonable interpretation, the claims must be at least this broad. Accordingly, under the broadest reasonable interpretation, this limitation is again met by any situation in which current is drawn without engaging in *every* step of USB enumeration.

E. Prior Requests for Review

The grounds and reasoning asserted in this request for *ex parte* reexamination are unique. As noted above, the examiner did not consider any of the references cited herein during prosecution. Moreover, the PTAB has ***not*** considered any of the Matsumoto, Yang, or De Iuliis references, either alone or in combination, in any prior proceedings. And while the PTAB did consider three of the prior art references discussed herein during prior *inter partes* review proceedings (Dougherty, Shiga, Morita), it did not consider the reasoning discussed herein. Moreover, patent owner has recently disclaimed certain claims in response to Dougherty, tacitly admitting that it is relevant prior art.

1. Prior Discussion of Dougherty and Shiga

The Board considered Dougherty and Shiga in several related proceedings for *inter partes* review of the '766 Patent. *See e.g.*, PAT-B at 121-137 (IPR2018-214 Decision); *id.* at 138-158 (IPR2018-508 Decision); *id.* at 160-183 (IPR2018-472 Decision). In those decisions,

however, the Board did not consider the arguments raised here, which are fundamentally different. Specifically, the prior petitioners sought to combine Dougherty and Shiga by modifying the laptop dock of Dougherty to use the SE1 signal (high/high on D+/D-) of Shiga instead of the "handshaking" procedure disclosed by Dougherty. Ex. PAT-B at 179 (IPR2018-472) ("Specifically, Petitioner argues it would have been obvious to replace Dougherty's multi-step handshaking procedure with an exchange of Shiga's fourth mode signals."); *id.* at 149 (IPR2018-508) ("Specifically, Petitioner proposes modifying Dougherty's docking station to include a USB chip that generates an SE1 state (i.e., with the D+ and D- lineshigh) inplace of Dougherty's USB handshaking protocols to signal to the laptop that the docking station isable to provide power to the laptop."); *id.* at 131-133 (arguing that a person of ordinary skill in the art would have modified portions of the handshaking protocol of Dougherty to include the SE1 signal of Shiga). The Board found that it would not have been obvious to use the SE1 signal of Shiga (which is used as a power-on or wake-up signal) to replace the handshaking protocol of Dougherty (which is used to identify the laptop dock).

In other words, those prior arguments did not did not use the perihperal keyboard of Shiga for its intended purpose by connecting the keyboard to the laptop dock and laptop and, instead, sought to modify Dougherty to send the SE1 power-on signal of Shiga (1) while the laptop was already powered-on and was actively communicating with the laptop dock, (2) for a purpose that was different from the purpose propsosed by Shiga (i.e., not as a power-on signal), and (3) regardless of whether a peripheral keyboard was even connected to the laptop dock.

Here, in contrast, the Substnatial New Question of Patentability is based on the obvious and intended configuration of both Dougherty and Shiga. That is, (1) the disclosed periphral keyboard of Shiga is connected to a laptop comptuer through a laptop dock, (2) the laptop dock is not communicating with the laptop because the laptop has been is powered off, and (3) the

"power-on" signal is sent from the keyboard to the laptop for purposes of powering on the laptop and starting operations (e.g., receiving power on the VBUS line). *See* Section IV.D. The keyboard is used in exactly the way described by Shiga, *i.e.*, to power-on and power-off the connected host device, and the only modification proposed to Dougherty is that specifically taught by Shiga, *i.e.*, circuitry to receive the SE1 signal and use it to power on the device. *Id.*

2. Prior Discussion of Morita

In IPR2021-428, the Board considered grounds based on Morita alone. PAT-B at 1-21 (*TCT Mobile (US), Inc. et al. v. Fundamental Innovation Systems International, LLC*, IPR2018-598, Paper 8 (Decision)) at 6. The petition in that proceeding argued that the charger dock of Morita could be used in a *third* mode in which it was connected to the mobile videophone and no other devices (i.e., not a personal comptuer and not any peripheral devices). *Id.* at 10-11. The Board disagreed and held that Morita only disclosed two modes, both of which involve the charger dock being connected to peripheral devices. *Id.* at 15 ("Petitioners' contention that Morita would operate as a charger only, without USB data communication with the peripherals, is unsupported by Morita.").

The Board held that, in the first mode disclosed by Morita, the charger dock is connected to power, the videophone, a personal computer, and peripheral devices and the personal computer acts as a host. *Id.* at 8-9 ("In the first mode, the charger is connected to a personal computer through port 20, to the mobile device through port 21, and external peripherals such as a mouse and keyboard through port 24. In this first mode, USB hub control unit 27 sets the personal computer as a USB host and the mobile device as a device."). In the second mode, no personal computer is connected, and instead, the charger dock is connected to power, the videophone, and peripheral device(s) and the mobile videophone acts as the host. *Id.* at 9 ("In

the second mode . . . the mobile device is set as the UB host and port 20, connected to the personal computer, "becomes vacant" (i.e., disabled).")

The arguments contained herein based on Morita in view of Shiga are distinct from those made in the prior petition. Specifically, this request does not argue that Morita would be configured in a third "charger only" mode. Instead, the substantial new question of patentability is based on the second mode described by the PTAB and the obvious and intended use of both Morita and Shiga, *i.e.*, the charger dock connected to the videophone and a peripheral keyboard. *See* Section IV.C. The keyboard is used in exactly the way described by Shiga, *i.e.*, to power-on and power-off the connected host device. *Id.*

IV. DETAILED STATEMENT OF SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

A. Matsumoto in view of Yang Renders Claims 1-6, 9-14, and 17-21 Obvious.

For the reasons stated below, Matsumoto in view of Yang renders Claims 1-6, 9-14, and 17-21 obvious.

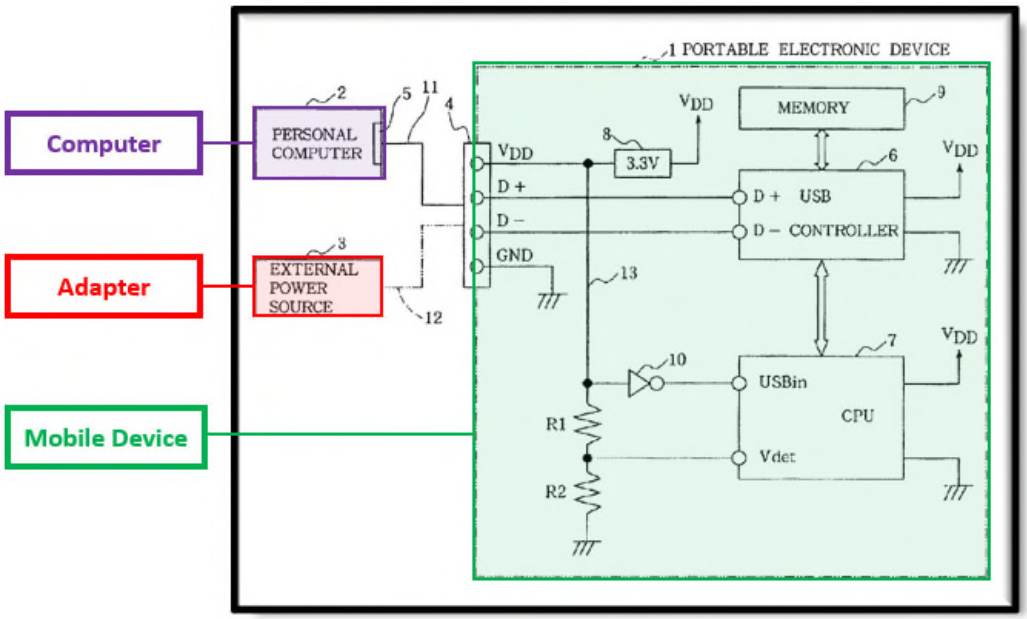
1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Matsumoto with the teachings of Yang. OTH-A (Baker Decl.,), ¶¶ 99-107.

Both Matsumoto and Yang relate to systems and methods for powering portable electronic devices (*i.e.*, mobile devices). Baker Decl., ¶ 100. Specifically, each involves a system and method for powering such mobile devices using an adapter that connects directly between a wall outlet and the mobile device. Ex. PA-A (Matsumoto), Abstract ("A portable electronic device . . . is adapted to receive a power supply from . . . an external power source.") and 3:46-47 ("an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12."); Ex. PA-B (Yang) at Abstract ("A mobile phone charger with multiple power supply inputs") and Specification Page 1 ("The second purpose of

this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."); Baker Decl., ¶ 100.

As noted in Section III.C.1, *supra*, Matsumoto discloses that the mobile device comprises a USB connector and can be connected to either (1) a computer or (2) an adapter connected to a wall outlet. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."):



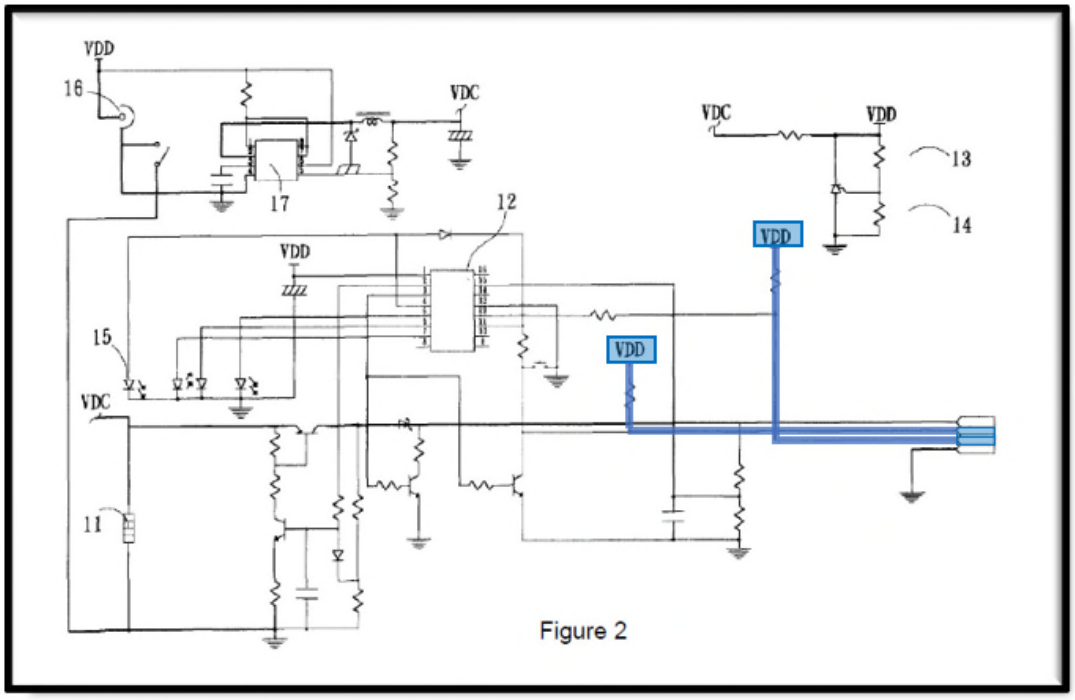
Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)).

Matsumoto further teaches that, when connected to the adapter, the mobile device need not undergo enumeration and, accordingly, it is beneficial to include "discriminating means" for determining when the mobile device is connected to an adapter (as opposed to a computer).

Accordingly, Matsumoto discloses a USB mobile device and a corresponding adapter. Baker Decl., ¶ 101. Matsumoto does not limit the adapter to any specific configuration or

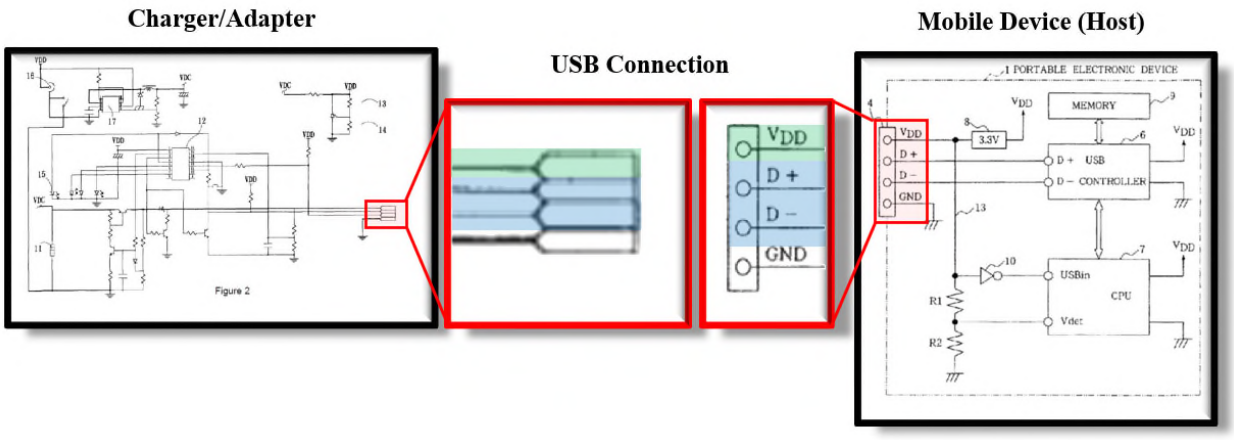
implementation, nor does it require a precise structure. Thus, a person of ordinary skill in the art seeking to implement a mobile device and USB wall adapter pursuant to the teachings of Matsumoto would search for references disclosing the structure of such adapters and would find Yang. Baker Decl., ¶¶ 102-103. Yang discloses precisely what is suggested by Matsumoto, an adapter that can power a mobile device from, for example, a wall outlet. Yang, Abstract and 3:46-47; Baker Decl., ¶ 103. Moreover, because Yang discloses a flexible design that can be used with various mobile devices, and a connector comprising the same four lines as a USB connection (*i.e.*, Power (VBUS), data lines (D+/D-), and ground), a person of ordinary skill in the art would immediately understand that the teachings of Yang regarding the adapter could be used in combination with the teaching of Matsumoto regarding a mobile device. Baker Decl., ¶ 104.

Moreover, Yang discloses an adapter design that would be easily distinguished from typical USB devices (like the personal computer that can be attached to the portable device of Matsumoto). Specifically, Yang discloses an adapter that comprises two pull-up resistors on the data lines, *i.e.*, a default high/high (SE1) signal.



Yang, Figure 2 (annotated); Baker Decl., ¶ 104. As discussed above, typical USB devices will have only one pull-up resistor (i.e., a high/low or low/high default signal depending on the speed of the device). *See* Section III.A.3. Accordingly, a person of ordinary skill in the art seeking to implement the USB device taught by Matsumoto would have understood that the Yang adapter would be a good and convenient design because the SE1 signal could be used as the "discriminating means" taught by Matsumoto.

Accordingly, a person of ordinary skill in the art would have been motivated to combine the teachings of Yang and Matsumoto in order to implement a USB Mobile device and associated wall adapter:



Yang Figure 2 and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 106. Upon detecting the adapter of Yang, the mobile device of Matsumoto would, as taught by Matsumoto, simply draw current from the USB VBUS line without engaging in enumeration or otherwise following the USB Specification.

2. Claim 1

Matsumoto in view of Yang renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 1 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 1 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Matsumoto in view of Yang. Specifically, Matsumoto discloses a "portable electronic device" that comprises a USB connection for connecting to a personal computer or an adapter. Matsumoto at Title and

Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."). A person of ordinary skill in the art would have understood or found obvious that such "portable electronic device" is or can be a mobile device. Baker Decl., ¶¶ 109-110.

Moreover, Yang teaches that the portable electronic device can be a mobile phone. Specifically, Yang discloses a "Mobile phone charger" that can be used to power and charge a mobile phone with a USB connection. Yang at Abstract ("A mobile phone charger") and at Specification page 1 ("The utility model relates to a charger, in particular to a mobile phone charger with multiple power supply inputs.")

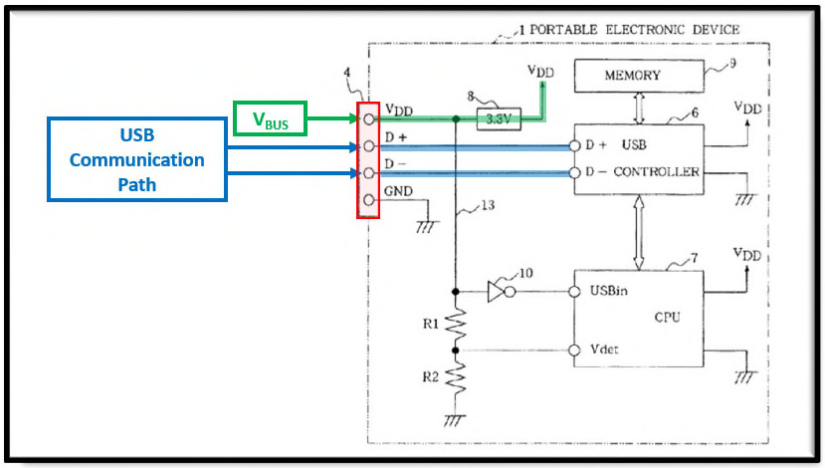
Accordingly, under the Broadest Reasonable Interpretation, Matsumoto in view of Yang discloses a mobile device as required by Claim 1.

b. *A USB communication path*

Claim 1 requires "a USB communication path." Matsumoto in view of Yang discloses this element. Specifically, Matsumoto in view of Yang discloses a charger and mobile device that connect to each other via a USB connection for purposes of charging. A person of ordinary skill in the art would have understood (and Yang and Matsumoto expressly disclose) that the devices thus comprise four connecting lines: (1) a power/voltage line, (2) a D+ data line, (3) a D- data line, and (4) a Ground line. Baker Decl., ¶ 111 A person of ordinary skill in the art would have understood that the data lines collectively comprise a "USB communication path." Baker Decl., ¶ 111.

Matsumoto teaches, for example, that the mobile device can connect to an adapter (like the charger of Yang) through a USB connector. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector" and "is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis

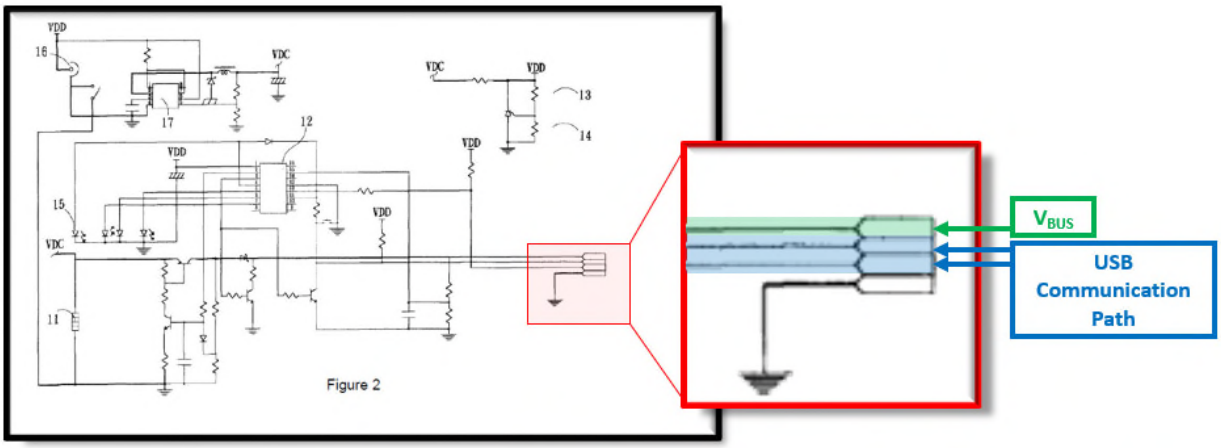
added). Matsumoto further discloses that the connector comprises connections for a "power source terminal" (USB VBUS line) and "a pair of data terminals" (USB communication path). *Id.*, 1:33-35 ("The USB connector has a pair of data terminals D+ and D- [USB Communication Path], power source terminal [VBUS line] and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal."). Because they are connected through a USB connector, a person of ordinary skill in the art would have understood that both the adapter and the portable device comprise a VBUS line (power/voltage) and a USB communication path (the D+ and D- lines). Baker Decl., ¶ 112.



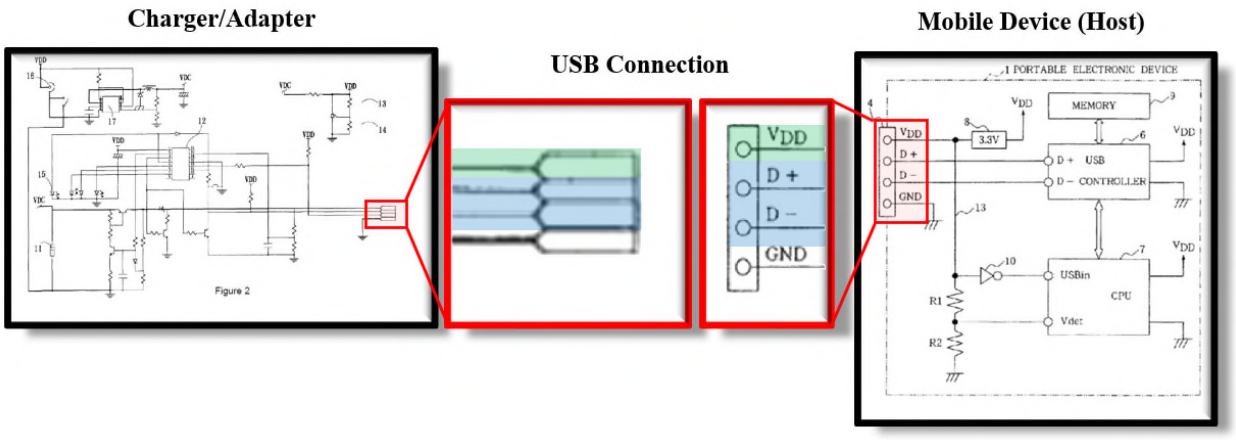
Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue)).

Yang similarly teaches that the adapter can comprise a VBUS line and USB Communication path and, thus, would connect to a mobile device with the same lines. Specifically, Yang teaches that the charger can draw power from a wall outlet. Yang, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs."); *Id.* at Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."). When power is drawn

from the wall socket, the charger first converts the power to the format used by an automobile power supply. *Id.*, Abstract ("The power supply input device converts the civil electricity to the same voltage as the automobile power supply through an AC transformer . . . ."); *id.*, Claim 1 ("The DC voltage conversion circuit converts the automobile voltage to the same voltage as the USB interface.") The charger then converts the power to a USB format. *Id.* ("[T]he DC voltage conversion circuit converts the automobile voltage to the same voltage as the USB interface.") The charger can then provide power to a mobile device according to the format used by the device which, in the case of the mobile device of Matsumoto, is a USB connection. *Id.* Like Matsumoto, Yang expressly discloses that the connection to the mobile device comprises a power line (USB VBUS line), two data lines (USB Communication path), and a Ground line:



Yang, Figure 2 (annotated) (showing USB connector (red), VBUS power line (green), and data lines (blue)). Baker Decl., ¶ 113.



Yang Figure 2 and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 113.

Accordingly, Matsumoto in view of Yang discloses a mobile device that comprises a USB Communication path as required by Claim 1.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 1 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Matsumoto in view of Yang discloses this element.

First, Matsumoto in view of Yang discloses a mobile device with a charging subsystem that is enabled to draw current. Specifically, Matsumoto discloses that the mobile device comprises a battery cell that can be used to power the mobile device. Matsumoto at 1:16-26 ("Portable electronic devices . . . conventionally have incorporated therein a dry cell or secondary sell serving as the power source to realize the portability of the device."). Matsumoto further discloses that the mobile device can draw power from a USB adapter and that, under the control of the CPU, that power can be used to charge the battery cell. *Id.* Abstract ("A portable electronic device . . . is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added); *id.* at 4:44-45 ("In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required . . . .")

(emphasis added). Yang similarly discloses that the mobile device can be a mobile phone that charges its battery using external power, and that such systems were well known at the time. Yang at Specification Page 1 ("At present, the use of mobile phones is quite popular. Almost everyone has a mobile phone. There are three types of charging devices for mobile phones . . . . The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries.").

A person of ordinary skill in the art would have thus understood that mobile device contains a charging subsystem for charging the battery and that it may comprise portions of the battery cells, CPU, USB Controller, and other components that are used to charge the battery. Baker Decl., ¶ 116.

Second, Matsumoto in view of Yang discloses that the charging subsystem is enabled to draw current "unrestricted by at least one predetermined USB Specification limit" in at least three ways. Specifically, Matsumoto in view of Yang discloses that the mobile device will (1) draw current in an upstream direction (*i.e.*, supplied at an upstream port and drawn by the host), (2) draw current (e.g., 100 mA) without having reached the "Default" state of enumeration, and (3) draw current in excess of 100mA without having reached the "Configured" state of enumeration. In other words, the mobile device draws current unrestricted by these limits. Baker Decl., ¶ 117.

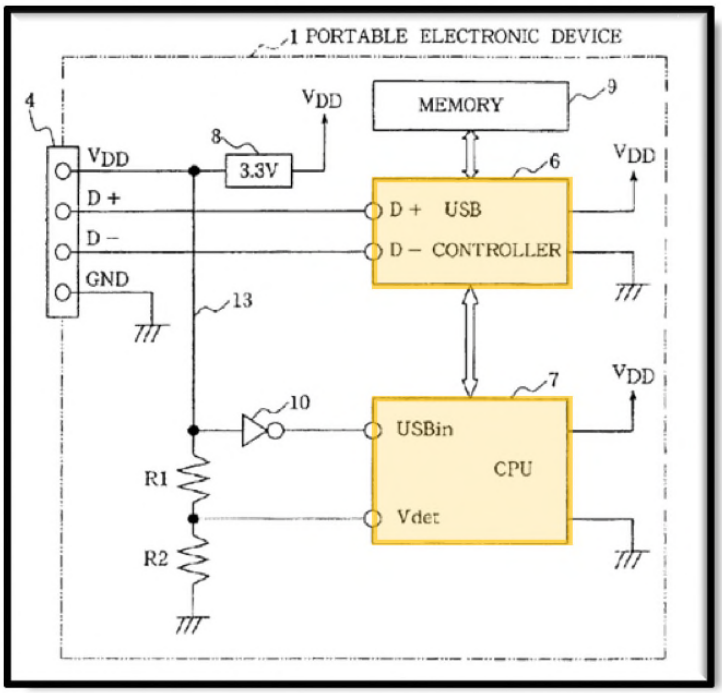
(1) Drawing Current Upstream

As discussed in section III.A.2, *supra*, the USB specification dictates that an upstream port is the port closest to the host. USB 2.0 at 10 ("An upstream port is the port on a device electrically closest to the host . . . ."); *id.* at 298 (Section 11.1.2.1 Packet Signaling Connectivity)

("Upstream connectivity is defined as being towards the host, and downstream connectivity is defined as being towards the device.").

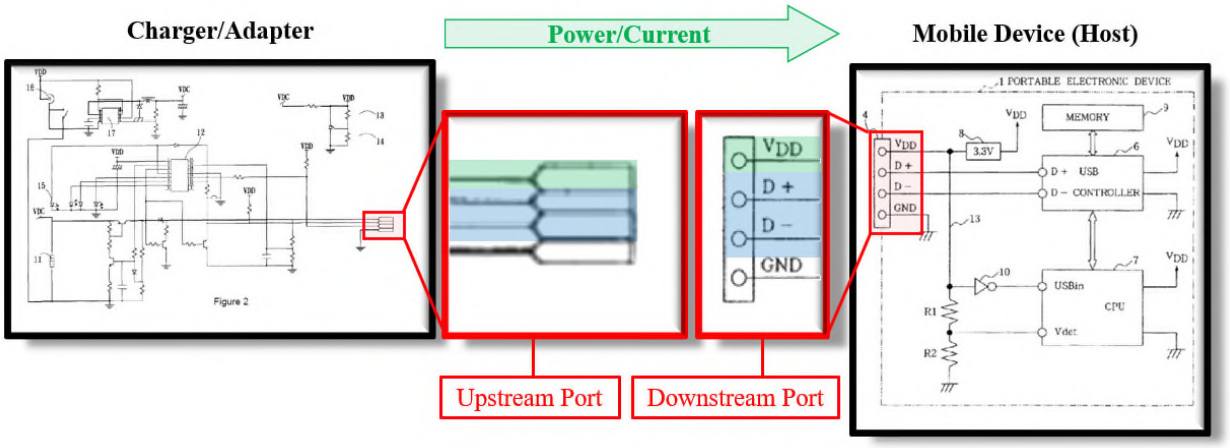
As also disclosed in section III.A.3, *supra*, the USB Specification limits the direction in which current can flow; it states that no device supply current on the VBUS at its upstream facing port and, correspondingly, that no device draw current from such upstream facing ports towards a downstream facing port (i.e., towards the host). USB 2.0 at 171 (Section 7.2.1) ("No device shall supply (source) current on VBUS at its upstream facing port at any time."); Baker Decl., ¶ 118. In other words, the host may supply power to other USB devices, but it may not draw power from such devices. *See* USB 2.0 at 24 (Section 4.9) (Host provides power to attached USB devices).

Matsumoto in view of Yang discloses a mobile device that draws current unrestricted by this limit. Specifically, a person of ordinary skill in the art would have understood that when the mobile device and adapter of Matsumoto in view of Yang are connected, the mobile device is the host. Baker Decl., ¶ 119-121 A USB network must have a host, and the host must comprise a USB controller and CPU. *See* Section III.A.1, *supra*. The mobile device of Matsumoto contains both of these elements and the adapter of Yang contains neither.



Matsumoto, Figure 1 (annotated) (showing USB Controller and CPU of portable electronic device in orange); *see also* Yang, Figure 2 (adapter does not contain USB controller or CPU).

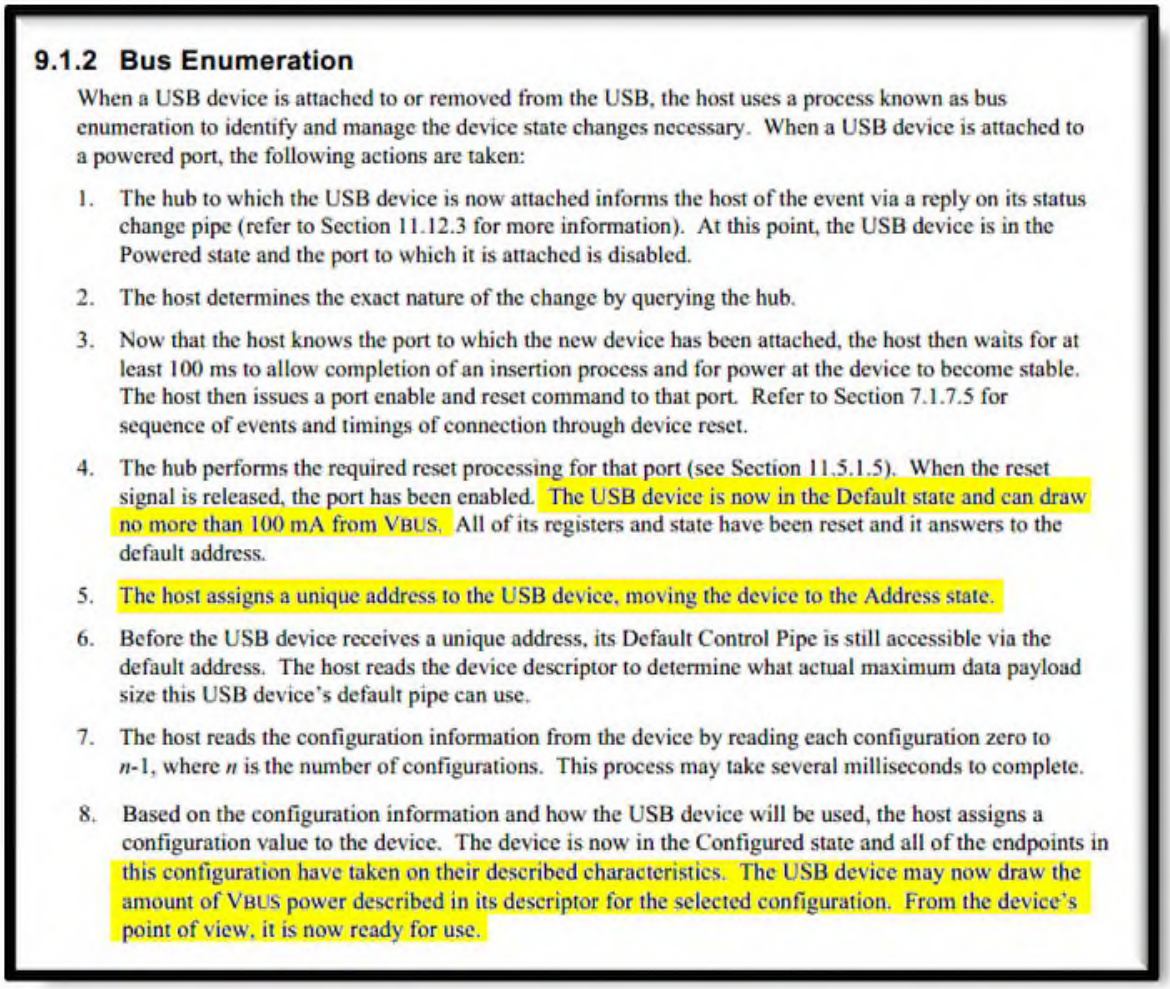
Because the mobile device is the host, the USB port of the adapter that connects to the mobile device (host) is an "upstream" port. Baker Decl., ¶ 120. Because the mobile device draws current as the host (i.e., current supplied at an upstream port), it draws unrestricted by at least one limit of the USB Specification. *Id.*



Accordingly, under the broadest reasonable interpretation, Matsumoto in view of Yang discloses a "charging subsystem" that is "enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

(2) Drawing More Current Than Stated in the USB Specification.

As discussed in section III.A.3, *supra*, the USB specification dictates a device shall not draw any current until the "Default" state and shall not draw more than 100 mA of current until the "Configured" state:



9.1.2 Bus Enumeration

When a USB device is attached to or removed from the USB, the host uses a process known as bus enumeration to identify and manage the device state changes necessary. When a USB device is attached to a powered port, the following actions are taken:

1. The hub to which the USB device is now attached informs the host of the event via a reply on its status change pipe (refer to Section 11.12.3 for more information). At this point, the USB device is in the Powered state and the port to which it is attached is disabled.
2. The host determines the exact nature of the change by querying the hub.
3. Now that the host knows the port to which the new device has been attached, the host then waits for at least 100 ms to allow completion of an insertion process and for power at the device to become stable. The host then issues a port enable and reset command to that port. Refer to Section 7.1.7.5 for sequence of events and timings of connection through device reset.
4. The hub performs the required reset processing for that port (see Section 11.5.1.5). When the reset signal is released, the port has been enabled. The USB device is now in the Default state and can draw no more than 100 mA from VBUS. All of its registers and state have been reset and it answers to the default address.
5. The host assigns a unique address to the USB device, moving the device to the Address state.
6. Before the USB device receives a unique address, its Default Control Pipe is still accessible via the default address. The host reads the device descriptor to determine what actual maximum data payload size this USB device's default pipe can use.
7. The host reads the configuration information from the device by reading each configuration zero to *n*-1, where *n* is the number of configurations. This process may take several milliseconds to complete.
8. Based on the configuration information and how the USB device will be used, the host assigns a configuration value to the device. The device is now in the Configured state and all of the endpoints in this configuration have taken on their described characteristics. The USB device may now draw the amount of VBUS power described in its descriptor for the selected configuration. From the device's point of view, it is now ready for use.

USB 2.0 at 243-244 (annotated). Baker Decl., ¶ 122.

Matsumoto in view of Yang renders obvious a mobile device that draws current unrestricted by these limits. Specifically, as noted below with respect to Claim 3, Matsumoto in

view of Yang discloses "discriminating means" that allows the mobile device to draw current without engaging in enumeration. *See* Section IV.A.4, *infra*. Once the adapter and device have recognized each other through the "discriminating means," the charger simply applies voltage to the VBUS line and the mobile device draws current as needed. Baker Decl., ¶ 123. Because USB devices can be classified as either low-power (drawing 100mA) or high-power (drawing 500mA) (*see* Section III.A.4), the mobile device would be configured to draw at least 100 mA (if the mobile device is a low-powered device), and it would have been obvious to configure the mobile device to draw up to 500 mA (for use with a high-powered device). Baker Decl., ¶ 123. In either event, the mobile device would be configured to draw current unrestricted by the USB Specification which limits the amount of current that can be supplied prior to the "Default" state. *Id.*; USB 2.0 at 243-244. ("The USB device is now in the Default state and can draw no more than 100 mA from VBUS.")

Moreover, it would have been obvious for to configure the mobile device to draw more than 100 mA prior to entering the "Configured" state. Baker Decl., ¶ 124. Indeed, once the mobile device and the adapter recognize each other through the "discriminating means," they operate outside of the USB Specification. Accordingly, a person of ordinary skill in the art would have understood that the adapter can maintain a set voltage and the mobile device can draw as much current as it needs. Baker Decl., ¶¶ 124-125. At a minimum, it would have been obvious to a person of ordinary skill in the art to configure the device to draw up to 500mA of current, which would be the maximum the device would be able to draw from a "normal" USB device (e.g., the computer of Matsumoto). *Id.* As noted above, USB devices can be classified as either low-power (drawing up to 100mA) or high-power (drawing up to 500mA). It would thus have been obvious (and at least obvious to try) to configure the mobile device as a high-power device that draws up to 500 mA. Indeed, Yang specifically discloses that the max current to be

drawn from a USB connection would be 500 mA, which would suggest that such the mobile device could be configured to draw that much current. Yang at Specification page 3 ("As we all know, the power supply of the USB interface of a regular PC is DC +5V, and the maximum current is 0.5A."). Moreover, Matsumoto does not limit the mobile device to any particular device, and Yang teaches that it may be a mobile phone. A person of ordinary skill in the art would have understood that a mobile phone would typically be a high-powered device, requiring as much current as possible for operation and charging. Baker Decl., ¶¶ 124-125.

Accordingly, a person of ordinary skill in the art implementing the mobile device of Matsumoto in view of Yang would have implemented the device to draw more than 0 mA (and at least 100 mA) of current prior to the "Default" state and more than 100 mA of current prior to the "Configured" state. Under the broadest reasonable interpretation, Matsumoto in view of Yang thus disclose a charging subsystem that is "enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

d. ***Said enablement being responsive to an abnormal USB data condition detected at said USB communication path***

Claim 1 requires "said enablement being responsive to an abnormal USB data condition detected at said USB communication path." Matsumoto in view of Yang discloses this element.

Specifically, as explained with respect to Claim 3, Matsumoto in view of Yang discloses using "discriminating means" to determine whether the mobile device is connected to a typical USB device or, alternatively, the adapter. There are a number of such discriminating means that would have been obvious to a person of ordinary skill in the art. Baker Decl., ¶ 126. For example, a person of ordinary skill in the art would have found obvious—and Yang and Matsumoto expressly disclose—that the mobile device may identify an unexpected data condition, one other than what the device would expect from typical USB operation (an "abnormal USB data condition," e.g., a condition on the USB communication path that is not

defined as a valid USB data condition) and, in response to that condition, immediately draw current from the adapter as discussed above. Baker Decl., ¶ 126. A person of ordinary skill in the art would have understood that the data condition would have to be "abnormal" or unexpected because, if the adapter presented a normal or expected data condition, the mobile device would likely mistake the adapter for a typical USB device and would attempt to engage in typical USB communication/enumeration, which is what Matsumoto is teaching to avoid. Baker Decl., ¶ 126.

Matsumoto in view of Yang discloses at least two abnormal USB data conditions that could be used for this purpose: (1) maintaining a low/low signal on the data lines (SE0 Signal) for an extended period of time after attachment and (2) sending a high/high signal on the data lines (SE1 Signal) at attachment.

(1) Abnormal USB Data Condition 1: Maintaining an SE0 Signal After Connection

Matsumoto expressly discloses, for example, that the adapter may keep both of the data lines low (*i.e.*, not send any signals on either line) after being connected to the mobile device and that, after a certain period of time, the discriminating means may thus determine that the mobile device is connected to an adapter. Matsumoto, 3:2-9 ("[W]ith the latter method, when the common serial bus controller started data communication via the common serial bus connector within a predetermined period of time, the information processing device is found to be the source of supply of power, whereas if data communication has not been started within the predetermined period of time, the external power source is found to be the supply source.") (emphasis added).

Generally, a short low/low signal is not an abnormal USB data condition. Baker Decl., ¶ 129. However, under the broadest reasonable interpretation of the term "abnormal USB data condition," an extended SE0 signal (*e.g.*, for more than 100ms) would be an abnormal USB data

condition because it is a condition that is not expected by the mobile device, e.g., it is not defined as valid by the USB Specification. Baker Decl., ¶ 129. A typical "idle" signal is either a high/low or low/high signal on the D+ and D- lines (depending on the speed of the device). Baker Decl., ¶ 129. Sending an SE0 signal for 10-20 ms is used to reset a device, but the reset signal is released after those 10-20 ms. USB 2.0 at 313 (Section 11.5.1.5 Resetting) ("The hub drives SE0 on the port during this timed interval. The duration of the Resetting state is nominally 10 ms to 20 ms (10 ms is preferred)."); Baker Decl., ¶ 129. Accordingly, sending an SE0 signal for more than 100ms upon attachment, under the broadest reasonable interpretation, would be an "abnormal USB data condition" on the data lines because it is not defined as a valid USB data condition after connecting a device. Indeed, the USB Specification requires that a connecting device signal that it is connected within 100ms of detecting voltage on the VBUS line by pulling either D+ or D- positive (i.e., signaling an "attach").

Table 7-14. Device Event Timings

Parameter	Symbol	Conditions	Min	Max	Units
Time from internal power good to device pulling D+/D- beyond V_{IHZ} (min) (signaling attach)	T_{SIGATT}	Figure 7-29		100	ms

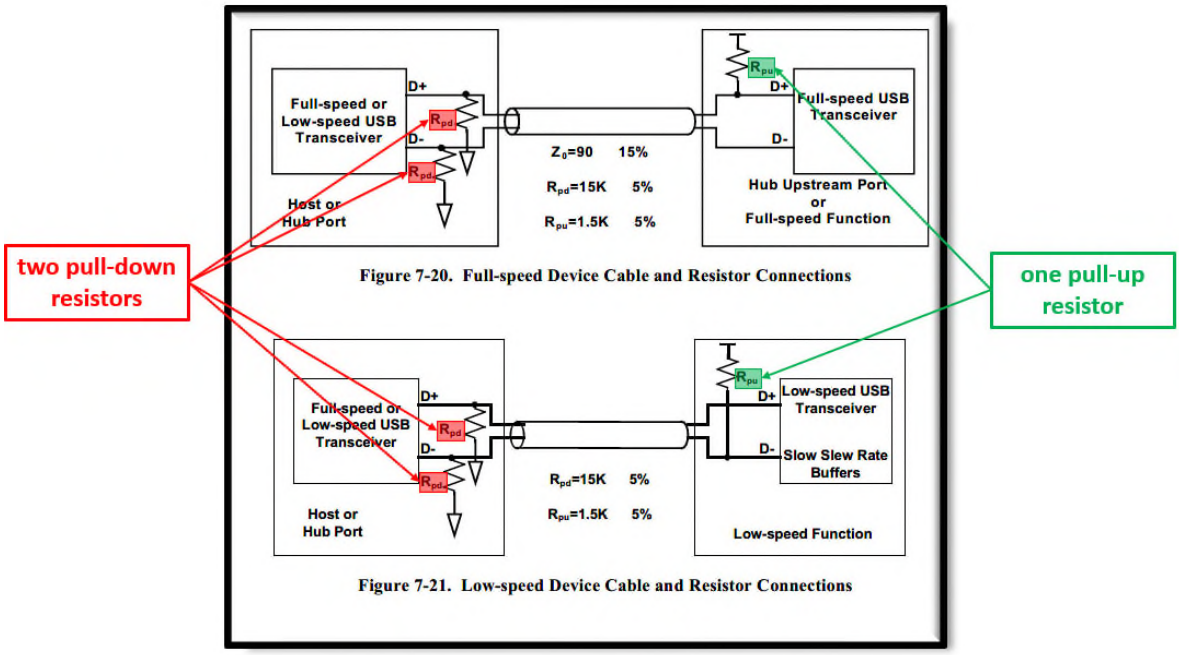
USB 2.0 at 188 (Table 7-14 Device Event Timings) (annotated); *see also* USB 2.0 at 150 (Section 7.1.7.3 Connect and Disconnect Signaling) ("Δt2 (T_{SIGATT}) This is the maximum time from when VBUS is up to valid level (4.01 V) to when a device has to signal attach. Δt2 represents the time required for the device's internal power rail to stabilize and for D+ or D- to reach VIH (min) at the hub. Δt2 must be less than 100 ms for all hub and device implementations. (This requirement only applies if the device is drawing power from the bus.)").

Accordingly, under the broadest reasonable interpretation of this claim, because

Matsumoto in view of Yang teaches that one option for the "discriminating means" is to send no signals (SE0) for an extended period of time, Matsumoto in view of Yang discloses that "said enablement being responsive to an abnormal USB data condition detected at said USB communication path" as required by Claim 1.

(2) Abnormal USB Data Condition 2: Using Termination Resistors to Send an SE1 Signal

Matsumoto in view of Yang further discloses that the adapter may pull each of the data lines high upon attachment (SE1 signal). Specifically, the USB Specification explains that when a device is connected, its termination resistors will determine whether it is a hub/host, a low-speed device or a full-speed device. *See* Section III.A.4, *supra*; USB 2.0 at 242 (9.1.1.3 Default) ("The speed selection for low- and full-speed is determined by the device termination resistors."). USB hubs and hosts have two pull-down resistors; full-speed and high-speed devices have a pull-up resistor on the D+ line; low-speed devices have a pull-up resistor on the D- line. USB 2.0 at 141 (Section 7.1.5.1 Low-/Full-Speed Device Speed Identification) ("The USB is terminated at the hub and function ends as shown in Figure 7-20 and Figure 7-21. Full-speed and low-speed devices are differentiated by the position of the pull-up resistor on the downstream end of the cable: Full-speed devices are terminated as shown in Figure 7-20 with the pull-up resistor on the D+ line. Low-speed devices are terminated as shown in Figure 7-21 with the pull-up resistor on the D- line."); Baker Decl., ¶ 132.



USB 2.0 at Figures 7-20 and 7-21 (annotated) (showing that typical USB hubs and hosts will have two pull down resistors and typical USB functions/devices will have one pull-up resistor to signal either low-speed or full-speed). Accordingly, full-speed devices will signal a default (idle) high/low on the D+/D- lines and low-speed devices will signal a default (idle) low/high signal on the D+/D- lines. Baker Decl., ¶ 132.

Table 7-2. Low-/full-speed Signaling Levels

Bus State	Signaling Levels		
	At originating source connector (at end of bit time)	At final target connector	
		Required	Acceptable
Differential "1"	D+ > V_{OH} (min) and D- < V_{OL} (max)	(D+) - (D-) > 200 mV and D+ > V_{IH} (min)	(D+) - (D-) > 200 mV
Differential "0"	D- > V_{OH} (min) and D+ < V_{OL} (max)	(D-) - (D+) > 200 mV and D- > V_{IH} (min)	(D-) - (D+) > 200 mV
Single-ended 0 (SE0)	D+ and D- < V_{OL} (max)	D+ and D- < V_{IL} (max)	D+ and D- < V_{IH} (min)
Single-ended 1 (SE1)	D+ and D- > V_{OSE1}(min)	D+ and D- > V_{IL} (max)	
Data J state: Low-speed Full-speed	 Differential "0" Differential "1"	 Differential "0" Differential "1"	
Data K state: Low-speed Full-speed	 Differential "1" Differential "0"	 Differential "1" Differential "0"	
Idle state: Low-speed Full-speed	NA	 D- > V_{IHZ} (min) and D+ < V_{IL} (max) D+ > V_{IHZ} (min) and D- < V_{IL} (max)	 D- > V_{IHZ} (min) and D+ < V_{IH} (min) D+ > V_{IHZ} (min) and D- < V_{IH} (min)

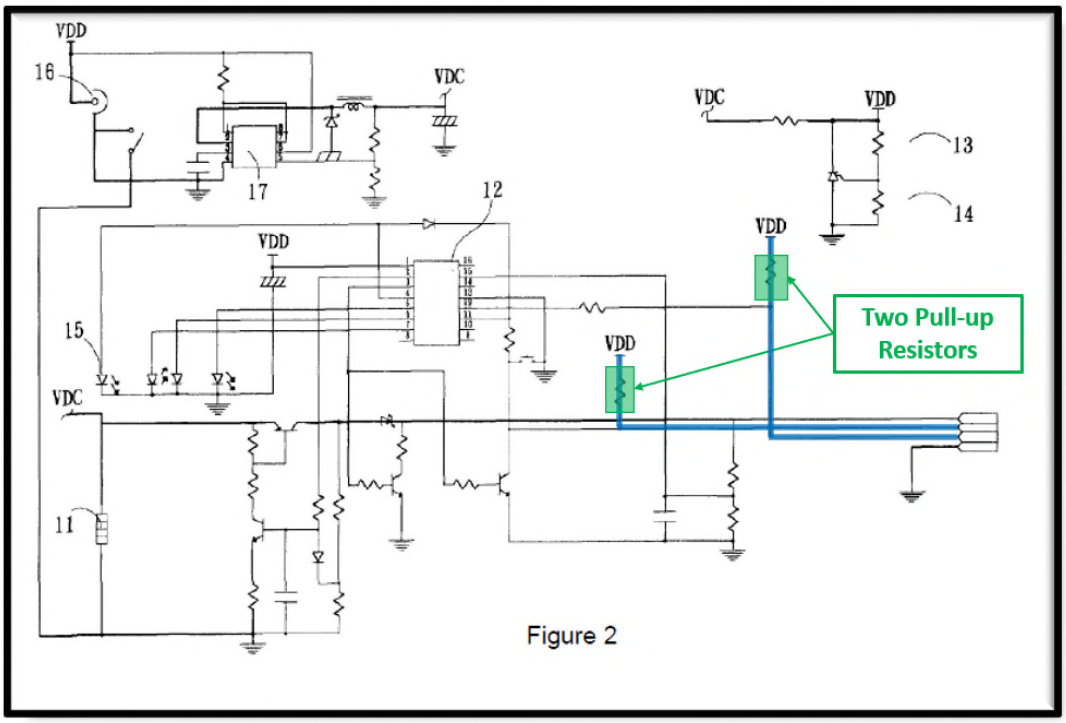
USB 2.0 at 145 (Table 7-2) annotated (showing: (1) full speed idle at D+ high (greater than V_{IHZ}) and D- low (less than V_{IL}))and (2) low-speed idle and D- high (greater than V_{IHZ}) and D+ low (less than V_{IL})).

Table 7-7. DC Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Supply Voltage:					
High-power Port	V_{BUS}	Note 2, Section 7.2.1	4.75	5.25	V
Low-power Port	V_{BUS}	Note 2, Section 7.2.1	4.40	5.25	V
Supply Current:					
High-power Hub Port (out)	I_{CCPRT}	Section 7.2.1	500		mA
Low-power Hub Port (out)	I_{CCUPT}	Section 7.2.1	100		mA
High-power Function (in)	I_{CCHPF}	Section 7.2.1		500	mA
Low-power Function (in)	I_{CCLPF}	Section 7.2.1		100	mA
Unconfigured Function/Hub (in)	I_{CCINIT}	Section 7.2.1.4		100	mA
Suspended High-power Device	I_{CCSH}	Section 7.2.3; Note 15		2.5	mA
Suspended Low-power Device	I_{CCSL}	Section 7.2.3		500	µA
Input Levels for Low-/full-speed:					
High (driven)	V_{IH}	Note 4, Section 7.1.4	2.0		V
High (floating)	V_{IHZ}	Note 4, Section 7.1.4	2.7	3.6	V
Low	V_{IL}	Note 4, Section 7.1.4		0.8	V

USB 2.0 at 178 (Table 7-7) (annotated) (showing voltage maximums and minimums for V_{IHZ} and V_{IL}).

Yang, in contrast, discloses that the charger can comprise two pull-up resistors connected to the data lines and thus sends a high/high signal on the data lines.



Yang, Figure 2 (annotated) (showing tow pull up resistors (green)). Baker Decl., ¶ 133. This signal is referred to as a "Single Ended 1" or "SE1" signal in the USB Specification:

Table 7-2. Low-/full-speed Signaling Levels

Bus State	Signaling Levels		
	At originating source connector (at end of bit time)	At final target connector	
		Required	Acceptable
Differential "1"	D+ > V_{OH} (min) and D- < V_{OL} (max)	(D+) - (D-) > 200 mV and D+ > V_{IH} (min)	(D+) - (D-) > 200 mV
Differential "0"	D- > V_{OH} (min) and D+ < V_{OL} (max)	(D-) - (D+) > 200 mV and D- > V_{IH} (min)	(D-) - (D+) > 200 mV
Single-ended 0 (SE0)	D+ and D- < V_{OL} (max)	D+ and D- < V_{IL} (max)	D+ and D- < V_{IH} (min)
Single-ended 1 (SE1)	D+ and D- > V_{OSE1}(min)	D+ and D- > V_{IL} (max)	
Data J state: Low-speed Full-speed	 Differential "0" Differential "1"	 Differential "0" Differential "1"	
Data K state: Low-speed Full-speed	 Differential "1" Differential "0"	 Differential "1" Differential "0"	
Idle state: Low-speed Full-speed	NA	 D- > V_{IHZ} (min) and D+ < V_{IL} (max) D+ > V_{IHZ} (min) and D- < V_{IL} (max)	 D- > V_{IHZ} (min) and D+ < V_{IH} (min) D+ > V_{IHZ} (min) and D- < V_{IH} (min)

USB 2.0 at 145 (Table 7-2) (annotated). A person of ordinary skill in the art would have understood that an SE1 signal on the data lines is an "abnormal USB data condition" because it is not defined as a valid USB data condition when connecting those devices. Baker Decl., ¶ 135. To the contrary, as noted above, a device must provide either a high/low signal or a low/high signal to indicate that it is a low-speed or full-speed device. Indeed, the USB Specification states that low-speed and full-speed devices should not intentionally send SE1 signals. USB 2.0 at 123 (Section 7.1.1 USB Driver Characteristics) ("Low-speed and full-speed USB drivers must never 'intentionally' generate an SE1 on the bus. SE1 is a state in which both the D+ and D- lines are at a voltage above VOSE1 (min), which is 0.8V."). Thus, a person of ordinary skill in the art implementing the mobile device of Matusmoto in combination with the charger of Yang would have understood that this signal could be used as the "discriminating means" taught by Matsumoto to distinguish between the adapter and the computer.

Accordingly, because Matsumoto in view of Yang teaches that one option for the "discriminating means" is to send an SE1 signal at connection, a person of ordinary skill in the

art would have understood that Matsumoto in view of Yang discloses or renders obvious that "said enablement [is] responsive to an abnormal USB data condition detected at said USB communication path" as required by Claim 1.

3. Claim 2

Matsumoto in view of Yang renders Claim 2 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 2 of the '766 Patent under 35 U.S.C. § 103

Claim 2 requires the device of Claim 1. As noted above, Matsumoto in view of Yang discloses the device of Claim 1.

Claim 2 further requires "wherein said predetermined USB Specification limit is a current limit." Matsumoto in view of Yang discloses this element. Specifically, as noted above with respect to Claim 1, the mobile device of Matsumoto in view of Yang draws current in the wrong direction and draws more current than permitted in the USB specification prior to the "Default" and "Configured" states. *See* Section IV.A.2.c. Accordingly, under the broadest reasonable interpretation of the claim, these limits are "current limits" because they pertain to the flow of current.

4. Claim 3

Matsumoto in view of Yang renders Claim 3 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 3 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 3 of the '766 Patent under 35 U.S.C. § 103

Claim 3 requires the device of Claim 1. As noted above, Matsumoto in view of Yang discloses the device of Claim 1.

Claim 3 further requires that "said enabling of the charging subsystem occurs without USB enumeration." As explained in Section III.A.4, *supra*, "enumeration" "is the activity that identifies and assigns unique addresses to the devices attached to a bus." USB 2.0 at 20 (Section 4.6.3 Bus Enumeration); *id.* at 243-244 (Section 9.1.2 Bus Enumeration) (listing the steps of enumeration). Matsumoto in view of Yang discloses a mobile device that meets this limitation. Specifically, Matsumoto in view of Yang discloses an adapter and mobile device that use "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a computer that may need to engage in typical USB communication). Baker Decl., ¶ 140. When the "discriminating means" determines that the mobile device is connected to the adapter, it avoids the enumeration process and other USB communication and immediately enables the device to draw current as discussed with respect to Claim 1. Baker Decl., ¶ 140.

Matsumoto teaches, for example, that the portable device can be connected via a USB connector to either (1) a computer or (2) an adapter (i.e., an external power source). Matsumoto, Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."); *id.* at 2:13-25 ("The present invention provides a portable electronic device comprising a serial bus connector . . . the electronic device being capable of receiving power supply from the information processing device [computer] or an external power source [adapter] as connected to

the common serios bus connector . . . .”). When the mobile device is connected to the computer, it results in USB communication (e.g., enumeration) between the two devices. *Id.*, 1:54-2:1 (“When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller.”) Such communication, however, slows down the operation of the portable electronic device. *Id.*, 1:60-64 (“This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction.”); *id.* at 2:1-4 (“This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.”)

Such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device). Accordingly, Matsumoto discloses using “discriminating means” to determine when the mobile device is connected to the adapter. Matsumoto, 2:58-59 (“The discriminating means identifies the source of supply of power . . . .”); *id.* at 2:46-50 (“Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . .”); *id.* at 2:13-27 (“The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . <u>The control circuit discriminates among the sources of supply of power</u>.”) (emphasis added).

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the control circuit will avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.") This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.")

Accordingly, a person of ordinary skill in the art would have understood that when the adapter and mobile device of Matsumoto in view of Yang are connected, the charging subsystem is enabled to draw current without being restricted by the USB Specification (as discussed with respect to Claim 1) without enumeration as required by Claim 3. Baker Decl., ¶¶ 141-144.

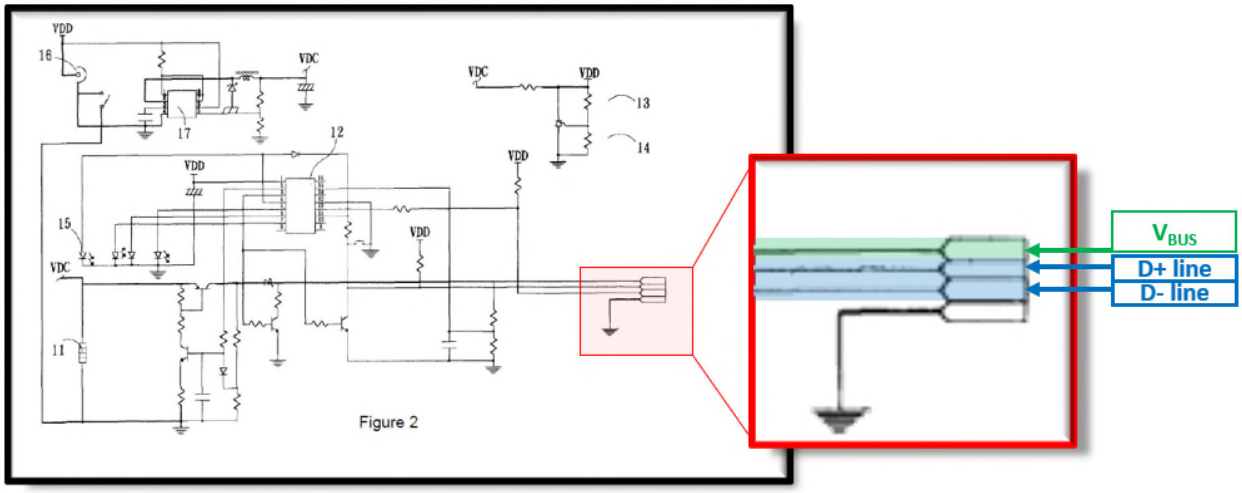
5. Claim 4

Matsumoto in view of Yang renders Claim 4 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 4 based on Matsumoto in view of Yang under 35 U.S.C. §103.

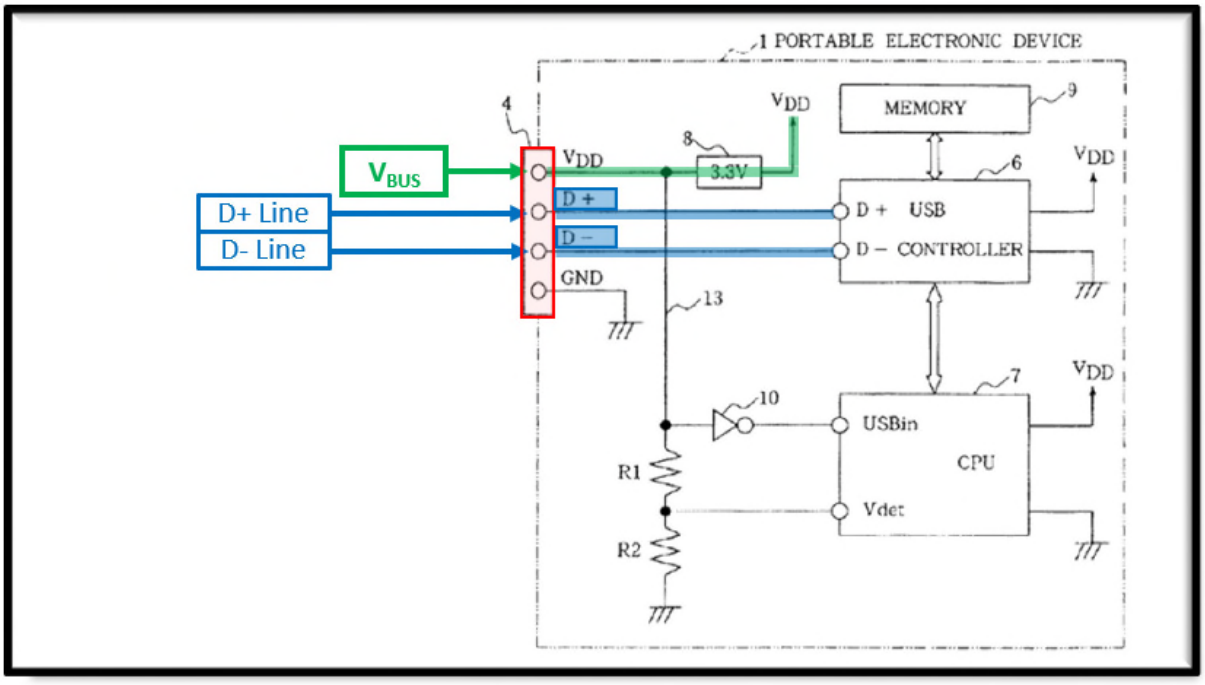
Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 4 of the '766 Patent under 35 U.S.C. § 103

Claim 4 requires the device of Claim 1. As noted above, Matsumoto in view of Yang discloses the device of Claim 1.

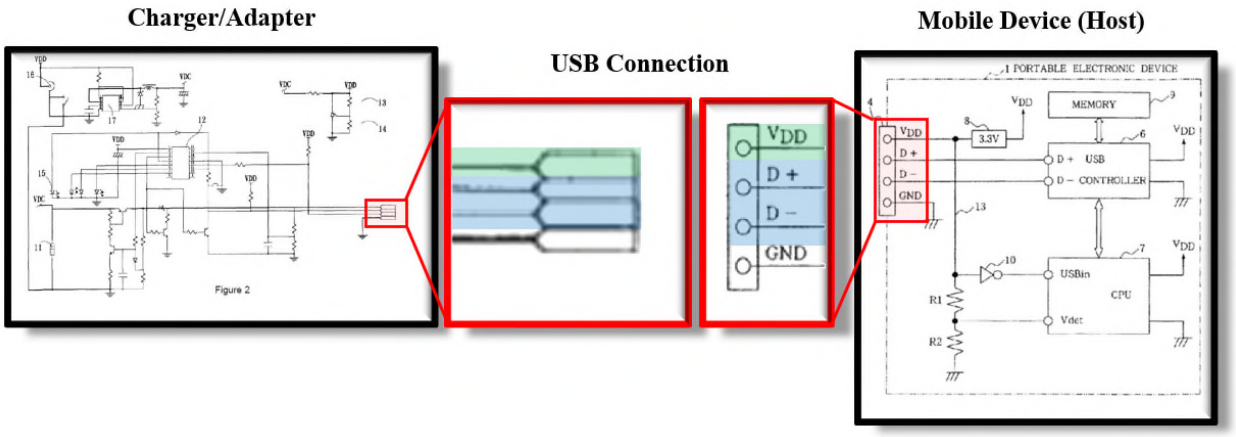
Claim 4 further requires that "said USB communication path includes a D+ line and a D- line." Matsumoto in view of Yang discloses this element. Specifically, as noted with respect to Claim 1, Matsumoto in view of Yang discloses a mobile device and a charger that connect to each other through USB connectors. *See* Section, IV.A.2.b. As further noted with respect to Claim 1, a person of ordinary skill in the art would have understood—and Yang and Matsumoto expressly disclose—that such connectors comprise a D+ and D- line that make up a USB communication path.



Yang, Figure 2 (annotated).



Matsumoto, Figure 1 (annotated).



Yang Figure 2 and Matsumoto Figure 1 (annotated).

Accordingly, Matsumoto in view of Yang discloses that the mobile device comprises a USB communication path "wherein said USB communication path includes a D+ line and a D- line" as required by Claim 4.

6. Claim 5

Matsumoto in view of Yang renders Claim 5 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 5 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 5 of the '766 Patent under 35 U.S.C. § 103

Claim 5 requires the device of Claim 4. As noted above, Matsumoto in view of Yang discloses the device of Claim 4.

Claim 5 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." Matsumoto in view of Yang discloses this element. Specifically, as disclosed with respect to Claim 1, Matsumoto in view of Yang discloses that the "discriminating means" for determining that the mobile device is connected to a charger/adapter may be (1) maintaining a low/low (SE0) signal for an extended period of time (e.g. more than 100ms) after the charger is connected or (2) intentionally sending a high/high signal (SE1) when the charger is connected. *See* Section IV.A.2.d. Because these conditions exist on the D+ and D- lines, they constitute "abnormal USB data line conditions" on the D+ line and D- line. Accordingly, Matsumoto in view of Yang disclose that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line" as required by Claim 5.

7. Claim 6

Matsumoto in view of Yang renders Claim 6 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 6 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 6 of the '766 Patent under 35 U.S.C. § 103

Claim 6 requires the device of Claim 5. As noted above, Matsumoto in view of Yang discloses the device of Claim 5.

Claim 6 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D- lines." Matsumoto in view of Yang discloses this element. Specifically, as explained with respect to Claim 1, Matsumoto in view of Yang discloses that the "discriminating means" for determining that the mobile device is connected to a charger/adapter may be (1) an extended low/low signal (SE0) after the device is connected or (2) a high/high signal (SE1) after the device is connected. *See* Claim 1. The second signal—the high/high (SE1) signal—constitutes "a logic high signal on each of said D+ and D- lines." Accordingly, Matsumoto in view of Yang disclose that "said abnormal USB data line condition is a logic high signal on each of said D+ and D lines" as required by Claim 6.

8. Claim 9

Matsumoto in view of Yang renders Claim 9 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 9 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 9 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

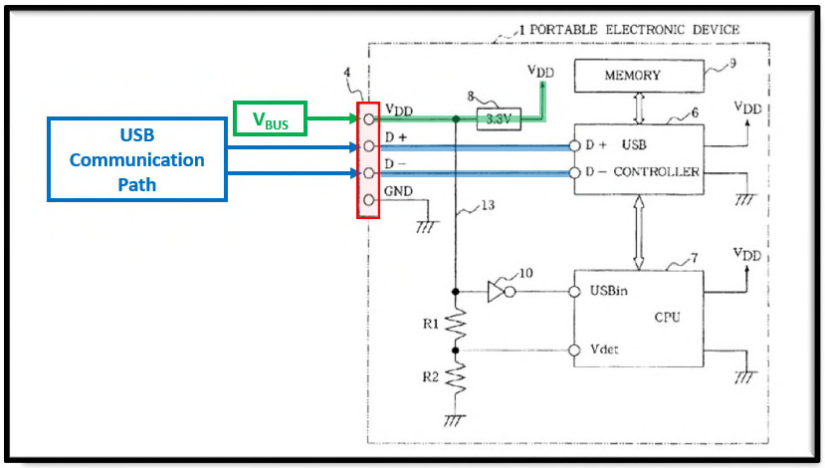
The preamble of Claim 9 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, as explained with respect to Claim 1, Matsumoto in view of Yang discloses a mobile device. *See* Section IV.A.2.a.

b. *A USB communication path and a USB VBUS line*

Claim 9 requires "a USB communication path and a USB VBUS line." Matsumoto in view of Yang discloses this element. Specifically, Matsumoto in view of Yang discloses a charger and mobile device that connect to each other via a USB connection for purposes of charging. A person of ordinary skill in the art would have understood (and Yang and Matsumoto expressly disclose) that the device thus comprises four connecting lines: (1) a power/voltage line, (2) a D+ data line, (3) a D- data line, and (4) a Ground line. Baker Decl., ¶ 153. A person of ordinary skill in the art would have understood that the power line is a "VBUS Line" and the data lines collectively comprise a "USB communication path." Baker Decl., ¶ 153.

Matsumoto teaches, for example, that the mobile device can connect to an adapter (like the charger of Yang) through a USB connector. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector" and "is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added). Matsumoto further discloses that the connector comprises connections for a "power source terminal" (USB VBUS line) and "a pair of data terminals" (USB communication path). *Id.*, 1:33-35 ("The USB connector has a pair of data terminals D+ and D- [USB Communication

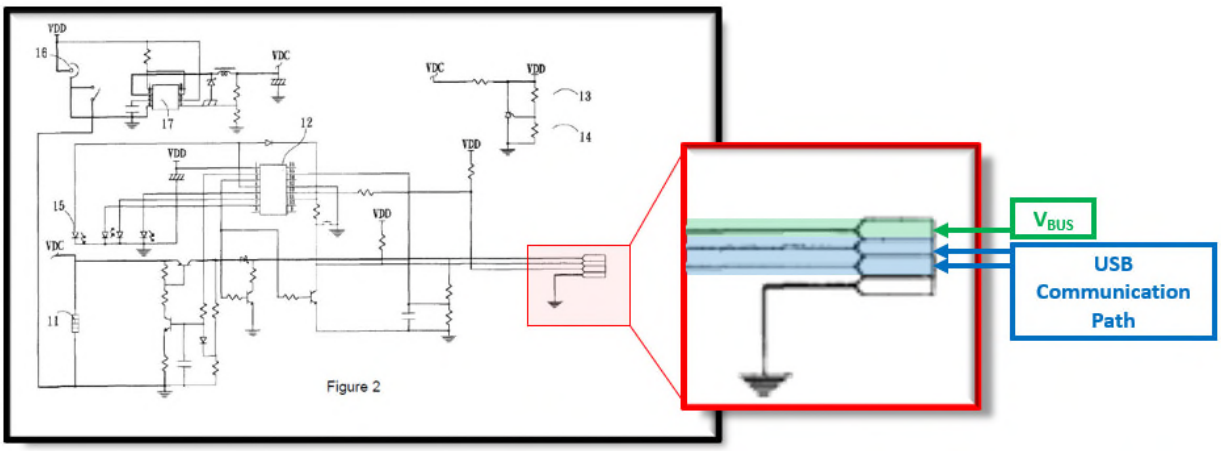
Path], power source terminal [VBUS line] and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal."). Because they are connected through a USB connector, a person of ordinary skill in the art would have understood that both the adapter and the portable device comprise a VBUS line (power/voltage) and a USB communication path (the D+ and D- lines). Baker Decl., ¶ 153.



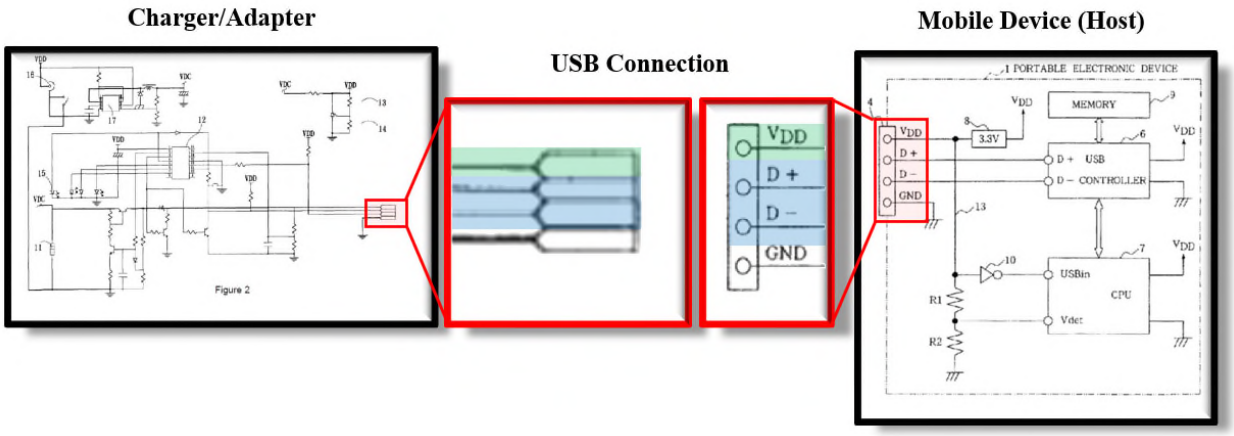
Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue)).

Yang similarly teaches that the adapter can comprise a VBUS line and USB Communication path. Specifically, Yang teaches that the charger can draw power from a wall outlet. Yang, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs."); *Id.* at Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."). When power is drawn from the wall socket, the charger first converts the power to the format used by an automobile power supply. *Id.*, Abstract ("The power supply input device converts the civil electricity to the same voltage as the automobile power supply through an AC transformer . . . ."); *id.*, Claim 1 ("The DC voltage conversion circuit converts the automobile

voltage to the same voltage as the USB interface." The charger then converts the power to a USB format. *Id.* ("[T]he DC voltage conversion circuit converts the automobile voltage to the same voltage as the USB interface.") The charger can then provide power to a mobile device according to the format used by the device which, in the case of the mobile device of Matsumoto, is a USB connection. *Id.* Like Matsumoto, Yang expressly discloses that the connection to the mobile device comprises a power line (USB VBUS line), two data lines (USB Communication path), and a Ground line:



Yang, Figure 2 (annotated) (showing USB connector (red), VBUS power line (green), and data lines (blue)). Baker Decl., ¶ 153.



Yang Figure 2 and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 153.

Accordingly, Matsumoto in view of Yang discloses a mobile device that comprises a VBUS line and a USB Communication path as required by Claim 9.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 9 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Matsumoto in view of Yang discloses this element. As explained with respect to Claim 1, Matsumoto in view of Yang discloses a charging subsystem that is configured to draw current unrestricted by several USB Specification limits: (1) drawing current upstream even though the USB Specification limits the flow of current to the downstream direction, (2) drawing more than 0mA (and at least 100 mA) of current prior to the "Default" state even though the USB Specification limits the flow of current prior to this state to 0mA, and (3) drawing more than 100mA of current prior to the "Configured" state even though the USB Specification limits the amount of current to at most 100mA prior to this state. *See* Section IV.A.2.c.

d. ***Said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path***

Claim 9 requires "said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path." Matsumoto in view of Yang discloses this element. Specifically, as explained with respect to Claim 1, Matsumoto in view of Yang discloses the enablement of the mobile device to draw current in the manner described above is responsive to an abnormal USB data condition detected on the USB communication path. *See* Section IV.A.2.d.

Matsumoto in view of Yang further discloses that said enablement is also responsive to the USB VBUS line being externally powered. Baker Decl., ¶¶ 157-159. Specifically, a person of ordinary skill in the art would have understood—and Matsumoto and Yang both disclose—

that the charging subsystem is enabled in response to the mobile device being attached to the charger, which powers the VBUS externally. Matsumoto, 2:47-50 ("[T]he control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector . . . ."); *id.* at 1:36-45 ("Accordingly, it appears feasible to provide the USB connector on a portable device for use with an a.c. adaptor (external power source) connectable to the power source terminal of the of the USB connector, and to connect the a.c. adaptor to the power source terminal [VBUS line] of the USB connector for the supply of power to the USB device.") (emphasis added); Yang at Claim 1 ("The voltage conversion IC converts the power supply voltage of the USB interface into the charging voltage of the mobile phone battery."). Matsumoto discloses for example, that the discriminating means will analyze the data lines for a certain period of time after the device has been connected to the adapter (and the VBUS has been externally powered) to see if communication has started. Matsumoto at 3:2-9.

Moreover, as noted in the USB Specification—which would have been known to a person of ordinary skill in the art—USB devices power the VBUS immediately upon attachment. *See* Section III.A.3; Baker Decl., ¶¶ 157-159. This is the first step that occurs when a USB device is attached to another USB device. *Id.* That is, the devices are attached and the devices entered the "Powered" state in which the VBUS line is powered:

Table 9-1. Visible Device States

Attached	Powered	Default	Address	Configured	Suspended	State
No	--	--	--	--	--	Device is not attached to the USB. Other attributes are not significant.
Yes	No	--	--	--	--	Device is attached to the USB, but is not powered. Other attributes are not significant.
Yes	Yes	No	--	--	--	Device is attached to the USB and powered, but has not been reset.
Yes	Yes	Yes	No	--	--	Device is attached to the USB and powered and has been reset, but has not been assigned a unique address. Device responds at the default address.

USB 2.0 at 241; Baker Decl., ¶¶ 157-159.

Accordingly, a person of ordinary skill in the art would have understood that the mobile device is enabled to draw current from the adapter (in the manner discussed with respect to Claim 1) in response to the power terminal of the device being connected to the power terminal of the adapter (USB VBUS line being externally powered) and the abnormal USB data condition detected at said USB communication path (either an extended SE0 signal or an SE1 signal as described with respect to Claim 1), as required by Claim 9.

9. Claim 10

Matsumoto in view of Yang renders Claim 10 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 10 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 10 of the '766 Patent under 35 U.S.C. § 103

Claim 10 requires the device of Claim 9. As noted above, Matsumoto in view of Yang discloses the device of Claim 9.

Claim 10 further requires that "said predetermined USB Specification limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Matsumoto in view of Yang discloses this element. *See* Section IV.A.3.

10. Claim 11

Matsumoto in view of Yang renders Claim 11 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 11 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 11 of the '766 Patent under 35 U.S.C. § 103

Claim 11 requires the device of Claim 9. As noted above, Matsumoto in view of Yang discloses the device of Claim 9.

Claim 11 further requires that "said enabling of the charging system occurs without USB enumeration." As explained with respect to Claim 3, Matsumoto in view of Yang discloses this element. *See* Section IV.A.4.

11. Claim 12

Matsumoto in view of Yang renders Claim 12 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 12 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 12 of the '766 Patent under 35 U.S.C. § 103

Claim 12 requires the device of Claim 9. As noted above, Matsumoto in view of Yang discloses the device of Claim 9.

Claim 12 further requires that "wherein said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Matsumoto in view of Yang discloses this element. *See* Section IV.A.5.

12. Claim 13

Matsumoto in view of Yang renders Claim 13 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 13 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 13 of the '766 Patent under 35 U.S.C. § 103

Claim 13 requires the device of Claim 12. As noted above, Matsumoto in view of Yang discloses the device of Claim 12.

Claim 13 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." As explained with respect to Claim 5, Matsumoto in view of Yang discloses this element. *See* Section IV.A.6.

13. Claim 14

Matsumoto in view of Yang renders Claim 14 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 14 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 14 of the '766 Patent under 35 U.S.C. § 103

Claim 14 requires the device of Claim 13. As noted above, Matsumoto in view of Yang discloses the device of Claim 13.

Claim 14 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D-lines." As explained with respect to Claim 6, Matsumoto in view of Yang discloses this element. *See* Section IV.A.7.

14. Claim 17

Matsumoto in view of Yang renders Claim 17 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 17 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 17 of the '766 Patent under 35 U.S.C. § 103

a. ***Preamble: A method of charging a mobile device having a charging subsystem and a USB communication path, comprising***

The preamble of Claim 17 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Matsumoto in view of Yang. Specifically, as explained with respect to Claim 1, Matsumoto in view of Yang discloses a mobile device having a charging subsystem and a USB communication path. *See* Sections IV.A.1.b-c. Moreover, both Matsumoto and Yang disclose a method for charging said mobile device with an adapter. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added); *id.* at 4:44-45 ("In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required . . . ."); Yang, Abstract (disclosing "[a] mobile phone charger"); *id.* at Claim 1 (claiming "[a] mobile phone charger with multiple power supply inputs" that converts power "into the voltage used by the mobile phone battery").

Accordingly, Matsumoto in view of Yang discloses a "method of charging a mobile device having a charging subsystem and a USB communication path."

b. ***Upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit***

Claim 17 requires the step of "upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit." Matsumoto in view of Yang discloses this element. Specifically, as explained with respect to Claim 3, Matsumoto in view of Yang discloses using "discriminating means" to determine whether the mobile device is connected to a typical USB device or, alternatively, the adapter. Moreover, as explained with respect to Claim 1, Matsumoto in view of Yang discloses that the discriminating means may comprise an abnormal USB data condition on the data lines. *See* Section IV.A.2.d. Specifically,

Matsumoto in view of Yang discloses that the abnormal USB data condition may be (1) maintaining a low/low signal on the data lines (SE0 Signal) for an extended period of time after connection (Section IV.A.2.d.1) or (2) sending a high/high signal on the data lines (SE1 Signal) at attachment (Section IV.A.2.d.1). A person of ordinary skill in the art would understand that each of these constitutes an "identification signal" because the abnormal USB data condition (the "discriminating means" of Matsumoto) indicates that the mobile device is connected to an adapter, rather than a typical USB device, and that the mobile device may draw current from the adapter in the manner described above (i.e., unrestricted by at least one limit of the USB Specification). Baker Decl., ¶ 168.

Indeed, Claims 19 and 21 of the '766 Patent depend on Claim 17 and expressly discloses that the identification signal may be "an abnormal data signal on the USB communication path" and, specifically, that it may comprise logic high signals on said D+ line and said D-line (an SE1 signal). '766 Patent at Claims 19 and 21. Moreover, the '766 Patent expressly discloses that this is the "preferred" identification signal. *Id.*, 9:28-31 ("The preferred identification signal results from the application of Voltage signals greater than 2 volts to both the D+ and D-lines in the USB connector 54.")

Moreover, as explained with respect to Claim 1, Matsumoto in view of Yang discloses that the mobile device draws current in excess of at least one USB Specification defined limit in response to said identification signals. *See* Section IV.A.2.c. Specifically, Matsumoto in view of Yang discloses that the mobile device (1) draws current as a host in the upstream direction even though the USB specification limits the flow of current to the downstream direction (Section IV.A.2.c.1), (2) draws more than 0mA of current (and at least 100 mA) prior to entering the "Default" state (Section IV.A.2.c.2) even though the USB Specification limits devices from drawing current at that time, and (3) draws more than 100mA of current prior to entering the

"Configured" state even though the USB Specification limits the amount of current that can be drawn at that time to 100 mA (Section IV.A.2.c.2.).

Accordingly, Matsumoto in view of Yang discloses the step of "upon detection of an identification signal on said path [maintained SE0 or SE1], drawing current in excess of at least one USB Specification defined limit [drawing current upstream and in an amount more than allowed by the USB Specification]."

c. *if said identification signal is not detected, drawing current in accordance with said USB Specification*

Claim 17 requires the step of "if said identification signal is not detected, drawing current in accordance with said USB Specification." Matsumoto in view of Yang discloses this element. Specifically, Matsumoto discloses that if the identification signal is not detected, it means the mobile device is connected to the personal computer of Matsumoto. In that case, the Personal Computer acts as the host and supplies power (in the correct direction) after engaging in enumeration (i.e., in the correct amounts). That is, in the absence of the identification signal, the mobile device of Matsumoto draws current in accordance with the USB Specification.

Specifically, Matsumoto in view of Yang discloses an adapter and mobile device that use "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a computer that may need to engage in typical USB communication). Baker Decl., ¶ 171. When the "discriminating means" determines that the mobile device is connected to the adapter, it avoids the enumeration process and other USB communication and immediately enables the device to draw current as discussed with respect to Claim 1. Baker Decl., ¶ 171.

Matsumoto teaches, for example, that the portable device can be connected via a USB connector to either (1) a computer or (2) an adapter (i.e., an external power source). Matsumoto, Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."); *id.* at

2:13-25 (“The present invention provides a portable electronic device comprising a serial bus connector . . . the electronic device being capable of receiving power supply from the information processing device [computer] or an external power source [adapter] as connected to the common serios bus connector . . . .”). When the mobile device is connected to the computer, it results in USB communication (e.g., enumeration) between the two devices. *Id.*, 1:54-2:1 (“When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller.”) Such communication, however, slows down the operation of the portable electronic device. *Id.*, 1:60-64 (“This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction.”); *id.* at 2:1-4 (“This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.”)

Such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device). Accordingly, Matsumoto discloses using “discriminating means” to determine when the mobile device is connected to the adapter. Matsumoto, 2:58-59 (“The discriminating means identifies the source of supply of power . . . .”); *id.* at 2:46-50 (“Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common

serial bus connector . . . ."); *id.* at 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . The control circuit discriminates among the sources of supply of power.") (emphasis added).

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the control circuit will avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.") This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.")

Accordingly, a person of ordinary skill in the art would have understood that when the personal computer and mobile device of Matsumoto in view of Yang are connected, the discriminating means will not detect the identification signal, determine that it is connected to a computer, and draw current in accordance with the USB Specification as required by Claim 17.

15. Claim 18

Matsumoto in view of Yang renders Claim 18 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 18 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 18 of the '766 Patent under 35 U.S.C. § 103

Claim 18 requires the method of Claim 17. As noted above, Matsumoto in view of Yang discloses the method of Claim 17.

Claim 18 further requires that "said USB Specification defined limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Matsumoto in view of Yang discloses this element. *See* Section IV.A.3.

16. Claim 19

Matsumoto in view of Yang renders Claim 19 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 19 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 19 of the '766 Patent under 35 U.S.C. § 103

Claim 19 requires the method of Claim 17. As noted above, Matsumoto in view of Yang discloses the method of Claim 17.

Claim 19 further requires that "the identification signal includes an abnormal signal on the USB communication path." Matsumoto in view of Yang discloses this element. Specifically, as disclosed above and with respect to Claim 1, Matsumoto in view of Yang discloses that the identification signal is either an extended SE0 signal or an SE1 signal. *See*

Section IV.A.2.d. Each of these constitutes an abnormal signal on the USB communication path. *Id.*

17. Claim 20

Matsumoto in view of Yang renders Claim 20 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 20 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 20 of the '766 Patent under 35 U.S.C. § 103

Claim 20 requires the method of Claim 19. As noted above, Matsumoto in view of Yang discloses the method of Claim 19.

Claim 20 further requires that "said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Matsumoto in view of Yang discloses this element. *See* Section IV.A.5.

18. Claim 21

Matsumoto in view of Yang renders Claim 21 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 21 based on Matsumoto in view of Yang under 35 U.S.C. §103.

Please see attached Exhibit CC-A for a claim chart comparing Matsumoto in view of Yang with Claim 21 of the '766 Patent under 35 U.S.C. § 103

Claim 21 requires the method of Claim 20. As noted above, Matsumoto in view of Yang discloses the method of Claim 20.

Claim 21 further requires that "the abnormal signal includes logic high signals on said D+ line and said D-line." As explained with respect to Claim 6, Matsumoto in view of Yang discloses this element. See Section IV.A.7.

B. Matsumoto in view of De Iuliis renders Claims 1-5, 9-13, and 17-20 Obvious.

For the reasons stated below, Matsumoto in view of De Iuliis renders Claims 1-5, 9-13, and 17-20 Obvious.

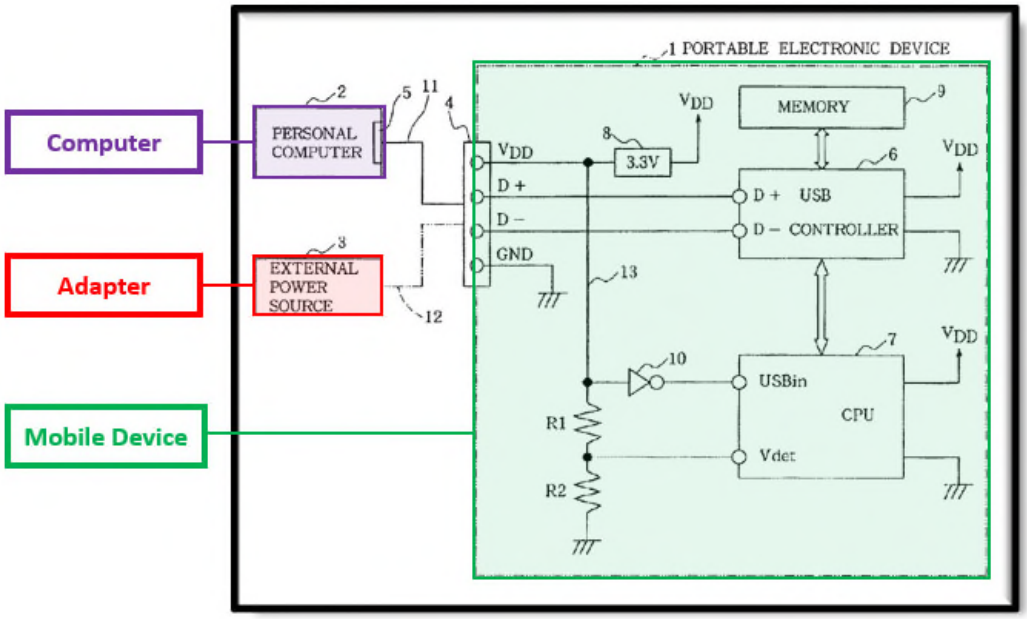
1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Matsumoto with the teachings of De Iuliis. OTH-A (Baker Decl.,), ¶¶ 177-182.

Both Matsumoto and De Iuliis relate to systems and methods for powering portable electronic devices (i.e., mobile devices) through a USB connection. Baker Decl., ¶ 178. Specifically, each involves a system and method for powering such mobile devices using an adapter that connects directly between a wall outlet and the USB connector of a mobile device. Ex. PA-A (Matsumoto), Abstract ("A portable electronic device . . . is adapted to receive a power supply from . . . an external power source.") and 3:46-47 ("an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12."); Ex. PA-C (De Iuliis) at 1:20-39 ("More particularly, the present invention relates to improved techniques for powering and/or charging peripheral devices through a data transmission line . . . . the peripheral device 12 may be a portable device such as a personal computer, personal digital assistant, cellular phone, digital camera, media player, and the like."); Baker Decl., ¶ 178.

As noted in Section III.C.1, *supra*, Matsumoto discloses that such mobile devices can be connected through a USB connection to either (1) a computer or (2) an adapter connected to a

wall outlet. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."):



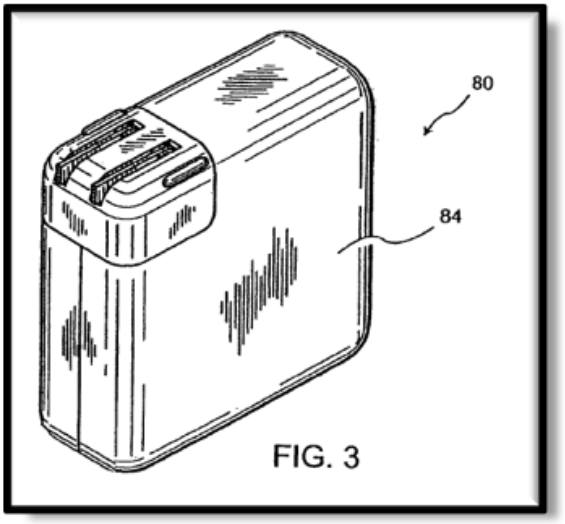
Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)).

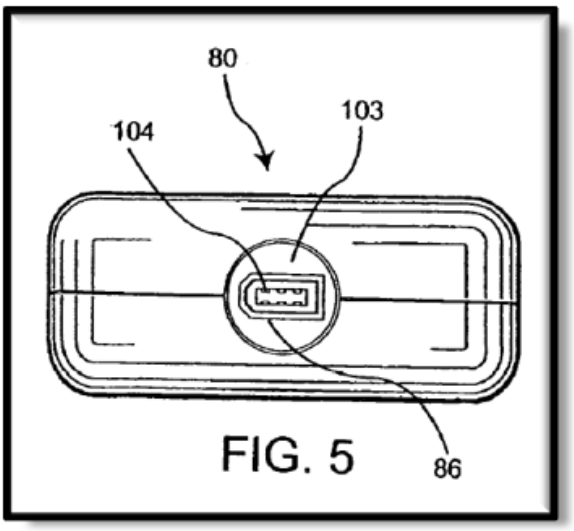
Matsumoto further teaches that, when connected to the adapter, the mobile device need not undergo enumeration and, accordingly, it is beneficial to include "discriminating means" for determining when the mobile device is connected to an adapter (as opposed to a computer). Baker Decl., ¶ 179.

Accordingly, Matsumoto discloses a USB device with a corresponding adapter. Baker Decl., ¶ 181. A person seeking to implement a mobile device and USB wall adapter pursuant to the teachings of Matsumoto would therefore search for references disclosing such adapters and would find De Iuliis. Baker Decl., ¶ 181. De Iuliis discloses precisely what is suggested by Matsumoto, a USB adapter for powering a mobile device through a USB connection. De Iuliis at

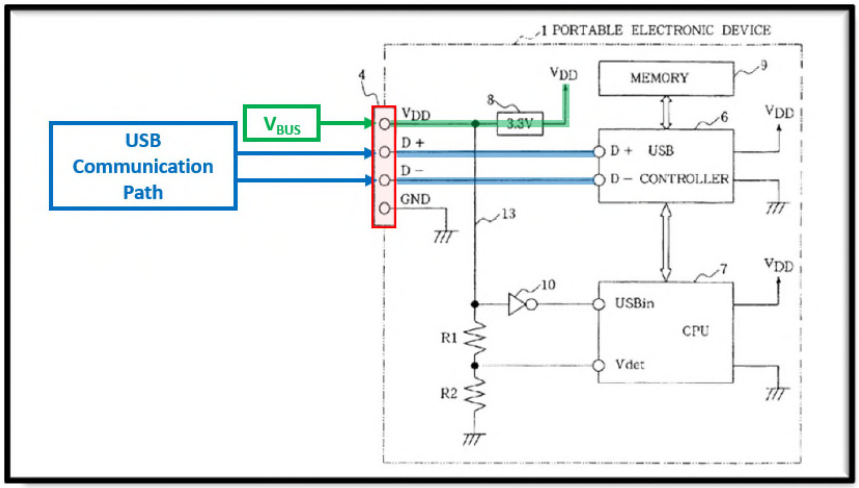
4:55-56 (“By way of example, the data transmission line 58 may be a universal serial bus (USB)”); Baker Decl., ¶ 181.

Accordingly, a person of ordinary skill in the art would have been motivated to combine the teachings of De Iuliis and Matsumoto in order to implement a USB Mobile device and associated wall adapter:





De Iuliis at Figures 3 and 5 (showing adapter with connection for wall-socket and data port connection to power mobile device).



Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue)); Baker Decl., ¶ 182.

2. Claim 1

Matsumoto in view of De Iuliis renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 1 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 1 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Matsumoto in view of De Iuliis. Specifically, Matsumoto discloses a "portable electronic device" that comprises a USB connection for connecting to a personal computer or an adapter. Matsumoto at Title and Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."). A person of ordinary skill in the art would have understood or found obvious that such "portable electronic device" is or can be a mobile device.

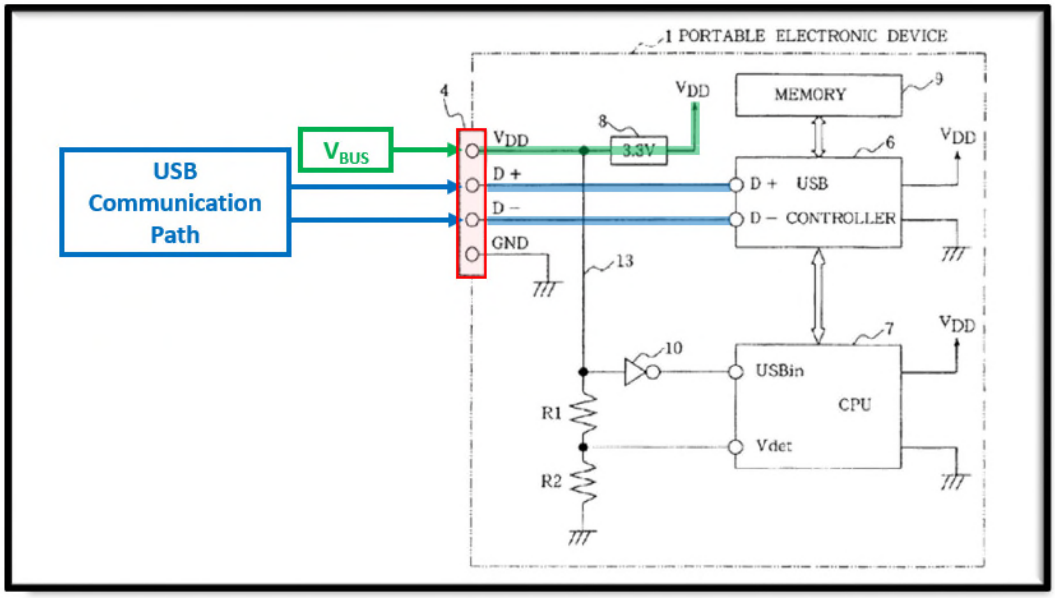
Moreover, De Iuliis discloses that the adapter is for use with any peripheral device. Ex. PA-C (De Iuliis) at 1:20-39 ("More particularly, the present invention relates to improved techniques for powering and/or charging peripheral devices through a data transmission line . . . . the peripheral device 12 may be a portable device such as a personal computer, personal digital assistant, cellular phone, digital camera, media player, and the like.").

Accordingly, under the Broadest Reasonable Interpretation, Matsumoto in view of De Iuliis discloses a mobile device.

b. *A USB communication path*

Claim 1 requires "a USB communication path." Matsumoto in view of De Iuliis discloses this element. Specifically, Matsumoto in view of De Iuliis discloses a charger/adapter and mobile device that connect via a USB connection for purposes of charging. A person of ordinary skill in the art would have understood (and De Iuliis and Matsumoto expressly disclose) that the devices thus comprise four connecting lines: (1) a power/voltage line, (2) a D+ data line, (3) a D- data line, and (4) a Ground line. A person of ordinary skill in the art would have understood that the voltage line constitutes a "USB VBUS line" and that the data lines collectively comprise a "USB communication path." Baker Decl., ¶ 187.

Matsumoto teaches, for example, that the mobile device can connect to an adapter (like the adapter of De Iuliis) through a USB connection. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector" and "is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added). Matsumoto further discloses that the connector comprises connections for a "power source terminal" (USB VBUS line) and "a pair of data terminals" (USB communication path). *Id.*, 1:33-35 ("The USB connector has a pair of data terminals D+ and D- [USB Communication Path], power source terminal [VBUS line] and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal."). Because they are connected through a USB connector, a person of ordinary skill in the art would have understood that both the adapter and the portable device comprise a VBUS line (power/voltage) and a USB communication path (the D+ and D- lines).



Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue)).

De Iuliis similarly discloses that the power adapter includes a standard data port that can be used to supply both power as well as data and specifically states that this can be a USB connection. De Iuliis, Abstract ("The power adapter also includes a data port provided at a surface of the housing. The data port is configured to provide external power to the peripheral device."); *id.*, 2:22-29 ("The power adapter also includes a data connector assembly electrically coupled to the power connection, the data connector assembly providing at least one combined power [USB VBUS Line] and data connection [USB communication path], wherein the power provided by the combined data and power connection is used to operate or charge a peripheral device."); *id.* at 4:51-53 ("The data transmission line 58 is preferably a data transmission line having both data [USB Communication Path] and power transmitting [USB VBUS line] capabilities. As was stated earlier, the power transmitting capabilities are associated with data transmissions."); *id.* at 4:55-56 ("By way of example, the data transmission line 58 may be a universal serial bus (USB)").

Accordingly, a person of ordinary skill in the art would have understood that the adapter of Matsumoto in view of De Iuliis comprises a USB Communication path as required by Claim 1.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 1 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Matsumoto in view of De Iuliis discloses this element.

First, Matsumoto in view of De Iuliis discloses a charging subsystem that is enabled to draw current. Baker Decl., ¶ 190. Specifically, Matsumoto discloses that the mobile device comprises a battery cell that can be used to power the mobile device. Matsumoto at 1:16-26 ("Portable electronic devices . . . conventionally have incorporated therein a dry cell or secondary sell serving as the power source to realize the portability of the device."). Matsumoto further discloses that the mobile device can draw power from a USB adapter and that, under the control of the CPU, that power can be used to charge the battery cell. *Id.* Abstract ("A portable electronic device . . . is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added); *id.* at 4:44-45 ("In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required . . . ."). De Iuliis similarly discloses that the peripheral device to which the adapter is connected can charge the battery using the USB connection. De Iuliis at 2:12-15 ("The invention pertains to power adapters that allow a user to power and/or charge a peripheral device such as a portable electronic device without requiring any additional cables or connectors."). Accordingly, a person of ordinary skill in the art would have thus understood that mobile device contains a charging subsystem for charging the battery and that it may comprise portions of the battery cells, CPU, and other components that are used to charge the battery.

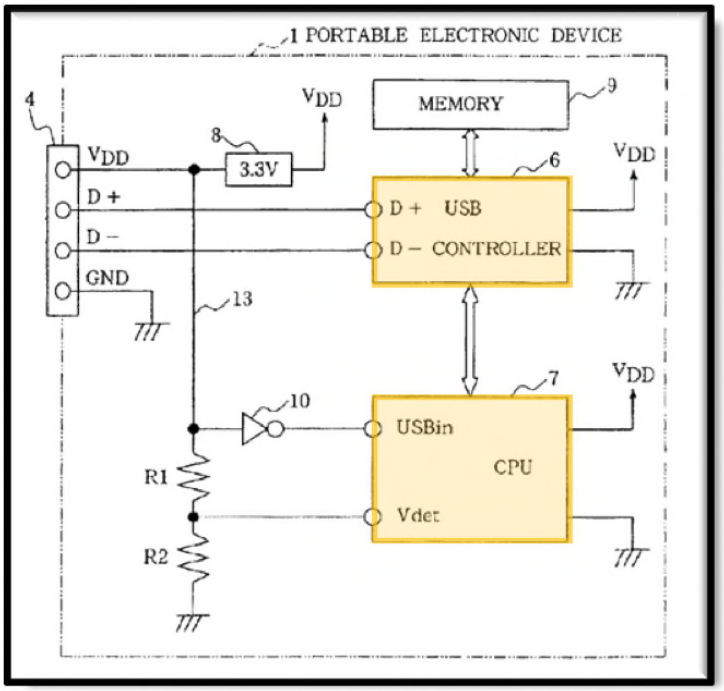
Second, Matsumoto in view of De Iuliis discloses that the charging subsystem is enabled to draw current "unrestricted by at least one predetermined USB Specification limit." Specifically, Matsumoto in view of De Iuliis discloses that the mobile device will: (1) draw current upstream even though the USB Specification limits the flow of current to the downstream direction, (2) draw more than 0mA (and at least 100 mA) of current prior to the "Default" state, and (3) draw more than 100mA of current prior to the "Configured" state. Baker Decl., ¶ 191.

(1) Drawing Current Upstream.

As discussed in section III.A.2, *supra*, the USB specification dictates that an upstream port is the port closest to the host. USB 2.0 at 10 ("An upstream port is the port on a device electrically closest to the host . . . ."); *id.* at 298 (Section 11.1.2.1 Packet Signaling Connectivity) ("Upstream connectivity is defined as being towards the host, and downstream connectivity is defined as being towards the device."). As also disclosed in section III.A.3, *supra*, the USB Specification limits the direction in which current can flow; it states that no device supply current on the VBUS at its upstream facing port and, correspondingly, that no device draw current from such downstream facing ports to an upstream facing port. USB 2.0 at 171 (Section 7.2.1) ("No device shall supply (source) current on VBUS at its upstream facing port at any time."); Baker Decl., ¶ 192. In other words, the host may supply power to other USB devices, but it may not draw power from such devices. *See* USB 2.0 at 24 (Section 4.9) (Host provides power to attached USB devices).

Matsumoto in view of De Iuliis teaches a mobile device that draws current unrestricted by this limit. Specifically, a person of ordinary skill in the art would have understood that when the mobile device of Matsumoto in view of De Iuliis is connected to the adapter (and not the personal computer) the mobile device is the host. Baker Decl., ¶¶ 193-195. A USB network must have a host, and the host must comprise a USB controller and CPU. *See* Section III.A.1,

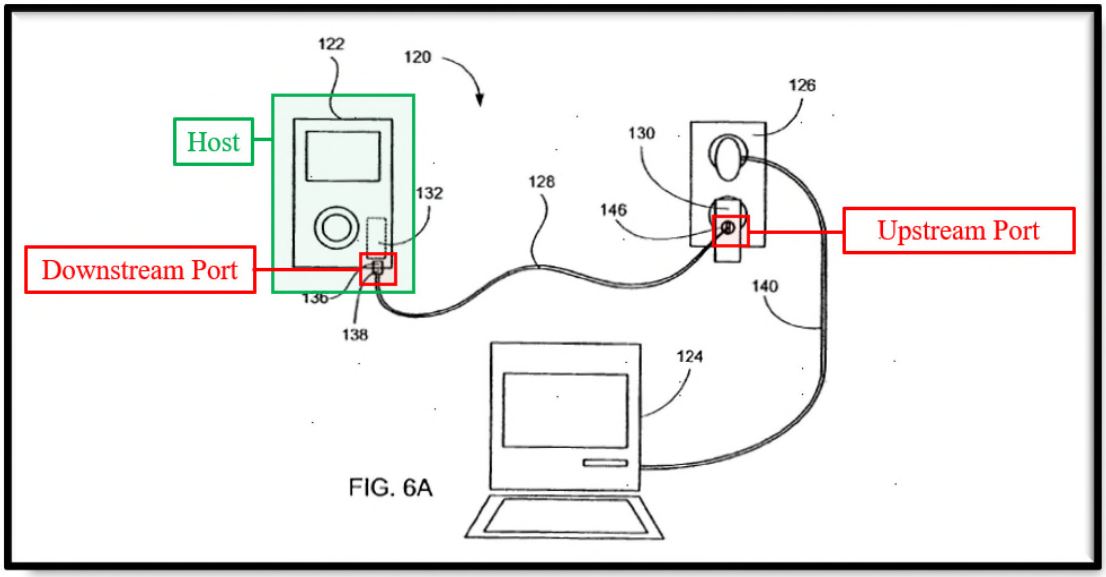
supra. De Iuliis and Matsumoto disclose that the peripheral device comprises both of these elements, but the adapter does not comprise either.



Matsumoto, Figure 1 (annotated) (showing USB Controller and CPU of portable electronic device in orange); *see also* De Iuliis, 6:55-63 ("The peripheral device 122 generally represents a portable computing device such as a portable computer, personal digital assistant, cellular phone, a media player, and the like. As such, the peripheral device 122 . . . . includes internal circuitry 134 for processing data. By way of example, the internal circuitry may correspond to processors, controllers, bridges, memory, buses and the like.") (emphasis added). Moreover, De Iuliis expressly discloses that the peripheral device may act as host. De Iuliis at 12:31-34 ("Furthermore, referring to FIG. 10, the second data port may be electrically coupled to the power connection so as to provide power to a second peripheral device (which acts as the host device).")

Because the mobile device is the host, the USB port of the adapter that connects to the mobile device (host) is an "upstream" port. Because the mobile device draws current as the host

(i.e., current supplied at an upstream port), it draws unrestricted by at least one limit of the USB Specification (i.e. drawing current in the wrong direction).

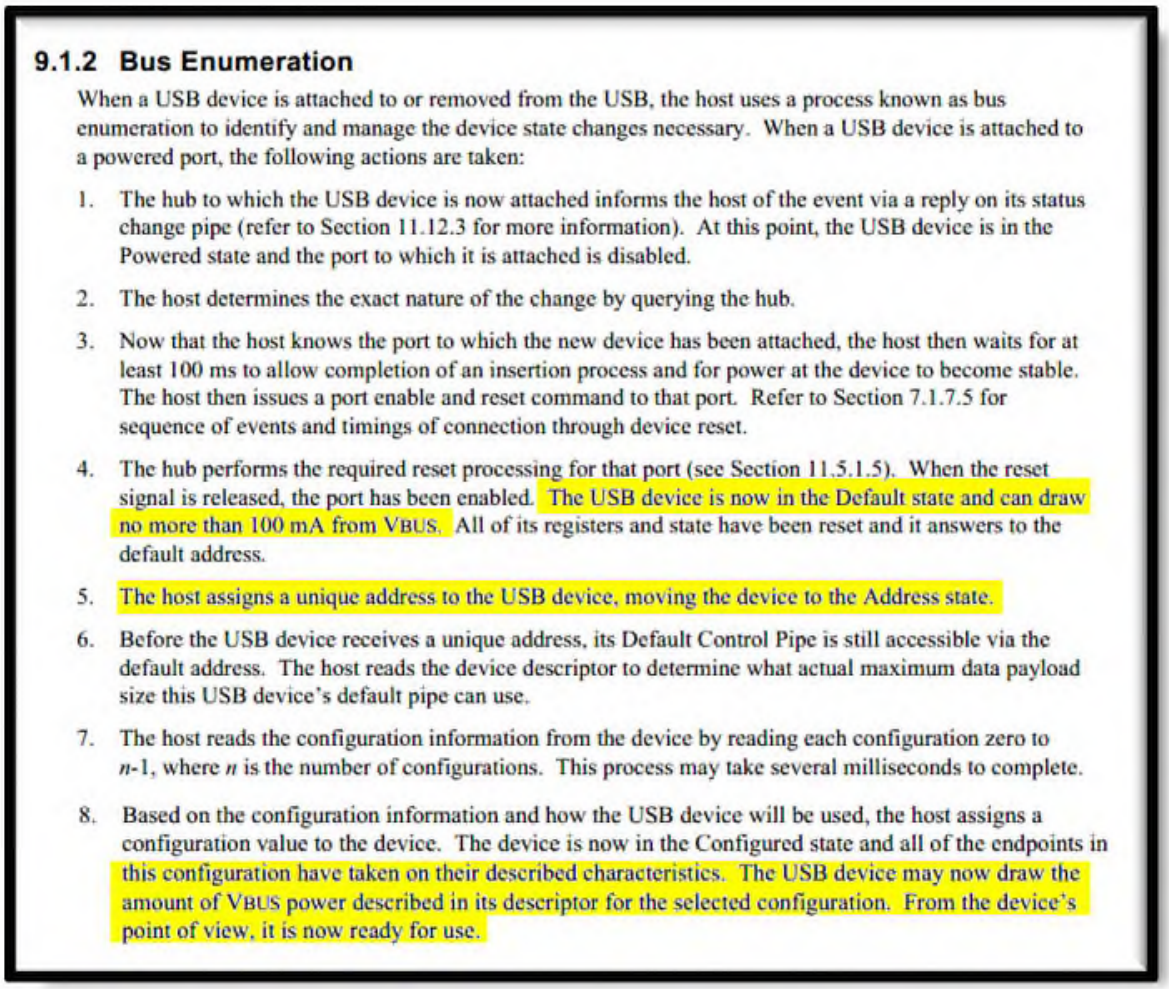


De Iuliis at Figure 6A (annotated).

Accordingly, Matsumoto in view of De Iuliis discloses a mobile device with a charging subsystem "enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

(2) <u>Drawing More Current than Specified in the USB Specification</u>

As discussed in section III.A.3, *supra*, the USB specification dictates a device shall not supply any current until the "Default" state and shall not supply more than 100 mA of current until the "Configured" state:



9.1.2 Bus Enumeration

When a USB device is attached to or removed from the USB, the host uses a process known as bus enumeration to identify and manage the device state changes necessary. When a USB device is attached to a powered port, the following actions are taken:

1. The hub to which the USB device is now attached informs the host of the event via a reply on its status change pipe (refer to Section 11.12.3 for more information). At this point, the USB device is in the Powered state and the port to which it is attached is disabled.
2. The host determines the exact nature of the change by querying the hub.
3. Now that the host knows the port to which the new device has been attached, the host then waits for at least 100 ms to allow completion of an insertion process and for power at the device to become stable. The host then issues a port enable and reset command to that port. Refer to Section 7.1.7.5 for sequence of events and timings of connection through device reset.
4. The hub performs the required reset processing for that port (see Section 11.5.1.5). When the reset signal is released, the port has been enabled. The USB device is now in the Default state and can draw no more than 100 mA from VBUS. All of its registers and state have been reset and it answers to the default address.
5. The host assigns a unique address to the USB device, moving the device to the Address state.
6. Before the USB device receives a unique address, its Default Control Pipe is still accessible via the default address. The host reads the device descriptor to determine what actual maximum data payload size this USB device's default pipe can use.
7. The host reads the configuration information from the device by reading each configuration zero to *n*-1, where *n* is the number of configurations. This process may take several milliseconds to complete.
8. Based on the configuration information and how the USB device will be used, the host assigns a configuration value to the device. The device is now in the Configured state and all of the endpoints in this configuration have taken on their described characteristics. The USB device may now draw the amount of VBUS power described in its descriptor for the selected configuration. From the device's point of view, it is now ready for use.

USB 2.0 at 243-244 (annotated). Baker Decl., ¶ 197.

Matsumoto in view of De Iuliis discloses a mobile device that draws current unrestricted by these limits. Specifically, as noted below with respect to Claim 3, Matsumoto in view of De Iuliis discloses "discriminating means" that allow the adapter and device to engage in charging without performing enumeration. *See* Section IV.B.3, *infra*. Once the adapter and device have recognized each other through the "discriminating means," the charger simply applies voltage to the VBUS line and the mobile device draws current as needed. Baker Decl., ¶ 198. Because USB devices can be classified as either low-power (drawing 100mA) or high-power (drawing 500mA) (*see* Section III.A.4), the mobile device would be configured to draw at least 100 mA (if the mobile device is a low-powered device), and it would have been obvious to configure the

mobile device to draw up to 500 mA (for use with a high-powered device). Baker Decl., ¶ 198. In either event, the mobile device would be configured to draw current unrestricted by the USB Specification which limits the amount of current that can be supplied prior to the "Default" state. *Id.*; USB 2.0 at 243-244. ("The USB device is now in the Default state and can draw no more than 100 mA from VBUS.")

Moreover, it would have been obvious to configure the mobile device to draw more than 100 mA of current prior to entering the "Configured" state. Baker Decl., ¶ 199. Indeed, because the devices are now operating outside of the USB Specification, the mobile device and adapter can be configured to such that the adapter maintains voltage on the USB lines and supplies any amount of current drawn by the mobile device. Baker Decl., ¶ 199. At a minimum, it would have been obvious to a person of ordinary skill in the art to configure the devices to supply and draw up to 500mA of current, which would be the maximum the device would be able to draw from a "normal" USB device (e.g., the computer of Matsumoto). Baker Decl., ¶ 199. As noted above, USB devices can be classified as either low-power (drawing up to 100mA) or high-power (drawing up to 500mA). *See* Section III.A.4. It would thus have been obvious (and at least obvious to try) to configure the mobile device as a high powered device that draws up to 500 mA. Indeed, Matsumoto does not limit the mobile device to any particular device, and De Iuliis teaches that it may be a personal computer, personal digital assistant, or cellular phone, which a person of ordinary skill in the art would draw as much current as possible. De Iuliis, 1:36-39 ("For example, the peripheral device may be a portable device such as a personal computer, personal digital assistant, cellular phone . . . . and the like.")

Accordingly, Matsumoto in view of De Iuliis discloses or renders obvious a mobile device that draws more than 0 mA (and at least 100 mA) of current prior to the "Default" state and more than 100 mA of current prior to the "Configured" state. Accordingly, Matsumoto in

view of De Iuliis discloses a mobile device with a charging subsystem "enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

d. ***Said enablement being responsive to an abnormal USB data condition detected at said USB communication path***

Claim 1 requires "said enablement being responsive to an abnormal USB data condition detected at said USB communication path." Matsumoto in view of De Iuliis discloses this element. Specifically, as explained with respect to Claim 3, Matsumoto in view of De Iuliis discloses using "discriminating means" to determine whether the mobile device is connected to a typical USB device or, alternatively, the adapter. There are a number of such discriminating means that would have been obvious to a person of ordinary skill in the art. Baker Decl., ¶ 201. For example, a person of ordinary skill in the art would have found obvious—and De Iuliis and Matsumoto expressly disclose—that the device may identify a data condition other than what the device would expect from typical USB operation (i.e., an "abnormal USB data condition") and, in response to that condition, immediately draw current from the adapter as discussed above. Baker Decl., ¶ 201. A person of ordinary skill in the art would have understood that the data condition would have to be "abnormal." Indeed, if the adapter presented a normal data condition, the mobile device would likely mistake the adapter for a typical USB device and would attempt to engage in typical USB communication/enumeration, which is what Matsumoto is teaching to avoid. Baker Decl., ¶ 201.

Matsumoto in view of De Iuliis discloses that the discriminating means may look for an abnormal USB data condition comprising a low/low signal on the data lines (SE0 Signal) for an extended period of time after connecting/attaching the mobile device to the adapter. Baker Decl., ¶ 202. Matsumoto discloses, for example, that the adapter may keep both of the data lines low (*i.e.*, not send any signals on either line) after being connected to the mobile device and that, after a certain period of time, the discriminating means may thus determine that the mobile

device is connected to an adapter. Matsumoto, 3:2-9 ("[W]ith the latter method, when the common serial bus controller started data communication via the common serial bus connector within a predetermined period of time, the information processing device is found to be the source of supply of power, whereas if data communication has not been started within the predetermined period of time, the external power source is found to be the supply source.") (emphasis added). De Iuliis similarly discloses that the data connections from the adapter may be "dummy contacts," *i.e.*, connections that don't provide any signals. De Iuliis, 6:31-34 ("It should be noted, however, that the power adapter 80 generally does not use the data contacts of the data port 86 for transmitting data (e.g., they act as dummy contacts).")

Generally, a short low/low signal is not an abnormal USB data condition. Baker Decl., ¶ 203. However, an extended SE0 signal (e.g., for more than 100ms) would be an abnormal USB data condition, particularly under the broadest reasonable interpretation of the term. Baker Decl., ¶ 203. A typical "idle" signal is either a high/low or low/high signal on the D+ and D- lines (depending on the speed of the device). Baker Decl., ¶ 203. Sending an SE0 signal for 10-20 ms is used to reset a device. Baker Decl., ¶ 203. Accordingly, sending an SE0 signal for more than 100ms upon attachment, under the Broadest Reasonable Interpretation, would be an "abnormal USB data condition" on the data lines because it is not defined as a valid USB data condition after connecting a device. Indeed, the USB Specification requires that a connecting device signal that it is connected within 100ms of detecting voltage on the VBUS line by pulling either D+ or D- positive (i.e., signaling an "attach").

Table 7-14. Device Event Timings

Parameter	Symbol	Conditions	Min	Max	Units
Time from internal power good to device pulling D+/D- beyond V_{IHZ} (min) (signaling attach)	T_{SIGATT}	Figure 7-29		100	ms

USB 2.0 at 188 (Table 7-14 Device Event Timings) (annotated); *see also* USB 2.0 at 150 (Section 7.1.7.3 Connect and Disconnect Signaling) ("Δt2 (T_{SIGATT}) This is the maximum time from when VBUS is up to valid level (4.01 V) to when a device has to signal attach. Δt2 represents the time required for the device's internal power rail to stabilize and for D+ or D- to reach VIH (min) at the hub. Δt2 must be less than 100 ms for all hub and device implementations. (This requirement only applies if the device is drawing power from the bus.)").

Accordingly, under the Broadest Reasonable Interpretation of this claim, because Matsumoto in view of De Iuliis teaches that one option for the "discriminating means" is to send no signals (SE0) for an extended period of time, Matsumoto in view of De Iuliis discloses a mobile device with a charging subsystem that is enabled to draw current unrestricted by the UB Specification "wherein said enablement being responsive to an abnormal USB data condition detected at said USB communication path" as required by Claim 1.

3. Claim 2

Matsumoto in view of De Iuliis renders Claim 2 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 2 of the '766 Patent under 35 U.S.C. § 103

Claim 2 requires the device of Claim 1. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 1.

Claim 2 further requires "wherein said predetermined USB Specification limit is a current limit." Matsumoto in view of De Iuliis discloses this element. Specifically, as noted above with respect to Claim 1, the mobile device of Matsumoto in view of De Iuliis draws current in the wrong direction and draws more current than permitted in the USB specification prior to the "Default" and "Configured" states. *See* Section IV.A.2.c. Under the broadest reasonable interpretation of the claim, a person of ordinary skill in the art would have understood that these are current limits because they pertain to the flow of current.

4. Claim 3

Matsumoto in view of De Iuliis renders Claim 3 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 3 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 3 of the '766 Patent under 35 U.S.C. § 103

Claim 3 requires the device of Claim 1. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 1.

Claim 3 further requires that "said enabling of the charging Subsystem occurs without USB enumeration." As explained in Section III.A.4, *supra*, "enumeration" "is the activity that identifies and assigns unique addresses to the devices attached to a bus." USB 2.0 at 20 (Section 4.6.3 Bus Enumeration); *id.* at 243-244 (Section 9.1.2 Bus Enumeration) (listing the steps of enumeration). Matsumoto in view of De Iuliis discloses a mobile device that meets this limitation. Specifically, Matsumoto in view of De Iuliis discloses an adapter and mobile device that use "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a computer that may need to engage in typical USB communication). Baker Decl., ¶ 207. When the "discriminating means" determines that the mobile device is connected to the adapter, it avoids the enumeration process and other USB communication and immediately enables the device to draw current as discussed with respect to Claim 1. Baker Decl., ¶ 207.

Matsumoto teaches, for example, that the portable device can be connected via a USB connector to either (1) a computer or (2) an adapter (i.e., an external power source). Matsumoto, Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."); *id.* at 2:13-25 ("The present invention provides a portable electronic device comprising a serial bus connector . . . the electronic device being capable of receiving power supply from the information processing device [computer] or an external power source [adapter] as connected to the common serios bus connector . . . ."). When the mobile device is connected to the computer, it results in USB communication (e.g., enumeration) between the two devices. *Id.*, 1:54-2:1 ("When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB

controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller.") Such communication, however, slows down the operation of the portable electronic device. *Id.*, 1:60-64 ("This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction."); *id.* at 2:1-4 ("This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.")

Such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device). Baker Decl., ¶ 209. Accordingly, Matsumoto discloses using "discriminating means" to determine when the mobile device is connected to the adapter. Matsumoto, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."); *id.* at 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . ."); *id.* at 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . <u>The control circuit discriminates among the sources of supply of power</u>.") (emphasis added).

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the control circuit will avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration]

when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power."); Baker Decl., ¶ 210. This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.")

Accordingly, a person of ordinary skill in the art would have understood that when the adapter and mobile device of Matsumoto in view of De Iuliis are connected, the charging subsystem is enabled to draw current without being restricted by the USB Specification (as discussed with respect to Claim 1) without enumeration as required by Claim 3.

5. Claim 4

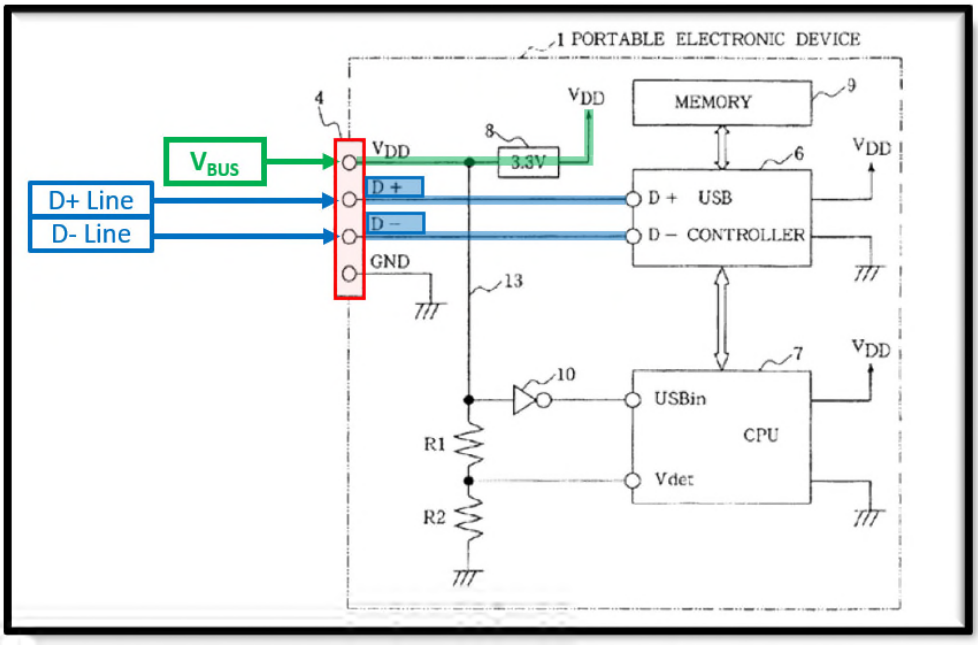
Matsumoto in view of De Iuliis renders Claim 4 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 4 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 4 of the '766 Patent under 35 U.S.C. § 103

Claim 4 requires the device of Claim 1. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 1.

Claim 4 further requires that "said USB communication path includes a D+ line and a D- line." Matsumoto in view of De Iuliis discloses this element. Specifically, as noted with respect to Claim 1, Matsumoto in view of De Iuliis discloses that the mobile device and adapter connect

to each other via USB connectors. As further noted with respect to Claim 1, a person of ordinary skill in the art would have understood—and Matsumoto expressly discloses—that such a port comprises a communication path comprising a D+ and D- line.



Matsumoto, Figure 1 (annotated).

Accordingly, a person of ordinary skill in the art would have understood that Matsumoto in view of De Iuliis discloses that the mobile device comprises a USB communication path "wherein said USB communication path includes a D+ line and a D-line" as required by Claim 4.

6. Claim 5

Matsumoto in view of De Iuliis renders Claim 5 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 5 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 5 of the '766 Patent under 35 U.S.C. § 103

Claim 5 requires the device of Claim 4. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 4.

Claim 5 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." Matsumoto in view of De Iuliis discloses this element. Specifically, as disclosed with respect to Claim 1, Matsumoto in view of De Iuliis discloses that the "discriminating means" for determining that the mobile device is connected to a charger/adapter may look for an "abnormal USB data condition" comprising a low/low (SE0) signal on the data lines for an extended period of time (i.e., indefinitely) after the charger is connected. *See* Section IV.B.2.d. Because this condition exists on the D+ and D- lines, a person of ordinary skill in the art would have understood that it represents and "abnormal USB data line condition" on the D+ line and D- line. Accordingly, a person of ordinary skill in the art would have understood that Matsumoto in view of De Iuliis renders obvious that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line" as required by Claim 5.

7. Claim 9

Matsumoto in view of De Iuliis renders Claim 9 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 9 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 9 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

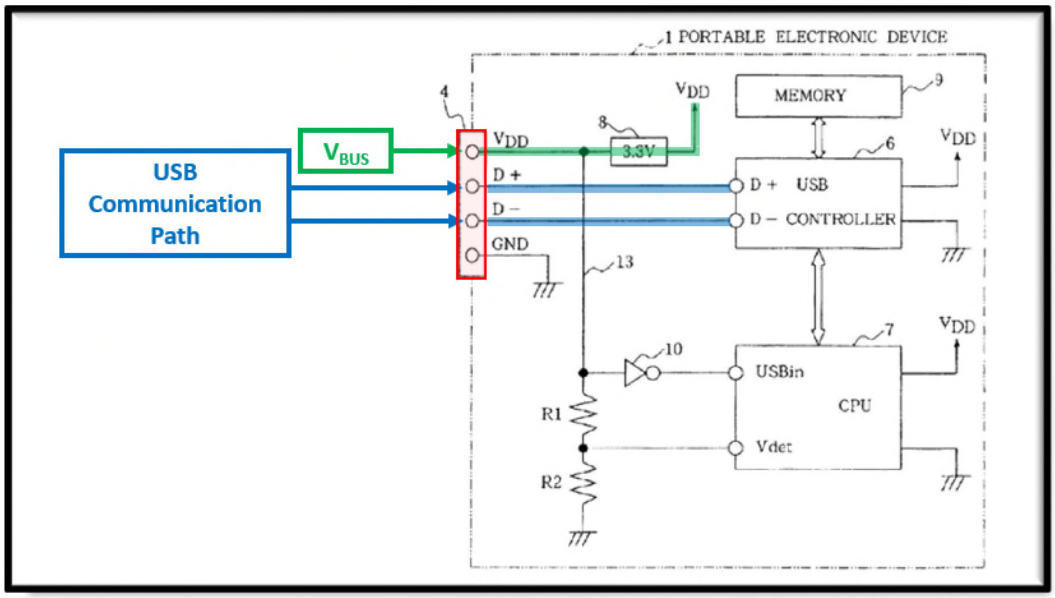
The preamble of Claim 9 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Matsumoto in view of De Iuliis. As explained with respect to Claim 1, Matsumoto in view of De Iuliis discloses a mobile device. *See* Section IV.B.2.a.

b. *A USB communication path and a USB VBUS line*

Claim 9 requires "a USB communication path and a USB VBUS line." Matsumoto in view of De Iuliis discloses this element. Specifically, Matsumoto in view of De Iuliis discloses a charger/adapter and mobile device that connect via a USB connection for purposes of charging. A person of ordinary skill in the art would have understood (and De Iuliis and Matsumoto expressly disclose) that the devices thus comprise four connecting lines: (1) a power/voltage line, (2) a D+ data line, (3) a D- data line, and (4) a Ground line. A person of ordinary skill in the art would have understood that the voltage line constitutes a "USB VBUS line" and that the data lines collectively comprise a "USB communication path." Baker Decl., ¶ 219.

Matsumoto teaches, for example, that the mobile device can connect to an adapter (like the adapter of De Iuliis) through a USB connection. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector" and "is adapted to receive power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added). Matsumoto further discloses that the connector comprises connections for a "power source terminal" (USB VBUS line) and "a pair of data terminals" (USB communication path). *Id.*, 1:33-35 ("The USB connector has a pair of data terminals D+ and D- [USB Communication Path], power source terminal [VBUS line] and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal."). Because they are connected through a USB connector, a person of ordinary skill in the art would

have understood that both the adapter and the portable device comprise a VBUS line (power/voltage) and a USB communication path (the D+ and D- lines).



Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue)).

De Iuliis similarly discloses that the power adapter includes a standard data port that can be used to supply both power as well as data and specifically states that this can be a USB connection. De Iuliis, Abstract ("The power adapter also includes a data port provided at a surface of the housing. The data port is configured to provide external power to the peripheral device."); *id.*, 2:22-29 ("The power adapter also includes a data connector assembly electrically coupled to the power connection, the data connector assembly providing at least one combined power [USB VBUS Line] and data connection [USB communication path], wherein the power provided by the combined data and power connection is used to operate or charge a peripheral device."); *id.* at 4:51-53 ("The data transmission line 58 is preferably a data transmission line having both data [USB Communication Path] and power transmitting [USB VBUS line] capabilities. As was stated earlier, the power transmitting capabilities are associated with data

transmissions."); *id.* at 4:55-56 ("By way of example, the data transmission line 58 may be a universal serial bus (USB)").

Accordingly, a person of ordinary skill in the art would have understood that the adapter of Matsumoto in view of De Iuliis comprises a USB VBUS line and a USB communication path as required by Claim 9.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 9 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Matsumoto in view of De Iuliis discloses this element. As explained with respect to Claim1, Matsumoto in view of De Iuliis discloses this element in at least three ways: (1) drawing current upstream even though the USB Specification limits the flow of current to the downstream direction, (2) drawing more than 0mA (and at least 100 mA) of current prior to the "Default" state, and (3) drawing more than 100mA of current prior to the "Configured" state. *See* Section IV.B.2.c.

d. ***Said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path***

Claim 9 requires "said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path." Matsumoto in view of De Iuliis discloses this element. Specifically, as explained with respect to Claim 1, Matsumoto in view of De Iuliis discloses a mobile device with a charging subsystem that is enabled to draw current from an adapter in response to an abnormal USB condition. *See* Section IV.B.2.d.

Matsumoto in view of De Iuliis further discloses that said enablement is also responsive to the USB VBUS line being externally powered. Baker Decl., ¶ 223. Specifically, a person of ordinary skill in the art would have understood—and Matsumoto and De Iuliis both disclose—

that the charging subsystem is enabled in response to the mobile device being attached to the charger, which powers the VBUS externally. Matsumoto, 2:47-50 ("[T]he control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector . . . ."); *id.* at 1:36-45 ("Accordingly, it appears feasible to provide the USB connector on a portable device for use with an a.c. adaptor (external power source) connectable to the power source terminal of the of the USB connector, and to connect the a.c. adaptor to the power source terminal [VBUS line] of the USB connector for the supply of power to the USB device.") (emphasis added); De Iuliis at 2:22-29 ("The invention relates, in one embodiment, to a power adapter . . . . the power provided by the combined data and power connection [USB] is used to operate or charge a peripheral device."); *id.* at 8:32-38 ("The power transmission line 156 is configured to electrically couple the power connection 152 with the connector assembly 158. The coupling may be direct or indirect. In the case of indirect, the power transmission line 156 may be coupled to the power connection 152 through the electrical components of the power adapter 150, as for example, a transformer or rectifier circuit."). Matsumoto discloses for example, that the discriminating means will analyze the data lines for a certain period of time after the device has been connected to the adapter (and the VBUS has been externally powered) to see if communication has started. Matsumoto at 3:2-9.

Moreover, as noted in the USB Specification—which would have been known to a person of ordinary skill in the art—USB devices power the VBUS immediately upon attachment. *See* Section III.A.3 This is the first step that occurs when a USB device is attached to another USB device. Baker Decl., ¶ 224. That is, the devices are attached and the devices entered the "Powered" state in which the VBUS line is powered:

Table 9-1. Visible Device States

Attached	Powered	Default	Address	Configured	Suspended	State
No	--	--	--	--	--	Device is not attached to the USB. Other attributes are not significant.
Yes	No	--	--	--	--	Device is attached to the USB, but is not powered. Other attributes are not significant.
Yes	Yes	No	--	--	--	Device is attached to the USB and powered, but has not been reset.
Yes	Yes	Yes	No	--	--	Device is attached to the USB and powered and has been reset, but has not been assigned a unique address. Device responds at the default address.

USB 2.0 at 241.

Accordingly, a person of ordinary skill in the art would have understood that the mobile device is enabled to draw current from the adapter (in the manner discussed with respect to Claim 1) in response to the power terminal of the device being connected to the power terminal of the adapter (USB VBUS line being externally powered) and an abnormal USB data condition detected at said USB communication path (extended SE0 signal as described with respect to Claim 1), as required by Claim 9.

8. Claim 10

Matsumoto in view of De Iuliis renders Claim 10 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 10 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 10 of the '766 Patent under 35 U.S.C. § 103

Claim 10 requires the device of Claim 9. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 9.

Claim 10 further requires that "said predetermined USB Specification limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.3.

9. Claim 11

Matsumoto in view of De Iuliis renders Claim 11 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 11 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 11 of the '766 Patent under 35 U.S.C. § 103

Claim 11 requires the device of Claim 9. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 9.

Claim 11 further requires that "said enabling of the charging system occurs without USB enumeration.." As explained with respect to Claim 3, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.4.

10. Claim 12

Matsumoto in view of De Iuliis renders Claim 12 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 12 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 12 of the '766 Patent under 35 U.S.C. § 103

Claim 12 requires the device of Claim 9. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 9.

Claim 12 further requires that "wherein said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.5.

11. Claim 13

Matsumoto in view of De Iuliis renders Claim 13 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 13 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 13 of the '766 Patent under 35 U.S.C. § 103

Claim 13 requires the device of Claim 12. As noted above, Matsumoto in view of De Iuliis discloses the device of Claim 12.

Claim 13 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." As explained with respect to Claim 5, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.6.

12. Claim 17

Matsumoto in view of De Iuliis renders Claim 17 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 17 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 17 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A method of charging a mobile device having a charging subsystem and a USB communication path, comprising*

The preamble of Claim 17 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Matsumoto in view of De Iuliis. Specifically, as explained with respect to Claim 1, Matsumoto in view of De Iuliis discloses a mobile device having a charging subsystem and a USB communication path. *See* Sections IV.B.2.b-c. Moreover, both Matsumoto and De Iuliis disclose a method for charging said mobile device with an adapter. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from . . . an external power source 3 as connected to the USB connector 4.") (emphasis added); *id.* at 4:44-45 ("In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required . . . ."); De Iuliis, 2:12-15 ("The invention pertains to power adapters that allow a user to power and/or charge a peripheral device such as a portable electronic device

without requiring any additional cables or connectors."); *id.* at 2:27-29 (". . . the power provided by the combined data and power connection is used to operate or charge a peripheral device.")

Accordingly, Matsumoto in view of De Iuliis discloses a "method of charging a mobile device having a charging subsystem and a USB communication path."

b. *Upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit*

Claim 17 requires the step of "upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit." Matsumoto in view of De Iuliis discloses this element. Specifically, as explained with respect to Claim 3, Matsumoto in view of De Iuliis discloses using "discriminating means" to determine whether the mobile device is connected to a typical USB device or, alternatively, the adapter. *See* Section IV.B.4. Moreover, as explained with respect to Claim 1, Matsumoto in view of De Iuliis discloses that the discriminating means may comprise means for recognizing an abnormal USB data condition on the data lines. *See* Section IV.B.2.d. Specifically, Matsumoto in view of De Iuliis discloses that the abnormal USB data condition may be maintaining a low/low signal on the data lines (SE0 Signal) for an extended period of time after connection. *See* Section IV.B.2.d). Under the Broadest Reasonable Interpretation, this "abnormal USB data condition" constitutes an "identification signal" because it indicates that the mobile device may draw current from the adapter in the manner described above (i.e., unrestricted by at least one limit of the USB Specification). Baker Decl., ¶ 235.

Moreover, as explained with respect to Claim 1, Matsumoto in view of De Iuliis discloses that the mobile device draws current in excess of at least one USB Specification defined limit in response to said identification signal. *See* Section IV.B.2.c. Specifically, Matsumoto in view of De Iuliis discloses that the mobile device (1) draws current as a host in the upstream direction even though the USB specification limits the flow of current to the

downstream direction (Section IV.B.2.c.1), (2) draws more then 0mA (and at least 100 mA) of current prior to entering the "Default" state (Section IV.B.2.c.2) even though the USB Specification limits devices from drawing current at that time, and (3) draws more than 100mA of current prior to entering the "Configured" state even though the USB Specification limits the amount of current that can be drawn at that time to 100 mA (Section IV.B.2.c.2.).

Accordingly, Matsumoto in view of De Iuliis discloses the step of "upon detection of an identification signal on said path [maintained SE0], drawing current in excess of at least one USB Specification defined limit [drawing current upstream and in an amount more than allowed by the USB Specification]."

c. *if said identification signal is not detected, drawing current in accordance with said USB Specification*

Claim 17 requires the step of "if said identification signal is not detected, drawing current in accordance with said USB Specification." Matsumoto in view of De Iuliis discloses this element. Specifically, Matsumoto discloses that if the identification is not detected, it means the mobile device is connected to the personal computer of Matsumoto. In that case, the Personal Computer acts as the host and supplies power (in the correct direction) after engaging in enumeration (i.e., in the correct amounts). That is, in the absence of the identification signal, the mobile device of Morita draws current in accordance with the USB Specification.

Specifically, Matsumoto in view of De Iuliis discloses an adapter and mobile device that use "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a computer that may need to engage in typical USB communication). Baker Decl., ¶ 238. When the "discriminating means" determines that the mobile device is connected to the adapter, it avoids the enumeration process and other USB communication and immediately enables the device to draw current as discussed with respect to Claim 1. Baker Decl., ¶ 238.

Matsumoto teaches, for example, that the portable device can be connected via a USB connector to either (1) a computer or (2) an adapter (i.e., an external power source). Matsumoto, Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."); *id.* at 2:13-25 ("The present invention provides a portable electronic device comprising a serial bus connector . . . the electronic device being capable of receiving power supply from the information processing device [computer] or an external power source [adapter] as connected to the common serios bus connector . . . ."). When the mobile device is connected to the computer, it results in USB communication (e.g., enumeration) between the two devices. *Id.*, 1:54-2:1 ("When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller.") Such communication, however, slows down the operation of the portable electronic device. *Id.*, 1:60-64 ("This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction."); *id.* at 2:1-4 ("This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.")

Such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device). Accordingly, Matsumoto discloses using "discriminating means" to determine when the

mobile device is connected to the adapter. Matsumoto, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."); *id.* at 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . ."); *id.* at 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . The control circuit discriminates among the sources of supply of power.") (emphasis added).

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the control circuit will avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.") This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.")

Accordingly, when the personal computer and mobile device of Matsumoto in view of De Iuliis are connected, the discriminating means will not detect the identification signal, will determine that the mobile device is connected to a computer, and will draw current in accordance with the USB Specification (*i.e.*, in the correct direction and consistent with the amounts specified during enumeration) as required by Claim 17.

13. Claim 18

Matsumoto in view of De Iuliis renders Claim 18 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 18 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 18 of the '766 Patent under 35 U.S.C. § 103

Claim 18 requires the method of Claim 17. As noted above, Matsumoto in view of De Iuliis discloses the method of Claim 17.

Claim 18 further requires that "said USB Specification defined limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.3.

14. Claim 19

Matsumoto in view of De Iuliis renders Claim 19 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 19 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 19 of the '766 Patent under 35 U.S.C. § 103

Claim 19 requires the method of Claim 17. As noted above, Matsumoto in view of De Iuliis discloses the method of Claim 17.

Claim 19 further requires that "the identification signal includes an abnormal signal on the USB communication path." Matsumoto in view of De Iuliis discloses this element. Specifically, as disclosed above and with respect to Claim 1, Matsumoto in view of De Iuliis discloses that the identification signal can be an extended SE0 signal. *See* Section IV.B.2.d. Under the Broadest Reasonable Interpretation, this constitutes an abnormal signal on the USB communication path. *Id.*

15. Claim 20

Matsumoto in view of De Iuliis renders Claim 20 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 20 based on Matsumoto in view of De Iuliis under 35 U.S.C. §103.

Please see attached Exhibit CC-B for a claim chart comparing Matsumoto in view of De Iuliis with Claim 20 of the '766 Patent under 35 U.S.C. § 103

Claim 20 requires the method of Claim 19. As noted above, Matsumoto in view of De Iuliis discloses the method of Claim 19.

Claim 20 further requires that "said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Matsumoto in view of De Iuliis discloses this element. *See* Section IV.B.5.

C. Morita in view of Shiga renders Claims 1-2, 4-6, 8-10, 12-14, 16-21, and 23 Obvious.

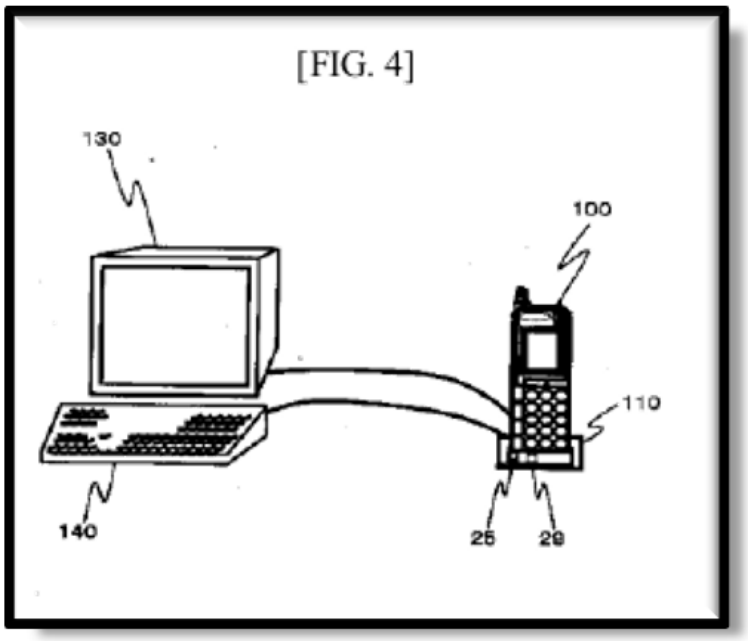
For the reasons stated below, Morita in view of Shiga renders Claims 1-2, 4-6, 8-10, 12-14, 16-21, and 23 obvious.

1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Morita and Shiga. OTH-A (Baker Decl.,), ¶¶ 243-247.

Both Morita and Shiga relate to USB compatible devices including computing host devices (e.g., computer, videophone) and related peripheral devices (e.g., keyboard, mouse). *See e.g.*, Morita at Claims 1-2 ("A charger capable of charging a mobile phone and coupling to an external device . . . wherein the first coupling means and the second coupling means are configured from a USB format"); Shiga at Title ("USB Apparatus that turns on computer power supply . . . ."); Baker Decl., ¶ 244. Indeed, both teach that such devices can be used together, and both teach improvements for using a host computing device in combination with a peripheral keyboard. *Id.;* Baker Decl., ¶ 244.

Morita, for example, discloses a charging dock that can charge a mobile videophone while connecting it to multiple peripheral devices, e.g., a keyboard, mouse and monitor. Morita, ¶ 0005 ("when connecting the mobile videophone device to a device, the mobile videophone device being the host end, it similarly becomes necessary to increase the number of USB hubs according to the number of peripherals used.") and ¶ 0012 ("24 illustrates a third USB port for coupling devices such as a mouse, keyboard, and monitor").

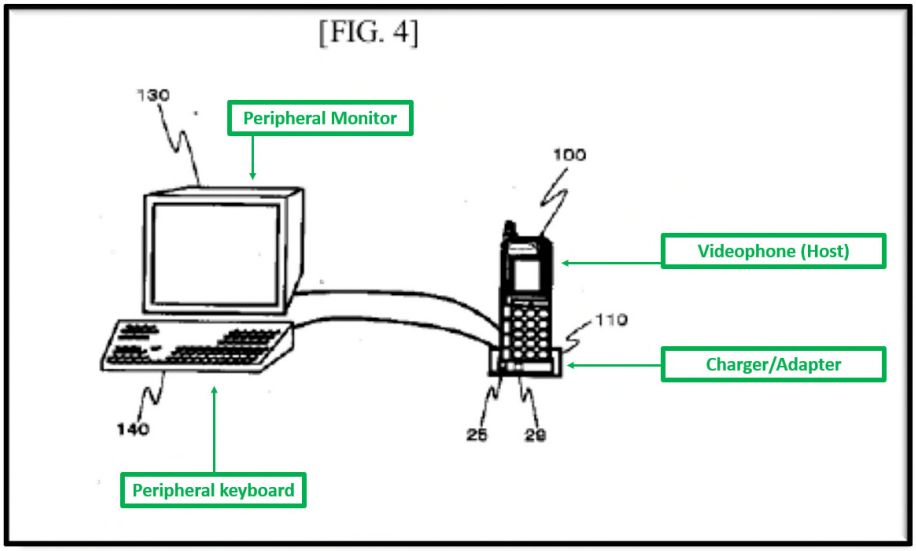


Morita, Figure 4 (showing second mode in which no personal computer is connected and the mobile videophone acts as the host). Morita, however, does not disclose or limit the functionality of the peripherals to be used with the charger dock and the mobile videophone.

Accordingly, as of the priority date of the '766 Patent a person seeking to implement the system disclosed by Morita would have been motivated to use prior art peripheral devices with the charger dock of Morita and the mobile videophone. Baker Decl., ¶ 246. Shiga, which is also prior art to the '766 Patent, also discloses a system and method for using such peripheral devices in combination with a computing device. Baker Decl., ¶ 246. Specifically, Shiga teaches a helpful feature for improving such peripherals, *i.e.*, a power-on/power-off switch that can be used to turn the host device on and off. Shiga, Abstract ("An apparatus for turning on a computer power supply . . . when an input operation of a predetermined key is carried out . . . ."). Shiga discloses that this "power-on" and "power-off" switch can be implemented, for example, on a peripheral keyboard like the one connected to the charger dock of Morita. *Id.* at 2:44-47 ("Here, the operation may be performed on a special-purpose power-on key on the keyboard or

on any combination of a plurality of keys.") *Id.* at 2:4-8 ("There has been a demand for adding value to such computers connected with the USB interface by providing a function that the USB does not have, that is, by providing a key called a power-on key, which allows the host computer to be started by a key input operation at a keyboard."); *id.* at 7:46-55 ("When a predetermined key on the keyboard 11 is operated . . . the main power is turned off.")

A person of ordinary skill in the art would have immediately recognized the benefit of the teachings of Shiga in a system like that disclosed in Morita (*i.e.*, where the disclosed peripheral devices is connected to the host device through a dock). Baker Decl., ¶ 247. When the user is done using the host device (e.g., the mobile video phone) for a particular purpose, he or she does not have to remove the phone from the dock to turn it on or off. Baker Decl., ¶ 247. Moreover, Shiga expressly teaches how to implement the claimed feature in a host computer device attached to a peripheral keyboard and, accordingly, applying the teachings of Shiga to the videophone, charger, and peripheral keyboard of Morita would simply involve applying a known technique to a similar device. Baker Decl., ¶ 247.



Morita, Figure 4 (annotated) (showing configuration in which mobile videophone is connected to peripheral devices (keyboard and monitor) but no personal computer).

2. Claim 1

Morita in view of Shiga renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 1 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 1 of the '766 Patent under 35 U.S.C. § 103

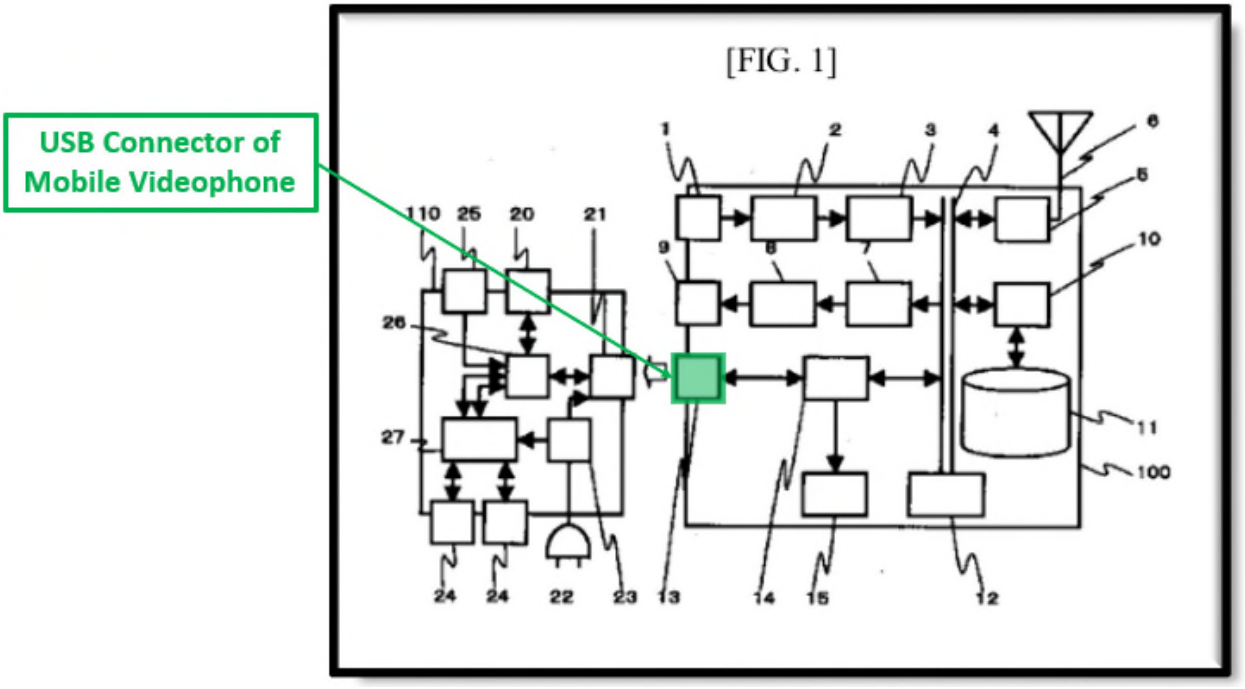
a. *Preamble: A mobile device, comprising*

The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Morita in view of Shiga. Specifically, Morita discloses a mobile videophone. Morita, Abstract ("A charger provided with first coupling means for coupling to a mobile phone . . . ."); *id.*, ¶ [0003] ("This mobile videophone device can take in an image using the camera and converts it to data and receive image data from a partner terminal, and thus it is possible to store image data in internal memory and link to phone directory data for use. Thereby, it is possible to search for a phone number while viewing an image, make a call to an image partner displayed on the screen, and display an image display along with a name when receiving a call. Additionally, it is also possible to exchange stored image data between partner terminals."). Under the broadest reasonable interpretation of the term "mobile device," the mobile videophone of Morita is a "mobile device."

b. *A USB communication path*

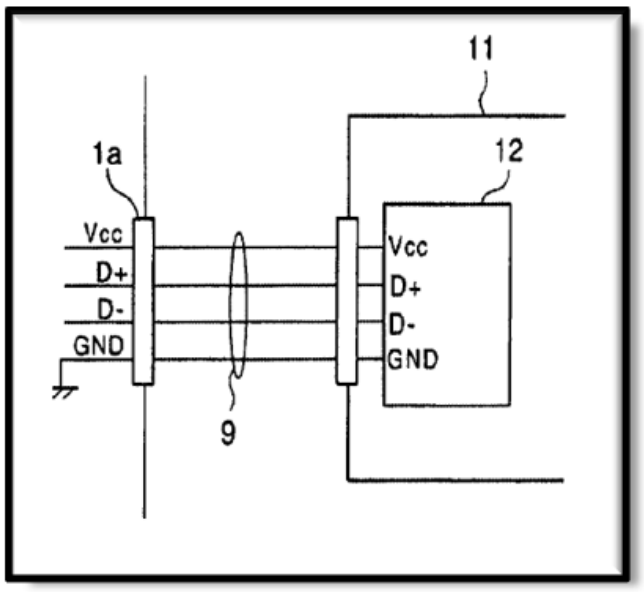
Claim 1 requires "a USB communication path." Morita in view of Shiga discloses this element. Specifically, Morita discloses a mobile videophone that connects a charger via a USB

connector. Morita, Claim 1 ("A charger [adapter] capable of charging a mobile phone and coupling to an external device, comprising: first coupling means for coupling to a mobile phone . . . .") (emphasis added); *id.*, Claim 2 ("The charger according to claim 1, wherein the first coupling means and the second coupling means are configured from a USB format.") (emphasis added); *id.*, ¶ [0004] ("Furthermore, a USB format, which is easy to use, is often used for the interfaces of current personal computers and the like, and using the USB format for the interface of the mobile videophone device and having a USB port enables easy use of personal computers or the like to read/write image data, audio data, phone directory data, and other internal program data stored in memory on the mobile videophone device. Moreover, when the mobile videophone device operates as a personal computer, itis possible to easily access hard disk data by simply connecting to an external peripheral (device) such as a hard disk.") (emphasis added).



Morita, Figure 1 (annotated) (showing "First USB port" (20), "Second USB Port" (21) and "Third USB Port[s]" (24)); *see also* Morita at "Description of Reference Numerals."

A person of ordinary skill would have understood—and Shiga expressly discloses—that USB connections like those disclosed for the charger of Morita include four lines: a VBUS; two data lines (D+ and D-) (collectively a USB Communication Path); and a ground line. Baker Decl., ¶¶ 250-251.



Shiga, Figure 1 (excerpted) (showing Vcc (VBUS), D+ and D- (USB communication Path), and GND (Ground)); *id.*, at 4:15-19 ("The USB chip 2 includes a power supply input terminal Vcc [VBUS], a ground terminal GND, a first signal line D+, and a second signal line D- [USB Communication Path], which correspond to those in a USB interface specification."); *see also* Section III.A.2, *supra* (describing USB Specification, which would have been known to a person of ordinary skill in the art).

Accordingly, under the Broadest Reasonable Interpretation, Morita in view of Shiga discloses a mobile device with a "USB communication path" as required by Claim 1.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 1 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Morita in view of Shiga discloses this element.

Specifically, Morita in view of Shiga discloses a mobile device with a charging subsystem that is configured to draw current in the upstream direction (*i.e.*, from an upstream facing port to a downstream facing port).

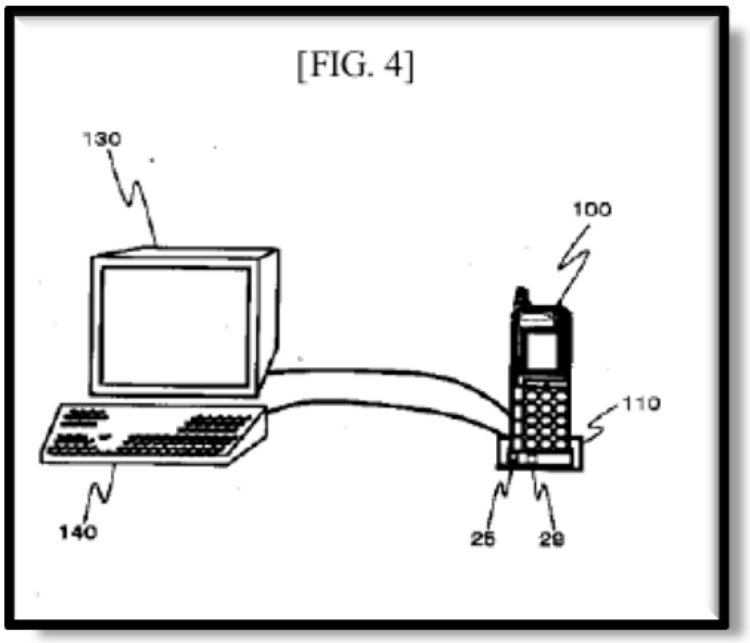
First, Morita in view of Shiga discloses a mobile videophone that comprises a "charging subsystem." Specifically, Morita discloses that the USB controller charges the battery of the mobile phone by supplying power from the charger. Morita, ¶ [0013] ("The power supply of the mobile videophone device 100 is supplied from the USB controller 14 to the battery 15 by coupling to a charger via a USB format capable of supplying data and power.") A person of ordinary skill in the art would have thus understood that mobile device contains a charging subsystem for charging the battery and that it may comprise portions of the battery, controller, and other components that are used to charge the battery. Baker Decl., ¶ 254.

Second, Morita in view of Shiga discloses that the charging subsystem is "enabled to draw current unrestricted by at least one predetermined USB Specification limit." Specifically, as discussed in section III.A.2, supra, the USB specification dictates that an upstream port is the port closest to the host. USB 2.0 at 10 ("An upstream port is the port on a device electrically closest to the host . . . ."); *id.* at 298 (Section 11.1.2.1 Packet Signaling Connectivity) ("Upstream connectivity is defined as being towards the host, and downstream connectivity is defined as being towards the device."). As also disclosed in section III.A.3, *supra*, the USB Specification limits the direction in which current may flow. Current cannot be supplied/drawn in an upstream direction. USB 2.0 at 171 (Section 7.2.1) ("No device shall supply (source) current on VBUS at its upstream facing port at any time.").

Morita in view of Shiga discloses a mobile videophone that draws current unrestricted by this limit. Baker Decl., ¶ 256. Specifically, as the PTAB recently found, Morita discloses that the charger has two modes of operation. PAT-B ('766 Patent File History) at 1-21 (*TCT Mobile*

(US), Inc. et al. v. Fundamental Innovation Systems International, LLC, IPR2018-598, Paper 8 (Decision)) at 8-9. In the first mode the charger dock is connected from the power source to (1) a personal computer, (2) the mobile videophone, and (3) peripheral devices (*e.g.*, keyboard and monitor). *Id.* In this mode, the personal computer acts as the host. *Id.*

In the second mode, no computer is connected; the charger dock is connected from the power source to (1) the mobile videophone and (2) the peripheral devices. Ex. PAT-B at 9. "In the second mode . . . the mobile device is set as the USB host and port 20, connected to the personal computer, "becomes vacant" (i.e., disabled). In this second mode, the external peripherals, such as the keyboard and monitor, remain connected to port 24 as peripherals to the mobile device. According to Morita, 'the mobile phone always accesses the external device while receiving the supply of power from the charger, and thus the mobile phone can be used without worrying about battery consumption due to long-term and continuous use." *Id.*:



Morita, Figure 4 (showing second mode in which no personal computer is connected and the mobile videophone acts as the host); Morita, ¶ 0015 ("On the other hand, when the mobile

videophone device 100 is used as the host personal computer, the connection switching unit 26 connects the second USB port 21 to the USB hub control unit 27 as the host end . . . .) (emphasis added); *id.* at ¶ 0018 ("In FIG. 4, the mobile videophone device 100 is set to operate as a device for host controlling a connected device.")

Because the videophone of Morita is the host in the second mode of operation, the USB port of the charger (adapter) that connects to the videophone (host) is an "upstream" facing port and the port of the videophone is a "downstream" facing port. In other words, the mobile videophone draws current in an upstream direction. Morita, ¶ 0022 ("[T]he mobile phone always accesses the external device while receiving the supply of power from the charger, and thus the mobile phone can be used without worrying about battery consumption due to long-term and continuous use."); *id.*, ¶ 0019 ("Thus, the mobile videophone device 100 on the host end can be continuously used for a long time.") Because the mobile device draws current as the host (i.e., current supplied at an upstream port), it draws unrestricted by at least one limit of the USB Specification.

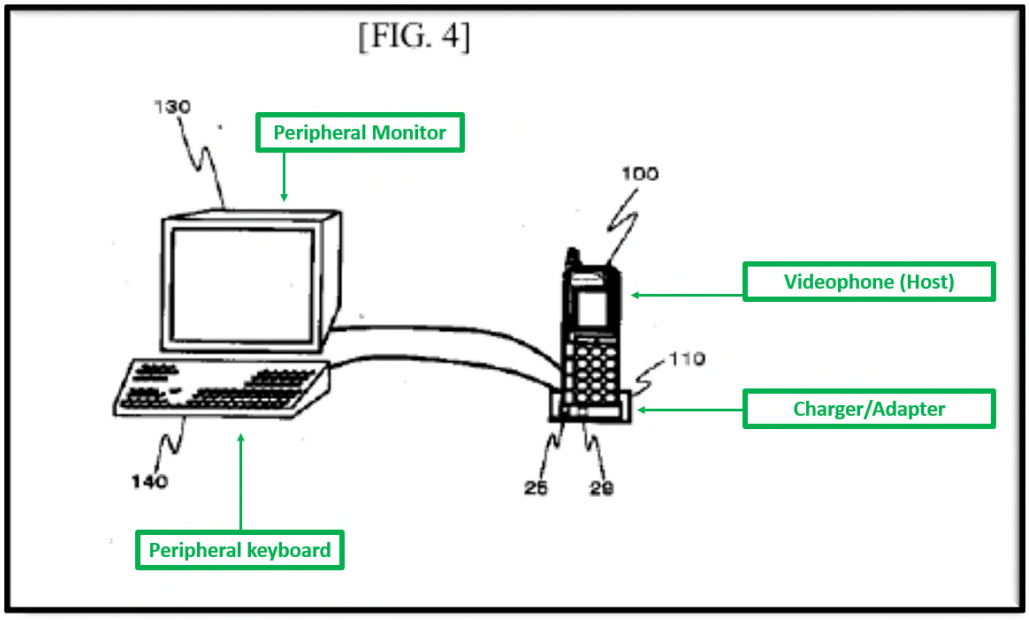
Accordingly, a person of ordinary skill in the art would have understood that Morita in view of Shiga discloses a "charging subsystem" that is "enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

d. ***Said enablement being responsive to an abnormal USB data condition detected at said USB communication path***

Claim 1 requires "said enablement being responsive to an abnormal USB data condition detected at said USB communication path." Morita in view of Shiga discloses this element. Specifically, Morita in view of Shiga discloses a system comprising the host videophone, connected to the USB charger, connected to the peripheral keyboard. The peripheral keyboard comprises a "power-on" and "power-off" button capable of turning the host videophone on or off while docked in the charger. To power-on the videophone, the keyboard sends an SE1 signal—

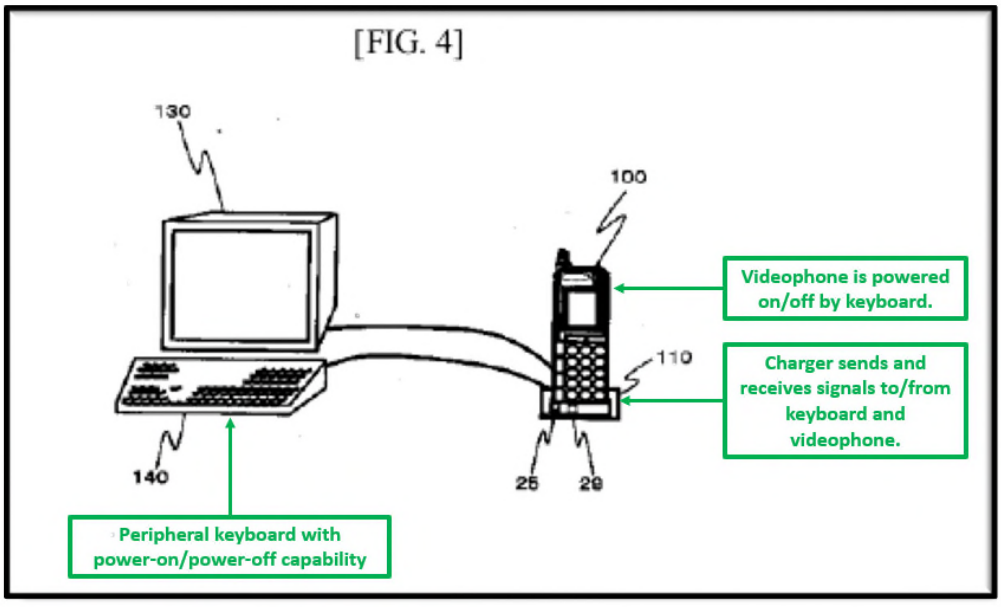
which is an "abnormal USB data condition" (as described above at Section III.C.4)—through the charger to the videophone. In response, the videophone will turn on, engage in enumeration, and be enabled to draw current (up to 100 mA for a low powered device and up to 500 mA for a high powered device) from the charger.

Specifically, as noted above, Morita discloses a mobile video phone that can be connected via USB connection to charger dock. Morita further discloses that the charger dock can also be connected to peripheral devices (e.g., keyboard, mouse) through other USB ports such that the peripherals can be used with videophone as if connected directly to said videophone. Morita, ¶ 0001 ("The present invention relates to a charger capable of charging a mobile phone and coupling to an external device and more specifically relates to a USB format charger provided with a HUB function capable of connecting a plurality of external devices.") (emphasis added); *id.*, Abstract ("To provide a hub-controllable charger [adapter] capable of accessing a plurality of external devices in a state wherein a mobile phone is coupled to the charger, and capable of managing transmission and branching of signals between each.") (emphasis added).



Morita, Figure 4 (annotated) (showing configuration in which mobile videophone is connected to peripheral devices (keyboard and monitor) but no personal computer). Thus, the adapter/charger of Morita allows the user to operate the videophone of Morita using said peripheral devices while the phone is docked in the charger. Baker Decl., ¶ 261.

Shiga in turn, discloses certain improvements that can be made to a peripheral keyboard and a host computing device like the keyboard and the videophone of Morita. Specifically, Shiga discloses the keyboard can be implemented with a "power-on" and "power-off" key that can be used to power-on and power-off a connected host device like the mobile videophone of Morita. Shiga, 2:43-49 ("When the predetermined operation is performed at the input device [keyboard], the main power supply is turned on. Here, the operation may be performed on a special-purpose power-on key on the keyboard or on any combination of a plurality of keys."). Shiga further discloses a circuit that can be implemented in the host device to turn the device off or on in response to the signals sent by the keyboard. Shiga, Figure 1. A person of ordinary skill in the art would have understood that the teachings of Shiga could be applied to the keyboard, charger, and videophone of Morita. Baker Decl., ¶ 262.



Morita, Figure 4 (showing configuration with videophone has host connected to peripherals, e.g., a keyboard with the functionality of Shiga and a monitor).

Shiga specifically discloses that when the peripheral device (keyboard) is connected to the host device (videophone) through USB connections, the power-on signal can be a logic high signal on each of the data lines, *i.e.*, a high/high signal on the USB communication path (D+ and D-). Shiga, 3:34-39 ("[T]he predetermined operation [power-on button] may be performed at the input device in order to output H signals of a predetermined pulse width to both the first signal line and the second signal line [high/high signal], after which the H signals with a predetermined pulse width equal to or greater than the predetermined pulse width are output from the AND circuit to turn on the power supply."); *id.*, 6:34-47 ("When the power-on key on the keyboard 11 is operated . . . predetermined signals are generated by the aforementioned 8-bit microcontroller (not shown), which is a controlling means (or signal-generating means) at the key board 11 side. The first signal line D+ and the second signal line D- are in a fourth mode in which both signal lines D+ and D- are in the H state. The pulse width and the pulse voltage of the predetermined Signals are, for example, 50 ms and 3 volts, respectively.") (emphasis added).

Shiga further discloses that this high/high signal (SE1) is an abnormal USB data condition and, thus, it allows the host device to distinguish the signal from normal USB operations and recognize the signal as a start-up signal. *Id.* at 3:40-56 ("The communication mode in which both of the first signal line and the second signal line are in an H state result from a combination that does not exist in ordinary USB standard operation modes [abnormal USB data condition]. Therefore, when the wake-up means is constructed so that it starts up when H signals are applied to both of these lines, there is no obstacle to carrying out ordinary communications using the USB interface. When the communication mode is switched at the USB interface, the first signal line and the second signal line may both be instantaneously set in

the H ("high") state. When the duration in which the first signal line and the second signal line are in the H state becomes equal to or greater than a predetermined time period (more specifically, a time period which is longer than a USB Standard Signal transfer rate), and an attempt is made to start up the wake-up means, it is possible to prevent confusion with the case where communication modes are switched by the USB interface.").

TABLE 1

	Low Speed	Full Speed	Unconnected
D+	L (Hi-Z)	H	L (Hi-Z)
D–	H (Hi-Z)	L (Hi-Z)	L (Hi-Z)

Shiga, 5:38-45 (showing normal data conditions); *id.*, 5:59-62 ("The state in which both of these first and the second signal lines D+ and D- are in the H state is not a USB standard state."); *id.* at 6:47-58 ("The fourth mode of first signal line D+ and second signal line D- in which both of them are in the H level state is not shown in Table 1 because it is not a USB standard mode. Taking into account that the data transfer speed of the USB is measured in nanoseconds (nsec), it can be said that a pulse width of 50 ms is very large. Therefore, even when fourth mode signals (H level signals with a pulse width of 50 ms) are set as signals that are not USB Standard signals, and then transmitted to first signal line D+ and second signal line D-, they can be easily distinguished from USB standard data signals.")

A person of ordinary skill in the art would have understood that, once powered on, the host device (the videophone) and the charger would engage in typical USB operations as described above. Baker Decl., ¶ 265. That is, as disclosed with respect to Claim 1, the mobile videophone would be enabled to draw current from the VBUS line in an upstream direction. *See* claim 1; Baker Decl., ¶ 265. A person of ordinary skill in the art would have understood, for

example, that the mobile videophone could draw up to 500mA of current if the videophone is a high-powered device. Baker Decl., ¶ 265. The mobile videophone only draws this current because it has been turned on by the "power-on" signal (prior to that time the mobile device is not powered on and is not communicating via the USB connection). Accordingly, under the Broadest Reasonable Interpretation, the enablement to draw said current is "responsive to" the abnormal USB data condition.

3. Claim 2

Morita in view of Shiga renders Claim 2 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 2 of the '766 Patent under 35 U.S.C. § 103

Claim 2 requires the device of Claim 1. As noted above, Morita in view of Shiga discloses the device of Claim 1.

Claim 2 further requires "wherein said predetermined USB Specification limit is a current limit." Morita in view of Shiga discloses this element. Specifically, as noted above with respect to Claim 1, the mobile device of Morita in view of Shiga draws current in an upstream direction even though the USB Specification limits the flow of current to the downstream direction. *See* Section IV.C.2.c. Under the broadest reasonable interpretation of the claim, this limit is a "current limit" because it relates to the flow of current.

4. Claim 4

Morita in view of Shiga renders Claim 4 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 4 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 4 of the '766 Patent under 35 U.S.C. § 103

Claim 4 requires the device of Claim 1. As noted above, Morita in view of Shiga discloses the device of Claim 1.

Claim 4 further requires that "said USB communication path includes a D+ line and a D- line." Morita in view of Shiga discloses this element. Specifically, as noted with respect to Claim 1, Morita in view of Shiga discloses that the mobile videophone connects to the charger dock via a USB port. *See* Section IV.C.2.b. As further noted with respect to Claim 1, a person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the connection would comprise a communication path comprising a D+ and D- line. *Id.*

5. Claim 5

Morita in view of Shiga renders Claim 5 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 5 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 5 of the '766 Patent under 35 U.S.C. § 103

Claim 5 requires the device of Claim 4. As noted above, Morita in view of Shiga discloses the device of Claim 4.

Claim 5 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." Morita in view of Shiga discloses this element. Specifically, as disclosed with respect to Claim 1, Morita in view of Shiga discloses that the peripheral keyboard comprises "power-on" and "power-off" means (*e.g.*, a button or a combination of keys) that can be used to power-on and power-off a connected host device like the videophone of Morita (which is connected through the charger of Morita). *See* Section IV.C.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the charger of Morita, which sends the signal to the videophone of Morita, which then powers on. *Id.* A person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the SE1 signal is an abnormal USB data line condition on the D+ and D- lines as required by Claim 5.

6. Claim 6

Morita in view of Shiga renders Claim 6 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 6 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 6 of the '766 Patent under 35 U.S.C. § 103

Claim 6 requires the device of Claim 5. As noted above, Morita in view of Shiga discloses the device of Claim 5.

Claim 6 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D- lines." Morita in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Morita in view of Shiga discloses that the peripheral keyboard comprises "power-on" and "power-off" means (e.g., a button or a combination of keys) that can be used to power-on and power-off a connected host device like the videophone of Morita (which is connected through the charger of Morita). See Section IV.C.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the charger of Morita, which sends the signal to the videophone of Morita, which then powers on. *Id.* A person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the SE1 signal is a logic high signal on each of said D+ and D- lines. *Id.*

7. Claim 8

Morita in view of Shiga renders Claim 8 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 8 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 8 of the '766 Patent under 35 U.S.C. § 103

Claim 8 requires the device of Claim 6. As noted above, Morita in view of Shiga discloses the device of Claim 6.

Claim 8 further requires that "each said logic high signals is signals greater than 2V." Morita in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Morita in view of Shiga discloses that the peripheral keyboard comprises "power-on" and

"power-off" means (e.g., a button or a combination of keys) that can be used to power-on and power-off a connected host device like the videophone of Morita (which is connected through the charger of Morita). *See* Section IV.C.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the charger of Morita, which sends the signal to the videophone of Morita, which then powers on. *Id.*

Shiga also specifically discloses that the SE1 signal may comprise logic high signals of, for example, 3 volts on each of the data lines for 50ms. Shiga, 6:43-47 ("The first signal line D+ and the second signal line D- are in a fourth mode in which both signal lines D+ and D- are in the H state. The pulse width and the pulse voltage of the predetermined signals are, for example, 50 ms and 3 volts, respectively.") (emphasis added).

Accordingly, Morita in view of Shiga discloses that the abnormal USB data line condition is a logic high signal of at least 2 volts on each of the data lines as required by Claim 8.

8. Claim 9

Morita in view of Shiga renders Claim 9 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 9 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 9 of the '766 Patent under 35 U.S.C. § 103

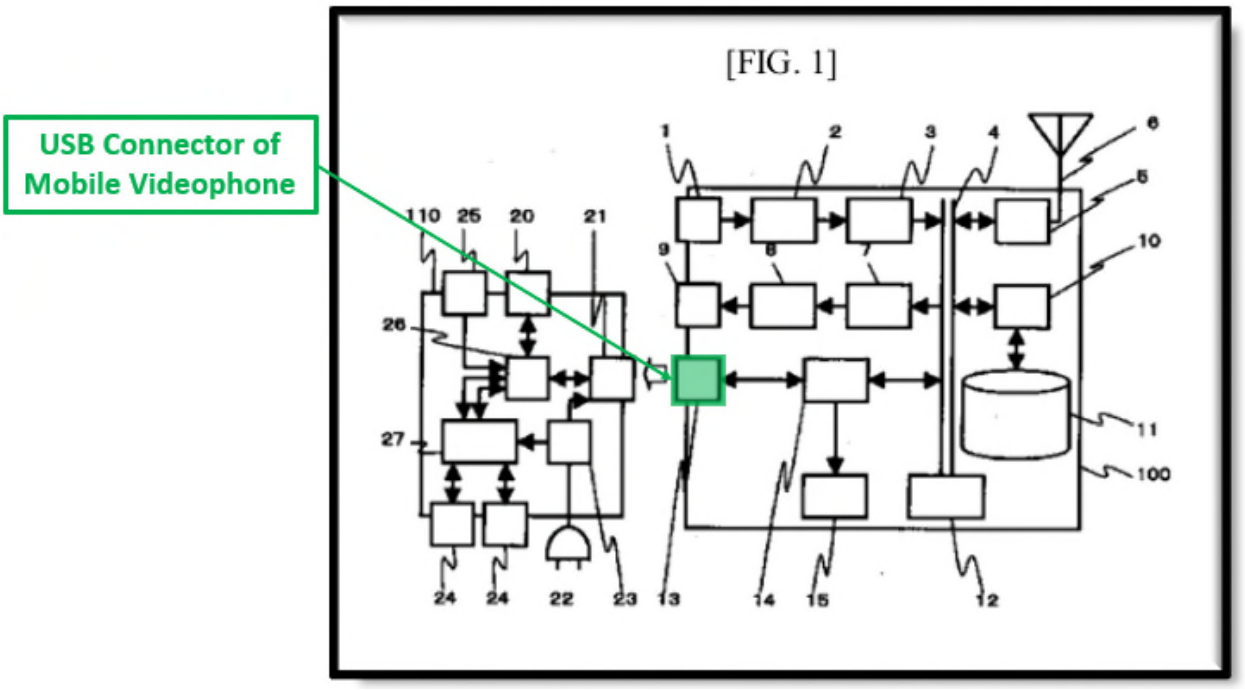
a. *Preamble: A mobile device, comprising*

The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Morita in view of Shiga. As

explained with respect to Claim 1, Morita in view of Shiga discloses a mobile device. *See* Section IV.C.2.a.

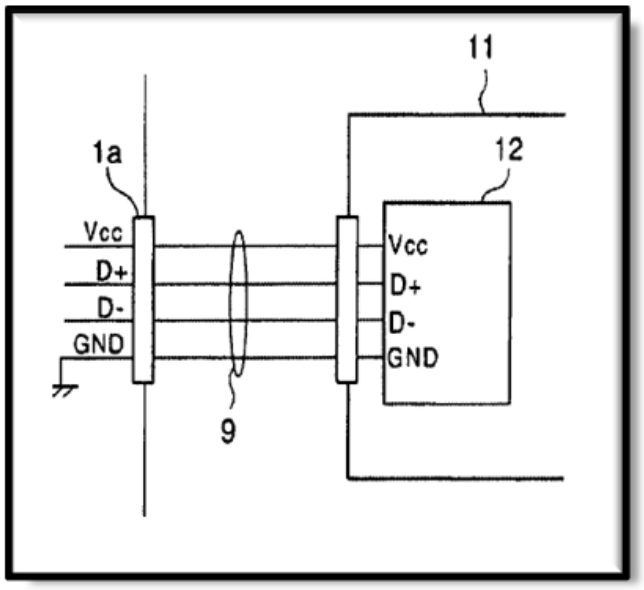
b. *A USB communication path and a USB VBUS line*

Claim 9 requires "a USB communication path and a USB VBUS line." Morita in view of Shiga discloses this element. Specifically, Morita discloses a mobile videophone that connects to a charger via a USB connector. Morita, Claim 1 ("A charger [adapter] capable of charging a mobile phone and coupling to an external device, comprising: first coupling means for coupling to a mobile phone . . . .") (emphasis added); *id.*, Claim 2 ("The charger according to claim 1, wherein the first coupling means and the second coupling means are configured from a USB format.") (emphasis added); *id.*, ¶ [0004] ("Furthermore, a USB format, which is easy to use, is often used for the interfaces of current personal computers and the like, and using the USB format for the interface of the mobile videophone device and having a USB port enables easy use of personal computers or the like to read/write image data, audio data, phone directory data, and other internal program data stored in memory on the mobile videophone device. Moreover, when the mobile videophone device operates as a personal computer, itis possible to easily access hard disk data by simply connecting to an external peripheral (device) such as a hard disk.") (emphasis added).



Morita, Figure 1 (annotated) (showing "First USB port" (20), "Second USB Port" (21) and "Third USB Port[s]" (24)); *see also* Morita at "Description of Reference Numerals."

A person of ordinary skill would have understood—and Shiga expressly discloses—that USB connections like those disclose for the charger of Morita include four lines: a VBUS; to data lines (D+ and D-) (collectively a USB Communication Path); and a ground line. Baker Decl., ¶ 279.



Shiga, Figure 1 (excerpted) (showing Vcc (VBUS), D+ and D- (USB communication Path), and GND (Ground)); *id.*, at 4:15-19 ("The USB chip 2 includes a power supply input terminal Vcc [VBUS], a ground terminal GND, a first signal line D+, and a second signal line D- [USB Communication Path], which correspond to those in a USB interface specification."); *see also* Section III.A.2, *supra* (describing USB Specification, which would have been known to a person of ordinary skill in the art).

Accordingly, under the Broadest Reasonable Interpretation, Morita in view of Shiga discloses a mobile device with a "USB communication path and USB VBUS line" as required by Claim 9.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 9 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Morita in view of Shiga discloses this element. As explained with respect to Claim 1, Morita in view of Shiga discloses a mobile videophone with a charging subsystem that draws current in an upstream direction even though the USB Specification limits the flow of current to the downstream direction. *See* Section IV.C.2.c.

d. ***Said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path***

Claim 9 requires "said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path." Morita in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Morita in view of Shiga discloses a mobile device with a charging subsystem that is enabled to draw current from an adapter in response to an abnormal USB data condition. *See* Section IV.C.2.d.

Morita in view of Shiga further discloses that said enablement is also responsive to the USB VBUS line being externally powered. Specifically, a person of ordinary skill in the art would have understood—and Morita expressly discloses—that the charging subsystem is enabled in response to the mobile device being attached to the charger, which powers the VBUS externally. Morita, ¶ [0013] ("The power supply of the mobile videophone device 100 is supplied from the USB controller 14 to the battery 15 by coupling to a charger via a USB format capable of supplying data and power.") Indeed, as noted in the USB Specification—which would have been known to a person of ordinary skill in the art—USB devices power the VBUS immediately upon attachment. *See* Section III.A.3 This is the first step that occurs in enumeration after the devices are attached, i.e., the "Powered State."

Table 9-1. Visible Device States

Attached	Powered	Default	Address	Configured	Suspended	State
No	--	--	--	--	--	Device is not attached to the USB. Other attributes are not significant.
Yes	No	--	--	--	--	Device is attached to the USB, but is not powered. Other attributes are not significant.
Yes	Yes	No	--	--	--	Device is attached to the USB and powered, but has not been reset.
Yes	Yes	Yes	No	--	--	Device is attached to the USB and powered and has been reset, but has not been assigned a unique address. Device responds at the default address.

USB 2.0 at 241. Accordingly, once the mobile videophone of powered on in response to the "power-on" signal, the VBUS line will be powered and, in response, the reset of enumeration will occur and the mobile videophone will be enabled to draw more than 0 mA (and at least 100 mA) of current prior to the "Default" state and then up to 500 mA of current in the "Configured" state.

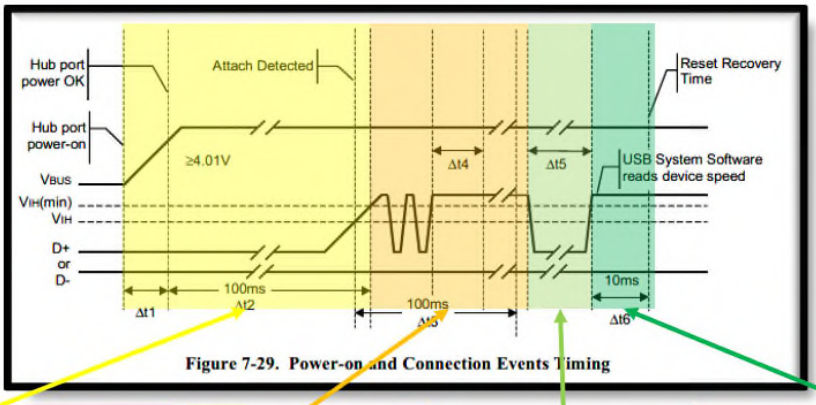


Figure 7-29. Power-on and Connection Events Timing

Device is Attached and Powered. Attach is signaled with high/low or low/high signal on data lines.

Device waits 100ms to receive low/low (SE0) Reset Signal

Reset signal

Reset signal is released, and device enters Default mode and can draw up to 100 mA

USB 2.0 at 150 (Figure 2-29) (annotated).

Accordingly, under the broadest reasonable interpretation, the mobile videophone of Morita in view of Shiga is enabled to draw current from the charger dock in response to an abnormal USB data condition detected at said USB communication path (SE 1 power-on signal) **and** the charger powering the VBUS line (USB VBUS line being externally powered) as required by Claim 9.

9. Claim 10

Morita in view of Shiga renders Claim 10 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 10 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 10 of the '766 Patent under 35 U.S.C. § 103

Claim 10 requires the device of Claim 9. As noted above, Morita in view of Shiga discloses the device of Claim 9.

Claim 10 further requires that "said predetermined USB Specification limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Morita in view of Shiga discloses this element. *See* Section IV.C.3.

10. Claim 12

Morita in view of Shiga renders Claim 12 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 12 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 12 of the '766 Patent under 35 U.S.C. § 103

Claim 12 requires the device of Claim 9. As noted above, Morita in view of Shiga discloses the device of Claim 9.

Claim 12 further requires that "wherein said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Morita in view of Shiga discloses this element. *See* Section IV.C.4.

11. Claim 13

Morita in view of Shiga renders Claim 13 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 13 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 13 of the '766 Patent under 35 U.S.C. § 103

Claim 13 requires the device of Claim 12. As noted above, Morita in view of Shiga discloses the device of Claim 12.

Claim 13 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." As explained with respect to Claim 5, Morita in view of Shiga discloses this element. *See* Section IV.C.5.

12. Claim 14

Morita in view of Shiga renders Claim 14 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 14 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 14 of the '766 Patent under 35 U.S.C. § 103

Claim 14 requires the device of Claim 13. As noted above, Morita in view of Shiga discloses the device of Claim 13.

Claim 14 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D-lines." As explained with respect to Claim 6, Morita in view of Shiga discloses this element. See Section IV.C.6.

13. Claim 16

Morita in view of Shiga renders Claim 16 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 16 of the '766 Patent under 35 U.S.C. § 103

Claim 16 requires the device of Claim 13. As noted above, Morita in view of Shiga discloses the device of Claim 13.

Claim 16 further requires that "each said logic high signals is signals greater than 2V." Morita in view of Shiga discloses this element. As explained with respect to Claim 8, Morita in view of Shiga discloses this element. *See* Section IV.C.7.

14. Claim 17

Morita in view of Shiga renders Claim 17 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 17 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 17 of the '766 Patent under 35 U.S.C. § 103

a. ***Preamble: A method of charging a mobile device having a charging subsystem and a USB communication path, comprising***

The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Morita in view of Shiga. Specifically, as explained with respect to Claim 1, Morita in view of Shiga discloses a mobile device having a charging subsystem and a USB communication path. *See* Sections IV.C.2.b-c. Moreover, Morita in view of Shiga discloses a method for charging said mobile device with a charger dock. Morita, Claim 1 ("A charger capable of charging a mobile phone"); ¶ [0013] ("The power supply of the mobile videophone device 100 is supplied from the USB controller 14 to the battery 15 by coupling to a charger via a USB format capable of supplying data and power.")

Accordingly, Morita in view of Shiga discloses a "method of charging a mobile device having a charging subsystem and a USB communication path."

b. ***Upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit***

Claim 17 requires the step of "upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit." Morita in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Morita in view of Shiga discloses a system comprising (1) a mobile videophone connected to (2) a charger dock connected to (3) a peripheral keyboard. *See* IV.C.2.d. The peripheral keyboard comprises a "power-on" and "power-off" button capable of turning the host videophone on or off while docked in the charger. To power-on the videophone, the keyboard sends an SE1 signal through the charger to the videophone. Upon detecting the signal (an identification signal) the mobile device will turn on, engage in enumeration, and draw current (up to 100 mA for a low powered device and up to 500 mA for a high powered device) from the charger as the host device (i.e., in an upstream direction). *Id.*

Under the broadest reasonable interpretation, the SE1 signal constitutes an "identification signal" because it indicates that the mobile device may draw current from the adapter (charger dock) in the manner described above (i.e., unrestricted by at least one limit of the USB Specification). Baker Decl., ¶ 296. Indeed, Claims 19 and 21 of the '766 Patent depend on Claim 17 and expressly discloses that the identification signal may be "an abnormal data signal on the USB communication path" and, specifically, that it may comprise logic high signals on said D+ line and said D-line (an SE1 signal). '766 Patent at Claims 19 and 21. Moreover, the '766 Patent expressly discloses that this is the "preferred" identification signal. *Id.*, 9:28-31 ("The preferred identification signal results from the application of Voltage signals greater than 2 volts to both the D+ and D-lines in the USB connector 54.")

Accordingly, under the broadest reasonable interpretation, Morita in view of Shiga discloses the step of "upon detection of an identification signal on said path [SE1 signal],

drawing current in excess of at least one USB Specification defined limit [the host drawing current upstream]."

c. *If said identification signal is not detected, drawing current in accordance with said USB Specification*

Claim 17 requires the step of "if said identification signal is not detected, drawing current in accordance with said USB Specification." Morita in view of Shiga discloses this element. Specifically, a person of ordinary skill in the art would have understood that if the mobile videophone does not detect the power-on signal, it will remain powered off and it will not engage in communication or draw current from the charger (in accordance with the USB Specification). *See e.g.*, Shiga, 5:66-6:3 ("When the power supply switch 5A of the main power supply 5 is set in an off state, electrical power supply from the main power supply 5 is stopped. In this case, an operating system (OS) of the host computer 1 is not turned on. Therefore, the operation of the USB chip 2 is stopped."); Baker Decl., ¶ 298. Accordingly, if the SE1 signal is not detected, the videophone stays powered off and draws current in accordance with the USB Specification as required by Claim 17.

15. Claim 18

Morita in view of Shiga renders Claim 18 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 18 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 18 of the '766 Patent under 35 U.S.C. § 103

Claim 18 requires the method of Claim 17. As noted above, Morita in view of Shiga discloses the method of Claim 17.

Claim 18 further requires that "said USB Specification defined limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Morita in view of Shiga discloses this element. *See* Section IV.C.3.

16. Claim 19

Morita in view of Shiga renders Claim 19 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 19 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 19 of the '766 Patent under 35 U.S.C. § 103

Claim 19 requires the method of Claim 17. As noted above, Morita in view of Shiga discloses the method of Claim 17.

Claim 19 further requires that "the identification signal includes an abnormal signal on the USB communication path." Morita in view of Shiga discloses this element. Specifically, as disclosed with respect to Claims 1 and 17, Morita in view of Shiga discloses that the identification signal is a logic high signal on both of the data lines (SE1 signal). *See* Section IV.C.2.d. As also noted with respect to Claim 1, this constitutes an abnormal signal on the USB communication path. *Id.*

17. Claim 20

Morita in view of Shiga renders Claim 20 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 20 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 20 of the '766 Patent under 35 U.S.C. § 103

Claim 20 requires the method of Claim 19. As noted above, Morita in view of Shiga discloses the method of Claim 19.

Claim 20 further requires that "said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Morita in view of Shiga discloses this element. *See* Section IV.C.4.

18. Claim 21

Morita in view of Shiga renders Claim 21 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 21 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 21 of the '766 Patent under 35 U.S.C. § 103

Claim 21 requires the method of Claim 20. As noted above, Morita in view of Shiga discloses the method of Claim 20.

Claim 21 further requires that "the abnormal signal includes logic high signals on said D+ line and said D-line." As explained with respect to Claim 6, Morita in view of Shiga discloses this element. See Section IV.C.6.

19. Claim 23

Morita in view of Shiga renders Claim 23 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 23 based on Morita in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-C for a claim chart comparing Morita in view of Shiga with Claim 23 of the '766 Patent under 35 U.S.C. § 103

Claim 23 requires the method of Claim 20. As noted above, Morita in view of Shiga discloses the method of Claim 20.

Claim 23 further requires that "said logic high signals are signals greater than 2V." As explained with respect to Claim 8, Morita in view of Shiga discloses this element. *See* Section IV.C.7.

D. Dougherty in view of Shiga renders Claims 1-2, 4-10, and 12-23 Obvious.

For the reasons stated below, Dougherty in view of Shiga renders Claims 1-2, 4-10, and 12-23 obvious.

1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Dougherty and Shiga. OTH-A (Baker Decl.,), ¶¶ 305-308.

Both Dougherty and Shiga relate to USB compatible devices including computing host devices (e.g., laptop computer) and related peripheral devices (e.g., keyboard, mouse). *See e.g.*, Dougherty at Title ("Powering a Notebook Across a USB Interface"); Shiga at Title ("USB Apparatus that turns on computer power supply . . . ."). Baker Decl., ¶ 306.

Dougherty, for example, teaches a laptop computer connected to a dock which can expand the number of connected peripheral devices including, for example, a keyboard. Dougherty, 1:61-67 ("When the user returns to the home or office, the laptop is docked with a non-portable unit. Docking in this manner may expand the capabilities of the laptop computer to include a full size keyboard, a full size monitor, more serial ports, and other functionality typically associated only with desktop computing devices."); *id.* at 2:24-28 ("Another method of expanding the capabilities of a laptop may be a form of port replication across a USB port. A user connects a laptop, via a USB connection, to a port replication device which generates plurality of communication ports for use as described above.") Shiga, in turn, teaches a helpful feature for improving such peripherals, *i.e.*, a power-on/power-off switch that can be used to turn the host device on and off. Shiga, Abstract ("An apparatus for turning on a computer power supply . . . when an input operation of a predetermined key is carried out . . . ."). Shiga discloses that this "power-on" and "power-off" switch can be implemented, for example, on a peripheral keyboard which can be connected to the dock of Dougherty. *Id.* at 2:44-47 ("Here, the operation may be performed on a special-purpose power-on key on the keyboard or on any combination of a plurality of keys.") *Id.* at 2:4-8 ("There has been a demand for adding value to such computers connected with the USB interface by providing a function that the USB does not have, that is, by providing a key called a power-on key, which allows the host computer to be started by a key input operation at a keyboard."); *id.* at 7:46-55 ("When a predetermined key on the keyboard 11 is operated . . . the main power is turned off.")

A person of ordinary skill in the art would have immediately recognized the benefit of the teachings of Shiga in a system like that disclosed in Dougherty (i.e., where the disclosed peripheral devices is connected to the host device through a dock). Baker Decl., ¶ 308. When the user is done using the host device (e.g., the laptop) for a particular purpose, he or she does

not have to remove the phone from the dock to turn it on or off. *Id.* Moreover, Shiga expressly teaches how to implement the claimed feature in a host computer device attached to a peripheral keyboard and, accordingly, applying the teachings to the laptop of Dougherty would simply involve applying a known technique to a similar device. *Id.*

2. Claim 1

Dougherty in view of Shiga renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 1 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 1 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

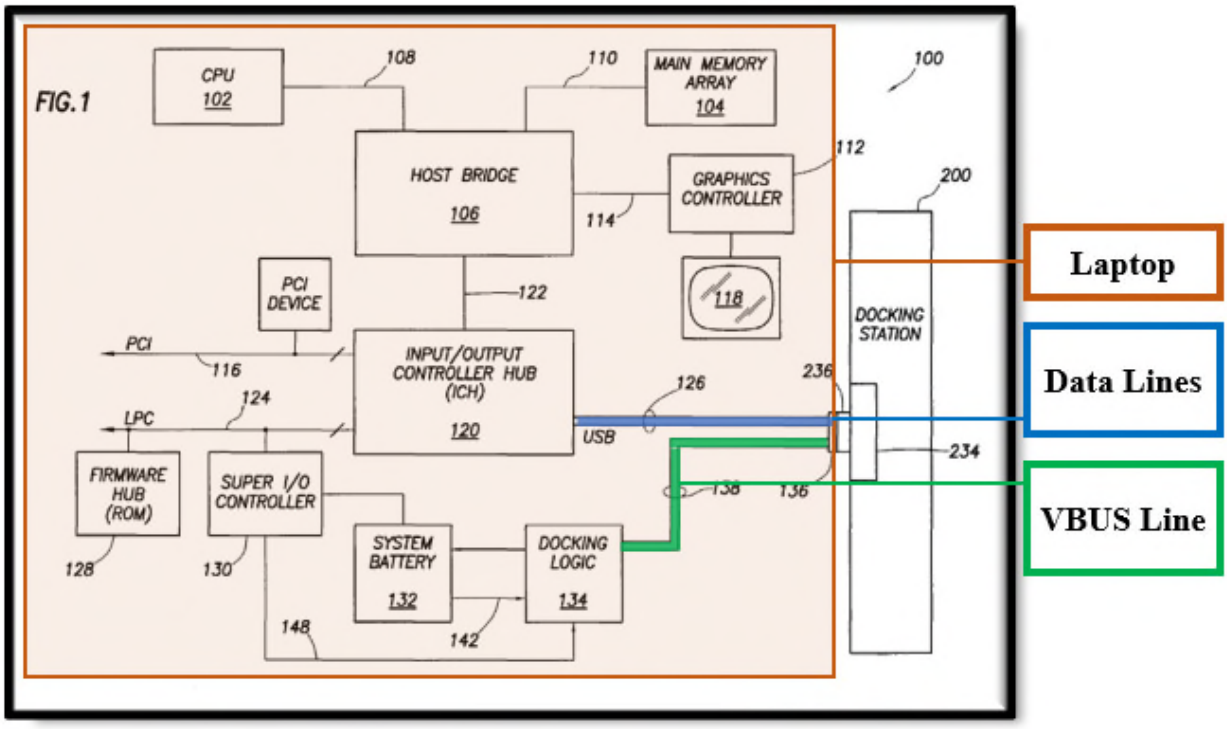
The preamble of Claim 1 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, it is satisfied by Dougherty in view of Shiga. Specifically, dougherty discloses a laptop computer or "Notebook." Dougherty, Title ("Powering a Notebook across a USB Interface"). Under the broadest reasonable interpretation of the term "mobile device," a laptop notebook constitutes a mobile device.

b. *A USB communication path*

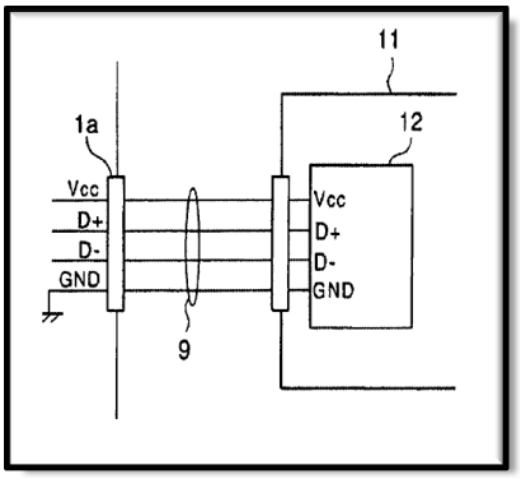
Claim 1 requires "a USB communication path." Dougherty in view of Shiga discloses this element. Specifically, Dougherty discloses a laptop dock and laptop (mobile device) connected to each other via a USB connector. Dougherty, Abstract ("A laptop computer and mating docking station where the docking station provides power to the laptop computer over power rails of the Universal Serial Bus (USB) interface.") (emphasis added); *id.* at 1:24-25

("[T]he invention relates to powering the laptop across a USB interface when in the docked position."); *id.* at 2:55-58 ("The problems noted above are solved in large part by a laptop computer and related docking station adapted to supply power from the docking station to the laptop computer across the USB connection.").

A person of ordinary skill would have understood—and Dougherty and Shiga expressly disclose—that USB connections like those disclosed for the dock, peripheral keyboard, and laptop of Dougherty in view of Shiga include four lines: a VBUS power line; two data lines (D+ and D-) (collectively a USB Communication Path); and a ground line. Dougherty, 4:61-66 ("More specifically, the standard USB communication cable has four conductors. Two of these conductors are serial communication conductors 126 which allow communication between devices using USB protocol [USB Communication Path]. The other two conductors carry power between USB devices [USB VBUS line and Ground]."); Baker Decl., ¶ 312.



Dougherty, Figure 1 (annotated).



Shiga, Figure 1 (excerpted) (showing Vcc (VBUS), D+ and D- (USB communication Path), and GND (Ground)); Shiga, 4:15-19 ("The USB chip 2 includes a power supply input terminal Vcc [VBUS], a ground terminal GND, a first signal line D+, and a second signal line D- [USB Communication Path], which correspond to those in a USB interface specification.").

Accordingly, Dougherty in view of Shiga discloses that the laptop notebook comprises a USB communication path.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 1 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Dougherty in view of Shiga discloses this element. Specifically, Dougherty in view of Shiga discloses a mobile device with a charging subsystem that is configured to draw 2,500 mA of current in an upstream direction.

First, Dougherty in view of Shiga discloses a charging subsystem. Baker Decl., ¶ 315. Specifically, Dougherty discloses that the laptop notebook comprises Docking Logic and a Battery. Dougherty, 4:59-61 ("The preferred embodiment of laptop computer 100 also has docking logic 134. Docking logic 134 is a set of circuitry coupled to the USB port 136 power lines 138."). The Docking logic charges the battery of the laptop notebook by supplying power

from the laptop dock that is received through the USB Connector. *Id.*, 2:64-66 ("The laptop computer may be operated by the dock unit Supplied power and, if necessary, the laptop's battery may be charged."); *id.*, 7:10-19 ("Voltage ramp logic 210, upon receiving the ramp indication from the communication and control logic 250, preferably ramps the voltage to 18 volts over a period of 20–50 milli-seconds. Thus, the Voltage on positive power rail 144 with respect to the negative power rail 146 in the laptop computer begins to rise toward 18 volts. Laptop computer 100 preferably operates using the 18 volt power supplied by the docking station 200 across the USB interface. Also, the laptop computer may charge its battery, if needed, with this same supply.") A person of ordinary skill in the art would have thus understood that mobile device contains a charging subsystem for charging the battery and that it may comprise portions of the Docking Logic that assist in charging the battery of the laptop.

Second, Dougherty in view of Shiga discloses that the charging subsystem is "enabled to draw current unrestricted by at least one predetermined USB Specification limit." Specifically, Dougherty in view of Shiga discloses that the mobile device will (1) draw current in an upstream direction (i.e., supplied at an upstream port and provided to a downstream port) port and (2) draw current in excess of 500 mA. In other words, the mobile device draws current unrestricted by these limits. Baker Decl., ¶ 316.

(1) <u>Drawing Current Upstream</u>

Specifically, as discussed in section III.A.2, supra, the USB specification dictates that an upstream port is the port closest to the host. USB 2.0 at 10 ("An upstream port is the port on a device electrically closest to the host . . . ."); *id.* at 298 (Section 11.1.2.1 Packet Signaling Connectivity) ("Upstream connectivity is defined as being towards the host, and downstream connectivity is defined as being towards the device."). As also disclosed in section III.A.3, *supra*, the USB Specification limits the direction in which current may flow. Current cannot be

supplied/drawn in an upstream direction. USB 2.0 at 171 (Section 7.2.1) ("No device shall supply (source) current on VBUS at its upstream facing port at any time.").

Dougherty in view of Shiga discloses a laptop notebook that draws current unrestricted by this limit. Baker Decl., ¶ 318. Specifically, a person of ordinary skill in the art would have understood that when the laptop device, laptop dock, and peripheral keyboard of Dougherty in view of Shiga are connected, the laptop is the host. Dougherty expressly discloses that that laptop is the host and, thus, the dock is a downstream device. Dougherty, 5:39-43 ("Under normal USB protocol, coupling of USB devices requires a series of USB handshaking protocols to identify both the host or master device, which would be the laptop computer 100, and any downstream device, which in this exemplary case is the docking station 200.") (emphasis added).

Because the laptop is the host, the USB port of the laptop dock that connects to the laptop (host) is an "upstream" facing port, and the USB port of the laptop is a "downstream" facing port. Baker Decl., ¶ 319. The laptop thus draws current in an upstream direct (i.e., to the host) and thus does not comply with the limit regarding the direction current may flow in the USB Specification. *Id.*; Dougherty, 5:67-6:3 (disclosing "Thus, the laptop computer 100 breaks with standard USB protocol . . . . "); *id.* at 7:47-51 ("When the dock station 200 provides full power for full operation of the laptop computer 100, as many as 2.5 amps of current may flow from the dock station 200 to the laptop computer 100 across the USB connectors 136, 236.") (emphasis added).

Accordingly, under the broadest reasonable interpretation, Dougherty in view of Shiga discloses a "charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

(2) Drawing more than 500 mA of Current

As discussed in section III.A.3, *supra*, the USB specification dictates that a device shall not supply more than 500 mA of current:

Table 7-7. DC Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Supply Voltage:					
High-power Port	V_{BUS}	Note 2, Section 7.2.1	4.75	5.25	V
Low-power Port	V_{BUS}	Note 2, Section 7.2.1	4.40	5.25	V
Supply Current:					
High-power Hub Port (out)	I_{CCPRT}	Section 7.2.1	500		mA
Low-power Hub Port (out)	I_{CCUPT}	Section 7.2.1	100		mA
High-power Function (in)	I_{CCHPF}	Section 7.2.1		500	mA
Low-power Function (in)	I_{CCLPF}	Section 7.2.1		100	mA
Unconfigured Function/Hub (in)	I_{CCINIT}	Section 7.2.1.4		100	mA
Suspended High-power Device	I_{CCSH}	Section 7.2.3; Note 15		2.5	mA
Suspended Low-power Device	I_{CCSL}	Section 7.2.3		500	µA

USB 2.0 at 178 (Table 7-7) (annotated) (showing maximum current amounts that can be supplied).

Dougherty in view of Shiga discloses a mobile device that is enabled to draw current unrestricted by this limit. Specifically, Dougherty discloses that the dock (adapter) will supply—and the laptop will draw—up to 2.5 Amps, *i.e.*, five times the 500mA limit imposed by the USB specification. Dougherty, 7:15-18 ("Laptop computer 100 preferably operates using the 18 volt power supplied by the docking station 200 across the USB interface. Also, the laptop computer may charge its battery, if needed, with this same supply.") (emphasis added); *id.* at 7:47-51 ("When the dock station 200 provides full power for full operation of the laptop computer 100, as many as 2.5 amps of current may flow from the dock station 200 to the laptop computer 100 across the USB connectors 136, 236.") (emphasis added); Baker Decl., ¶ 322.

Accordingly, under the broadest reasonable interpretation, Dougherty in view of Shiga discloses a "charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit" as required by Claim 1.

d. *Said enablement being responsive to an abnormal USB data condition detected at said USB communication path*

Claim 1 requires "said enablement being responsive to an abnormal USB data condition detected at said USB communication path." Dougherty in view of Shiga discloses this element. Specifically, Dougherty in view of Shiga discloses a system comprising of the laptop computer (host) connected to the laptop dock (adapter), which is connected to a keyboard (peripheral). The peripheral keyboard comprises a "power-on" and "power-off" button capable of turning the host laptop on or off while docked in the laptop dock (adapter). To power-on the laptop, the keyboard sends an SE1 signal—which is an "abnormal USB data condition" as discussed at Section III.C.4 above—through the dock to the laptop. The laptop will then turn on, and the laptop dock will supply up to 2.5 Amps of current to the laptop. Baker Decl., ¶¶ 324-329.

Specifically, Dougherty discloses a laptop notebook that can be connected via USB connection to a dock. *See* Claim 1. Dougherty further discloses that the dock can also be connected to peripheral devices (e.g., keyboard, mouse) through other USB ports so that those peripheral devices can be used with the laptop. Dougherty, 1:61-67 ("When the user returns to the home or office, the laptop is docked with a non-portable unit. Docking in this manner may expand the capabilities of the laptop computer to include a full size keyboard, a full size monitor, more serial ports, and other functionality typically associated only with desktop computing devices."); *id.* at 2:24-28 ("Another method of expanding the capabilities of a laptop may be a form of port replication across a USB port. A user connects a laptop, via a USB connection, to a port replication device which generates plurality of communication ports for use as described above."); *id.*, 2:39-44 ("Also, there are prior art devices that have the appearance of a full docking station, that is the laptop may physically couple to a non-portable docking station where the act of docking couples the USB ports; however, these devices still require the user to separately apply power to the laptop."); *id.* at 2:45-50 ("Thus, it would be desirable to have a

USB based docking station that has the capability of both operating the laptop computer and charging the batteries in the laptop computer while docked without the need to plug in a separate power connection, thus reducing the time and complexity to couple the laptop to the docking unit. Despite the desirability of Such systems, none are available in the prior art.")

Shiga discloses a system and method for using a peripheral keyboard and a host device (like the laptop of Dougherty). Specifically, Shiga discloses a keyboard that comprises a "power-on" and "power-off" key that can be used to power-on and power-off a connected host device like the laptop of Dougherty. Shiga, 2:43-49 ("When the predetermined operation is performed at the input device [keyboard], the main power supply is turned on. Here, the operation may be performed on a special-purpose power-on key on the keyboard or on any combination of a plurality of keys.") A person of ordinary skill in the art would have understood that the teachings of Shiga could be applied to the laptop of Dougherty and a connected peripheral keyboard. Baker Decl., ¶ 326.

Shiga specifically discloses that when the peripheral device (keyboard) is connected to the host device (laptop) through USB connections, the power-on signal can be a logic high signal on each of the data lines, *i.e.*, a high/high signal on the USB communication path (D+ and D-) (an SE1 signal). Shiga, 3:34-39 ("[T]the predetermined operation [power-on button] may be performed at the input device in order to output H signals of a predetermined pulse width to both the first signal line and the second signal line [high/high signal], after which the H signals with a predetermined pulse width equal to or greater than the predetermined pulse width are output from the AND circuit to turn on the power supply."); *id.*, 6:34-47 ("When the power-on key on the keyboard 11 is operated . . . predetermined signals are generated by the aforementioned 8-bit microcontroller (not shown), which is a controlling means (or signal-generating means) at the key board 11 side. The first signal line D+ and the second signal line D- are in a fourth mode in

which both signal lines D+ and D- are in the H state. The pulse width and the pulse voltage of the predetermined Signals are, for example, 50 ms and 3 volts, respectively.") (emphasis added).

Shiga further that this high/high signal (SE1) is an abnormal USB data condition and, thus, it allows the host device to distinguish the signal from normal USB operations and recognize the signal as a start-up signal. *Id.* at 3:40-56 ("The communication mode in which both of the first signal line and the second signal line are in an H state result from a combination that does not exist in ordinary USB standard operation modes [abnormal USB data condition]. Therefore, when the wake-up means is constructed so that it starts up when H signals are applied to both of these lines, there is no obstacle to carrying out ordinary communications using the USB interface. When the communication mode is switched at the USB interface, the first signal line and the second signal line may both be instantaneously set in the H state. When the duration in which the first signal line and the second signal line are in the H state becomes equal to or greater than a predetermined time period (more specifically, a time period which is longer than a USB Standard Signal transfer rate), and an attempt is made to start up the wake-up means, it is possible to prevent confusion with the case where communication modes are switched by the USB interface.").

TABLE 1

	Low Speed	Full Speed	Unconnected
D+	L (Hi-Z)	H	L (Hi-Z)
D–	H (Hi-Z)	L (Hi-Z)	L (Hi-Z)

Shiga, 5:38-45 (showing normal data conditions); *id.*, 5:59-62 ("The state in which both of these first and the second signal lines D+ and D- are in the H state is not a USB standard state."); *id.* at 6:47-58 ("The fourth mode of first signal line D+ and second signal line D- in which both of

them are in the H level state is not shown in Table 1 because it is not a USB standard mode. Taking into account that the data transfer speed of the USB is measured in nanoseconds (nsec), it can be said that a pulse width of 50 ms is very large. Therefore, even when fourth mode signals (H level signals with a pulse width of 50 ms) are set as signals that are not USB Standard signals, and then transmitted to first signal line D+ and second signal line D-, they can be easily distinguished from USB standard data signals.")

A person of ordinary skill in the art would have understood that, once powered-on from the powered-off status, the host device (the laptop) and the dock would engage in the operations discussed in Dougherty. Baker Decl., ¶ 329. That is, as disclosed with respect to Claim 1, the laptop would draw up to 2,500 mA of current from the VBUS line in order to power and charge the laptop. *See* Claim 1; Baker Decl., ¶ 329. Because this would not happen but for the power-on signal from Shiga, under the Broadest Reasonable Interpretation, "said enablement [is] responsive to an abnormal USB data condition detected at said USB communication path."

3. Claim 2

Dougherty in view of Shiga renders Claim 2 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 2 of the '766 Patent under 35 U.S.C. § 103

Claim 2 requires the device of Claim 1. As noted above, Dougherty in view of Shiga discloses the device of Claim 1.

Claim 2 further requires "wherein said predetermined USB Specification limit is a current limit." Dougherty in view of Shiga discloses this element. Specifically, as noted above with respect to Claim 1, the laptop of Dougherty in view of Shiga draws current in the wrong direction (upstream) and draws more current than permitted in the USB specification (more than 500 mA). *See* Section IV.D.2.c. Under the broadest reasonable interpretation of the claim, these limits are "current limits" because they pertain to the flow of current.

4. Claim 4

Dougherty in view of Shiga renders Claim 4 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 4 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 4 of the '766 Patent under 35 U.S.C. § 103

Claim 4 requires the device of Claim 1. As noted above, Dougherty in view of Shiga discloses the device of Claim 1.

Claim 4 further requires that "said USB communication path includes a D+ line and a D- line." Dougherty in view of Shiga discloses this element. Specifically, as noted with respect to Claim 1, Dougherty in view of Shiga discloses that the laptop connects to the dock via a USB connector. *See* Section IV.D.2.b. As further noted with respect to Claim 1, a person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the connection would comprise a communication path comprising a D+ and D- line. *Id.*

5. Claim 5

Dougherty in view of Shiga renders Claim 5 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 5 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 5 of the '766 Patent under 35 U.S.C. § 103

Claim 5 requires the device of Claim 4. As noted above, Dougherty in view of Shiga discloses the device of Claim 4.

Claim 5 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." Dougherty in view of Shiga discloses this element. Specifically, as disclosed with respect to Claim 1, Dougherty in view of Shiga discloses that the peripheral keyboard comprises "power-on" and "power-off" means (*e.g.*, a button or a combination of keys) that can be used to power-on and power-off a connected host device like the laptop of Dougherty (which is connected through the dock of Dougherty). *See* Section IV.D.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the dock of Dougherty, which sends the signal to the laptop of Dougherty, which then powers on. *Id.* A person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the SE1 signal is an abnormal USB data line condition on the D+ and D- lines as required by Claim 5.

6. Claim 6

Dougherty in view of Shiga renders Claim 6 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 6 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 6 of the '766 Patent under 35 U.S.C. § 103

Claim 6 requires the device of Claim 5. As noted above, Dougherty in view of Shiga discloses the device of Claim 5.

Claim 6 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D- lines." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty in view of Shiga discloses that the peripheral keyboard comprises "power-on" and "power-off" means (e.g., a button or a combination of keys) that can be used to power-on and power-off a connected host device like the laptop of Dougherty (which is connected through the dock of Dougherty). See Section IV.D.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the dock of Dougherty, which sends the signal to the laptop of Dougherty, which then powers on. *Id.* A person of ordinary skill in the art would have understood—and Shiga expressly discloses—that the SE1 signal is a logic high signal on each of said D+ and D- lines. *Id.*

7. Claim 7

Dougherty in view of Shiga renders Claim 7 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 7 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 7 of the '766 Patent under 35 U.S.C. § 103

Claim 7 requires the device of Claim 1. As noted above, Dougherty in view of Shiga discloses the device of Claim 1.

Claim 7 further requires that "said predetermined USB Specification limit is a current limit of 500 mA." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty discloses that the laptop draws up to 2,500 mA of current. *See* Section IV.D.2.c.2. Accordingly, the charging subsystem of the laptop draws current unrestricted by a current limit of 500 mA.

8. Claim 8

Dougherty in view of Shiga renders Claim 8 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 8 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 8 of the '766 Patent under 35 U.S.C. § 103

Claim 8 requires the device of Claim 6. As noted above, Dougherty in view of Shiga discloses the device of Claim 6.

Claim 8 further requires that "each said logic high signals is signals greater than 2V." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty in view of Shiga discloses that the peripheral keyboard comprises "power-on" and "power-off" means (e.g., a button or a combination of keys) that can be used to power-on and power-off a connected host device like the laptop of Dougherty (which is connected through the dock of Dougherty). *See* Section IV.D.2.d. Shiga further discloses that such means causes the peripheral keyboard to send a logic high/high (SE1) signal to the dock of Dougherty, which sends the signal to the laptop of Dougherty, which then powers on. *Id.*

Shiga also specifically discloses that the SE1 signal may comprise logic high signals of, for example, 3 volts on each of the data lines for 50ms. Shiga, 6:43-47 ("The first signal line D+ and the second signal line D- are in a fourth mode in which both signal lines D+ and D- are in the H state. The pulse width and the pulse voltage of the predetermined signals are, for example, 50 ms and 3 volts, respectively.") (emphasis added).

Accordingly, Dougherty in view of Shiga discloses that the abnormal USB data line condition is a logic high signal of at least 2 volts on each of the data lines as required by Claim 8.

9. Claim 9

Dougherty in view of Shiga renders Claim 9 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 9 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 9 of the '766 Patent under 35 U.S.C. § 103

a. *Preamble: A mobile device, comprising*

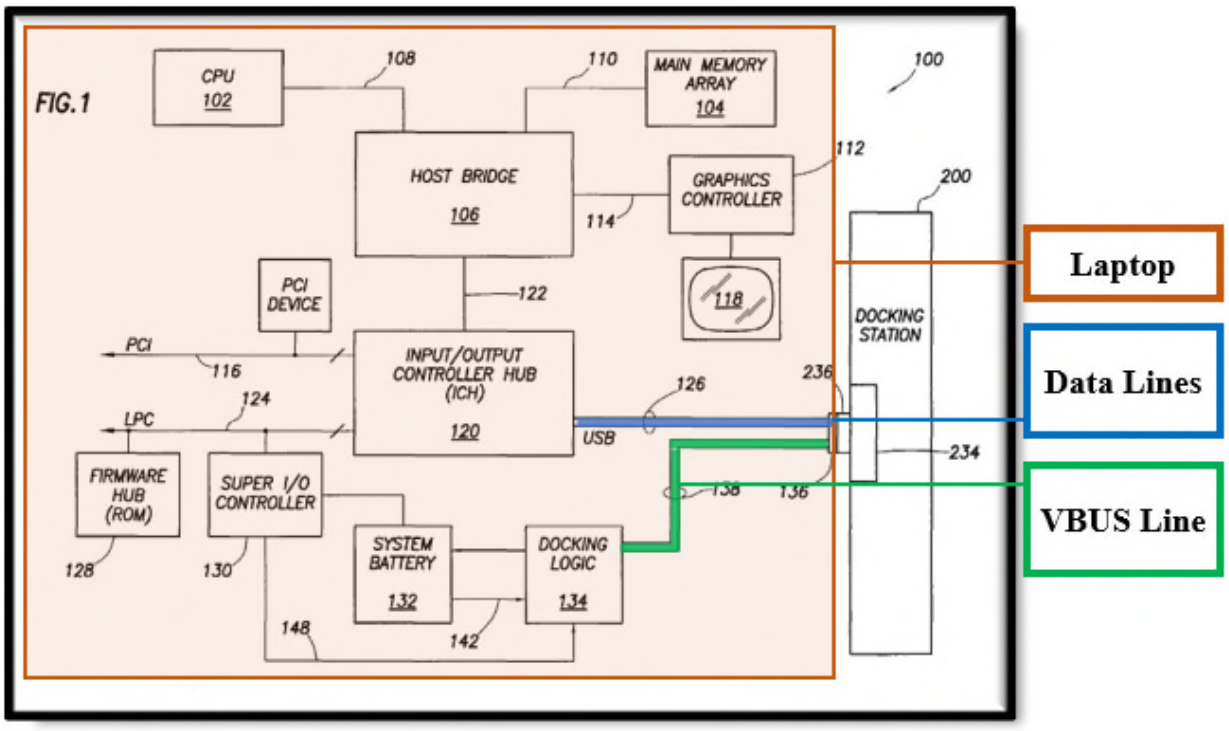
The preamble of Claim 9 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, as disclosed with respect to Claim 1, it is satisfied by Dougherty in view of Shiga. *See* Section IV.D.2.A.

b. *A USB communication path and a USB VBUS line*

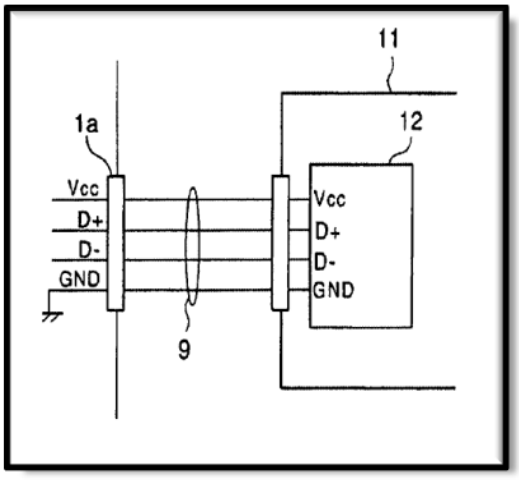
Claim 9 requires "a USB communication path and a USB VBUS line." Dougherty in view of Shiga discloses this element. Specifically, Dougherty discloses a laptop dock and laptop (mobile device) that connect to each other via a USB connector. Dougherty, Abstract ("A laptop computer and mating docking station where the docking station provides power to the laptop computer over power rails of the Universal Serial Bus (USB) interface.") (emphasis added); *id.* at 1:24-25 ("[T]he invention relates to powering the laptop across a USB interface when in the docked position."); *id.* at 2:55-58 ("The problems noted above are solved in large part by a laptop computer and related docking station adapted to supply power from the docking station to the laptop computer across the USB connection.").

A person of ordinary skill would have understood—and Dougherty and Shiga expressly disclose—that USB connections like those disclosed for the dock, peripheral keyboard, and laptop of Dougherty in view of Shiga include four lines: a VBUS power line; two data lines (D+ and D-) (collectively a USB Communication Path); and a ground line. Dougherty, 4:61-66 ("More specifically, the standard USB communication cable has four conductors. Two of these conductors are serial communication conductors 126 which allow communication between

devices using USB protocol [USB Communication Path]. The other two conductors carry power between USB devices [USB VBUS line and Ground].")



Dougherty, Figure 1 (annotated).



Shiga, Figure 1 (excerpted) (showing Vcc (VBUS), D+ and D- (USB communication Path), and GND (Ground)); Shiga, 4:15-19 ("The USB chip 2 includes a power supply input terminal Vcc

[VBUS], a ground terminal GND, a first signal line D+, and a second signal line D- [USB Communication Path], which correspond to those in a USB interface specification.").

Accordingly, Dougherty in view of Shiga discloses that the laptop notebook comprises a USB communication path and a USB VBUS line.

c. ***A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit***

Claim 9 requires "A charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit." Dougherty in view of Shiga discloses this element. As explained with respect to Claim 1, Dougherty in view of Shiga discloses a laptop Notebook with a charging subsystem that draws current in an upstream direction even though the USB Specification limits the flow of current to the downstream direction and draws up to 2,500 mAof current even though the UB Specification limits the amount of current that can be drawn to 500mA. *See* Section IV.D.2.c.

d. ***Said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path***

Claim 9 requires "said enablement being responsive to said USB VBUS line being externally powered and an abnormal USB data condition detected at said USB communication path." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty in view of Shiga discloses a mobile device with a charging subsystem that is enabled to draw current from an adapter in response to an abnormal USB data condition. *See* Section IV.D.2.d.

Dougherty in view of Shiga further discloses that said enablement is also responsive to the USB VBUS line being externally powered. Baker Decl., ¶ 351. Specifically, Dougherty discloses that in order to determine whether the connected laptop is compatible with the dock of Dougherty, the dock provides up to 3.1 volts to the VBUS line as an attempt to engage in a

handshaking protocol. Dougherty, 6:22-27 ("communication and control logic 250 commands the voltage ramp logic 210 to ramp-up a small voltage, preferably 3.1 volts, onto power rail 244. Positive power rail 244 couples to the power rail 144 on the laptop side of the connection and therefore also couples to the reactive signaling circuit 150."). In response to this powering of the VBUS line, the laptop and dock engage in a handshaking protocol and the laptop is enabled to draw up to 2,500 mA of current. *Id.*, 6:32-37 ("If communication and control circuit 250 establishes positive communication with reactive signaling circuit 150, the docking station 200 has made a positive identification that the laptop to which it is docked is capable of receiving power across the USB connection."); *id.*, 7:10-19 ("Voltage ramp logic 210, upon receiving the ramp indication from the communication and control logic 250, preferably ramps the voltage to 18 volts over a period of 20–50 milli-seconds. Thus, the Voltage on positive power rail 144 with respect to the negative power rail 146 in the laptop computer begins to rise toward 18 volts. Laptop computer 100 preferably operates using the 18 volt power supplied by the docking station 200 across the USB interface. Also, the laptop computer may charge its battery, if needed, with this same supply."); Baker Decl., ¶ 351.

Accordingly, under the broadest reasonable interpretation, the laptop of Dougherty in view of Shiga is enabled to draw current from the laptop dock in excess of 2,500 mA in response to an abnormal USB data condition detected at said USB communication path (SE 1 power-on signal) **and** the USB VBUS line being externally powered (dock powering the VBUS line as part of Dougherty Handshaking protocol) as required by Claim 9.

10. Claim 10

Dougherty in view of Shiga renders Claim 10 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 10 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 10 of the '766 Patent under 35 U.S.C. § 103

Claim 10 requires the device of Claim 9. As noted above, Dougherty in view of Shiga discloses the device of Claim 9.

Claim 10 further requires that "said predetermined USB Specification limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Dougherty in view of Shiga discloses this element. *See* Section IV.D.3.

11. Claim 12

Dougherty in view of Shiga renders Claim 12 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 12 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 12 of the '766 Patent under 35 U.S.C. § 103

Claim 12 requires the device of Claim 9. As noted above, Dougherty in view of Shiga discloses the device of Claim 9.

Claim 12 further requires that "wherein said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Dougherty in view of Shiga discloses this element. *See* Section IV.D.4.

12. Claim 13

Dougherty in view of Shiga renders Claim 13 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 13 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 13 of the '766 Patent under 35 U.S.C. § 103

Claim 13 requires the device of Claim 12. As noted above, Dougherty in view of Shiga discloses the device of Claim 12.

Claim 13 further requires that "said abnormal USB data condition is an abnormal USB data line condition on said D+ line and said D-line." As explained with respect to Claim 5, Dougherty in view of Shiga discloses this element. *See* Section IV.D.5.

13. Claim 14

Dougherty in view of Shiga renders Claim 14 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 14 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 14 of the '766 Patent under 35 U.S.C. § 103

Claim 14 requires the device of Claim 13. As noted above, Dougherty in view of Shiga discloses the device of Claim 13.

Claim 14 further requires that "said abnormal USB data line condition is a logic high signal on each of said D+ and D-lines." As explained with respect to Claim 6, Dougherty in view of Shiga discloses this element. See Section IV.D.6.

14. Claim 15

Dougherty in view of Shiga renders Claim 15 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 15 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 15 of the '766 Patent under 35 U.S.C. § 103

Claim 15 requires the device of Claim 9. As noted above, Dougherty in view of Shiga discloses the device of Claim 9.

Claim 15 further requires that "said predetermined USB Specification limit is a current limit of 500 mA." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty discloses that the laptop draws up to 2,500 mA of current. *See* Section IV.D.2.c.2. Accordingly, the charging subsystem of the laptop draws current unrestricted by a current limit of 500 mA.

15. Claim 16

Dougherty in view of Shiga renders Claim 16 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 2 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 16 of the '766 Patent under 35 U.S.C. § 103

Claim 16 requires the device of Claim 13. As noted above, Dougherty in view of Shiga discloses the device of Claim 13.

Claim 16 further requires that "each said logic high signals is signals greater than 2V." As explained with respect to Claim 8, Dougherty in view of Shiga discloses this element. *See* Section IV.D.8.

16. Claim 17

Dougherty in view of Shiga renders Claim 17 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 17 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 17 of the '766 Patent under 35 U.S.C. § 103

a. ***Preamble: A method of charging a mobile device having a charging subsystem and a USB communication path, comprising***

The preamble of Claim 17 is not limiting under the broadest reasonable interpretation of the claim. Even were the preamble limiting, as disclosed with respect to Claim 1, it is satisfied by Dougherty in view of Shiga.

Specifically, as explained with respect to Claim 1, Dougherty in view of Shiga discloses a mobile device having a charging subsystem and a USB communication path. *See* Sections IV.D.2.b-c. Moreover, Dougherty in view of Shiga discloses a method for charging said mobile

device with a laptop dock. Dougherty, Abstract ("Once positive communications is established, the dock station provides voltages on the USB power rails sufficient to power the laptop as well as charge the laptop's battery."); *id.* at 2:64-66 ("The laptop computer may be operated by the dock unit supplied power and, if necessary, the laptop's battery may be charged.")

Accordingly, Morita in view of Shiga discloses a "method of charging a mobile device having a charging subsystem and a USB communication path."

b. *Upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit*

Claim 17 requires the step of "upon detection of an identification signal on said path, drawing current in excess of at least one USB Specification defined limit." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claim 1, Dougherty in view of Shiga discloses a system comprising (1) a laptop notebook connected to (2) a laptop dock connected to (3) a peripheral keyboard. *See* IV.D.2.d. The peripheral keyboard comprises a "power-on" and "power-off" button capable of turning the host laptop on or off while docked. To power-on the laptop from the powered off state, the keyboard sends an SE1 signal through the dock to the laptop. *Id.* Upon detecting the signal (an identification signal) the laptop will turn on and, as disclosed in Dougherty, draw up to 2,500 mA of current in an upstream direction from the dock through the USB connection. *Id.*

Under the broadest reasonable interpretation, the SE1 signal constitutes an "identification signal" because it indicates that the mobile device may draw current from the adapter (laptop dock) in the manner described above (i.e., unrestricted by at least one limit of the USB Specification). Baker Decl., ¶ 364. Indeed, Claims 19 and 21 of the '766 Patent depends on Claim 17 and expressly discloses that the identification signal may be "an abnormal data signal on the USB communication path" and, specifically, that it may comprise logic high signals on said D+ line and said D-line. '766 Patent at Claims 19 and 21. Moreover, the '766 Patent

expressly discloses that this is the "preferred" identification signal. *Id.*, 9:28-31 ("The preferred identification signal results from the application of Voltage signals greater than 2 volts to both the D+ and D-lines in the USB connector 54.")

Accordingly, under the broadest reasonable interpretation, Dougherty in view of Shiga discloses the step of upon detecting of an identification signal on said path [SE1 signal], drawing current in excess of at least one USB Specification defined limit [the host drawing current upstream in an amount exceeding 500 mA]." as required by Claim 17.

c. *If said identification signal is not detected, drawing current in accordance with said USB Specification*

Claim 17 requires the step of "if said identification signal is not detected, drawing current in accordance with said USB Specification." Dougherty in view of Shiga discloses this element. Specifically, during the powered-off state (prior to detecting the SE1 identification signal), the laptop computer will not draw the 2,500 mA of current from laptop dock. *See* Shiga, 5:66-6:3 ("When the power supply switch 5A of the main power supply 5 is set in an off state, electrical power supply from the main power supply 5 is stopped. In this case, an operating system (OS) of the host computer 1 is not turned on. Therefore, the operation of the USB chip 2 is stopped."); Baker Decl., ¶ 366. Indeed, Dougherty discloses that the laptop only draws the full 2.5 Amps of current when needed for full operation. Dougherty, 7:47-51 ("When the dock station 200 provides power for full operation of the laptop computer 100, as many as 2.5 amps of current may flow from the dock station 200 to the laptop computer 100 across the USB connectors 136, 236.")

17. Claim 18

Dougherty in view of Shiga renders Claim 18 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 18 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 18 of the '766 Patent under 35 U.S.C. § 103

Claim 18 requires the method of Claim 17. As noted above, Dougherty in view of Shiga discloses the method of Claim 17.

Claim 18 further requires that "said USB Specification defined limit is a current limit defined by USB Specification." As explained with respect to Claim 2, Dougherty in view of Shiga discloses this element. *See* Section IV.D.3.

18. Claim 19

Dougherty in view of Shiga renders Claim 19 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 19 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 19 of the '766 Patent under 35 U.S.C. § 103

Claim 19 requires the method of Claim 17. As noted above, Dougherty in view of Shiga discloses the method of Claim 17.

Claim 19 further requires that "the identification signal includes an abnormal signal on the USB communication path." Dougherty in view of Shiga discloses this element. Specifically, as disclosed with respect to Claims 1 and 17, Dougherty in view of Shiga discloses that the identification signal is a logic high signal on both of the data lines (SE1 signal). *See* Section

IV..D.2.d. As also noted with respect to Claim 1, this constitutes an abnormal signal on the USB communication path. *Id.*

19. Claim 20

Dougherty in view of Shiga renders Claim 20 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 20 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 20 of the '766 Patent under 35 U.S.C. § 103

Claim 20 requires the method of Claim 19. As noted above, Dougherty in view of Shiga discloses the method of Claim 19.

Claim 20 further requires that "said USB communication path includes a D+ line and a D-line." As explained with respect to Claim 4, Dougherty in view of Shiga discloses this element. *See* Section IV.D.4.

20. Claim 21

Dougherty in view of Shiga renders Claim 21 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 21 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 21 of the '766 Patent under 35 U.S.C. § 103

Claim 21 requires the method of Claim 20. As noted above, Dougherty in view of Shiga discloses the method of Claim 20.

Claim 21 further requires that "the abnormal signal includes logic high signals on said D+ line and said D-line." As explained with respect to Claim 6, Dougherty in view of Shiga discloses this element. See Section IV.D.6.

21. Claim 22

Dougherty in view of Shiga renders Claim 23 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 22 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 22 of the '766 Patent under 35 U.S.C. § 103

Claim 22 requires the method of Claim 18. As noted above, Dougherty in view of Shiga discloses the method of Claim 20.

Claim 22 further requires that "said current limit is a current limit of 500 mA.." Dougherty in view of Shiga discloses this element. Specifically, as explained with respect to Claims 1 and 17, Dougherty discloses that the laptop draws up to 2,500 mA of current in response to the identification signal / abnormal USB data condition. *See* Section IV.D.2.c.2. Accordingly, the charging subsystem of the laptop draws current unrestricted by a current limit of 500 mA.

22. Claim 23

Dougherty in view of Shiga renders Claim 23 obvious under 35 U.S.C. § 103. Below, Requestors provide a concise statement of the substantial new question of patentability for Claim 23 based on Dougherty in view of Shiga under 35 U.S.C. §103.

Please see attached Exhibit CC-D for a claim chart comparing Dougherty in view of Shiga with Claim 23 of the '766 Patent under 35 U.S.C. § 103

Claim 23 requires the method of Claim 20. As noted above, Dougherty in view of Shiga discloses the method of Claim 20.

Claim 23 further requires that "said logic high signals are signals greater than 2V." As explained with respect to Claim 8, Dougherty in view of Shiga discloses this element. *See* Section IV.D.7.

V. CONCLUSION

Requestors are willing to provide any appropriate assistance to permit the Examiner to address and decide the issues presented by this Request. As the M.P.E.P. explains, the Examiner may, when appropriate, cut and paste claim charts or other material within the Request to incorporate them within the body of an Office Action. *See* M.P.E.P. § 2262. Requestors are therefore, through the undersigned counsel, available to provide the Examiner with a digital copy of this Request, or any portion of it, in response to a request by email or phone. Requestor also understands that the Examiner may, in appropriate circumstances, set forth specific rejections in an Office Action and incorporate by reference Requestors' reasons for the proposed rejections, if the Examiner agrees with the proposed rejections and reasons supporting them

For the reasons set forth above, Requestors believe that substantial new questions of patentability exist with respect to claims 1-23 of the '766 Patent and requests that *ex parte* reexamination be ordered.

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Respectfully submitted,

/Richard Martinelli/

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