UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NOKIA OF AMERICA CORPORATION,
Petitioner,

v.

ALEXANDER SOTO AND WALTER SOTO,
Patent Owners.

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IPR2023-00960
Patent No. 8,238,754

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# PATENT OWNERS' ORAL HEARING DEMONSTRATIVES

In accordance with the Board's Order – Order Setting Oral Argument (Paper 41), Patent Owners Alexander and Walter Soto, hereby file their oral hearing demonstratives.

Respectfully submitted,

Dated: November 27, 2024

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# IPR2023-00960
# Patent 8,238,754

Nokia of America Corp., Petitioner

v.

Alexander Soto and Walter Soto,
Patent Owners

# Patent Owner's Demonstratives

Served Nov. 25 and 27, 2024
Presented Dec. 3, 2024

# Patent 8,238,754

# U.S. Patent 8,238,754 (Ex. 1001)



US008238754B2

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

(10) **Patent No.: US 8,238,754 B2**
(45) **Date of Patent: Aug. 7, 2012**

(54) **SYSTEM AND METHOD FOR PLUGGABLE OPTICAL MODULES FOR PASSIVE OPTICAL NETWORKS**

(76) Inventors: **Alexander I Soto**, San Diego, CA (US); **Walter G Soto**, San Clemente, CA (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 40 days.

(21) Appl. No.: **12/982,872**

(22) Filed: **Dec. 30, 2010**

(65) **Prior Publication Data**

US 2011/0150475 A1 Jun. 23, 2011

**Related U.S. Application Data**

(63) Continuation of application No. 10/886,514, filed on Jul. 6, 2004, now Pat. No. 7,925,162.

(60) Provisional application No. 60/485,072, filed on Jul. 3, 2003, provisional application No. 60/515,836, filed on Oct. 30, 2003.

(51) **Int. Cl.**
***H04J 14/08*** (2006.01)

(52) **U.S. Cl.** ..... **398/100**

(58) **Field of Classification Search** ..... 398/66–67, 398/98–100

See application file for complete search history.

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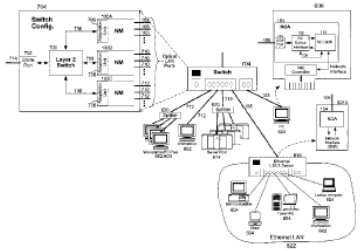
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*Primary Examiner* — Shi K Li

(57) **ABSTRACT**

An optical local area network includes a passive optical distribution fabric interconnecting a plurality of nodes including a first node and a plurality of remaining nodes, a hub that includes the first node and a control module, and a client network adapter coupled to each of the remaining nodes for responding to the control module. The control module controls timing for each of the client network adapters to transmit signals over the passive optical distribution fabric and distribution of signals to each of the nodes.

**65 Claims, 21 Drawing Sheets**



**Related U.S. Application Data**

(63) Continuation of application No. 10/886,514, filed on Jul. 6, 2004, now Pat. No. 7,925,162.

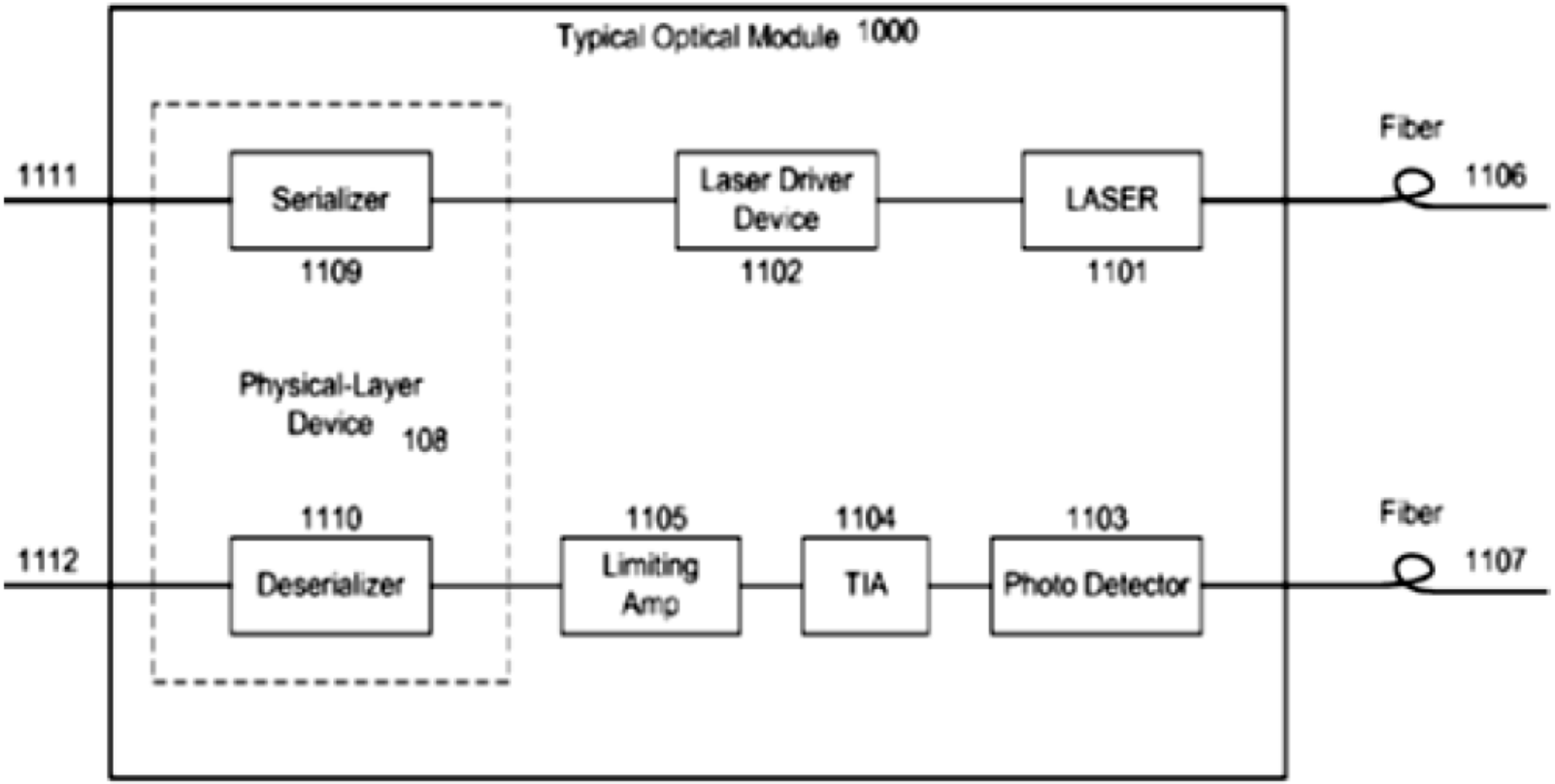
(60) Provisional application No. 60/485,072, filed on Jul. 3, 2003, provisional application No. 60/515,836, filed on Oct. 30, 2003.

Patent can properly claim priority to this date.[2] But for purposes of this Petition, no determination as to intervening priority need be made; all the prior art relied upon herein is prior art to the earliest alleged priority date in 2003. Ex. 1001. All

Petition at 9

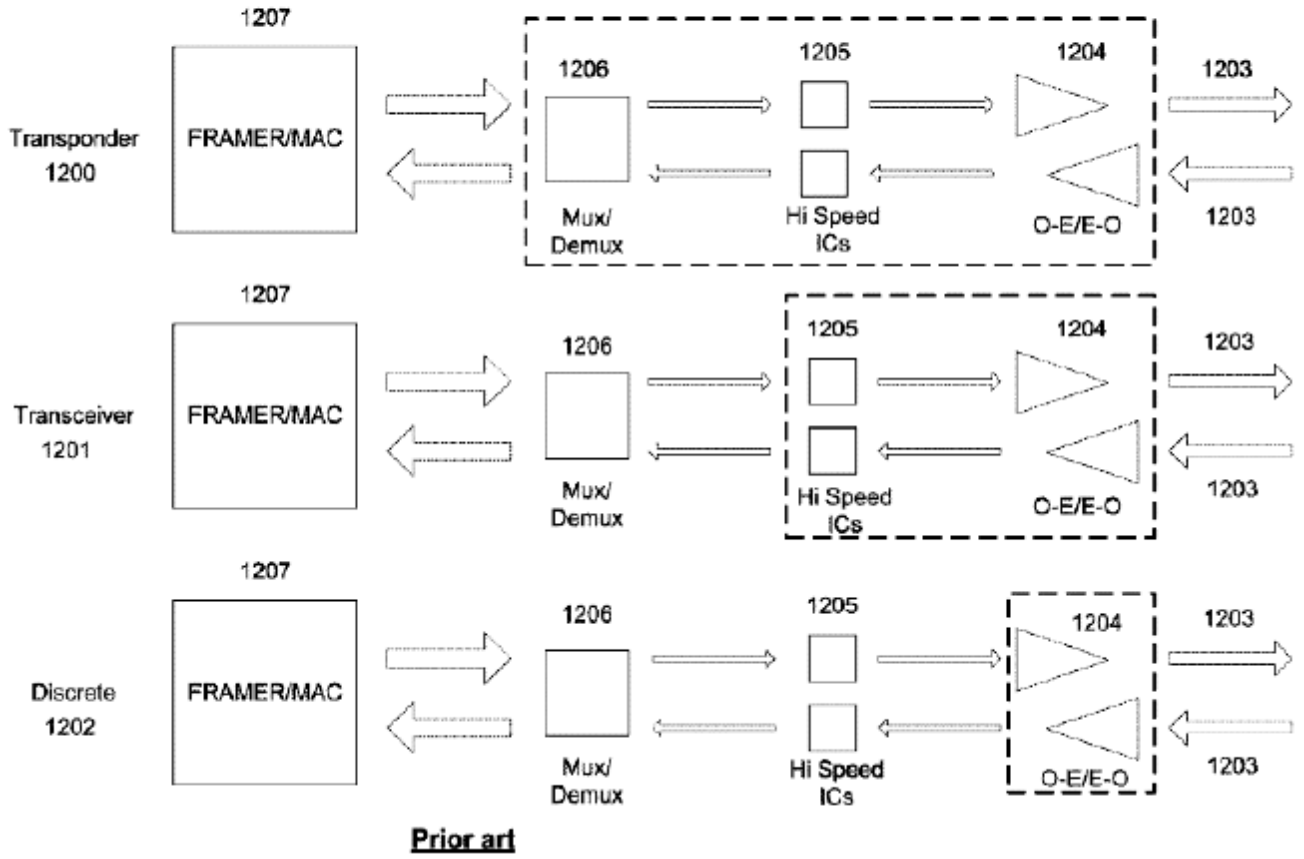
# U.S. Patent 8,238,754 (Ex. 1001)

Figure 11 of the '754 patent is reproduced below and described as illustrating a "typical optical module" of the prior art. *Id.* at 1:56, Fig. 11 (heading).



# U.S. Patent 8,238,754 (Ex. 1001)

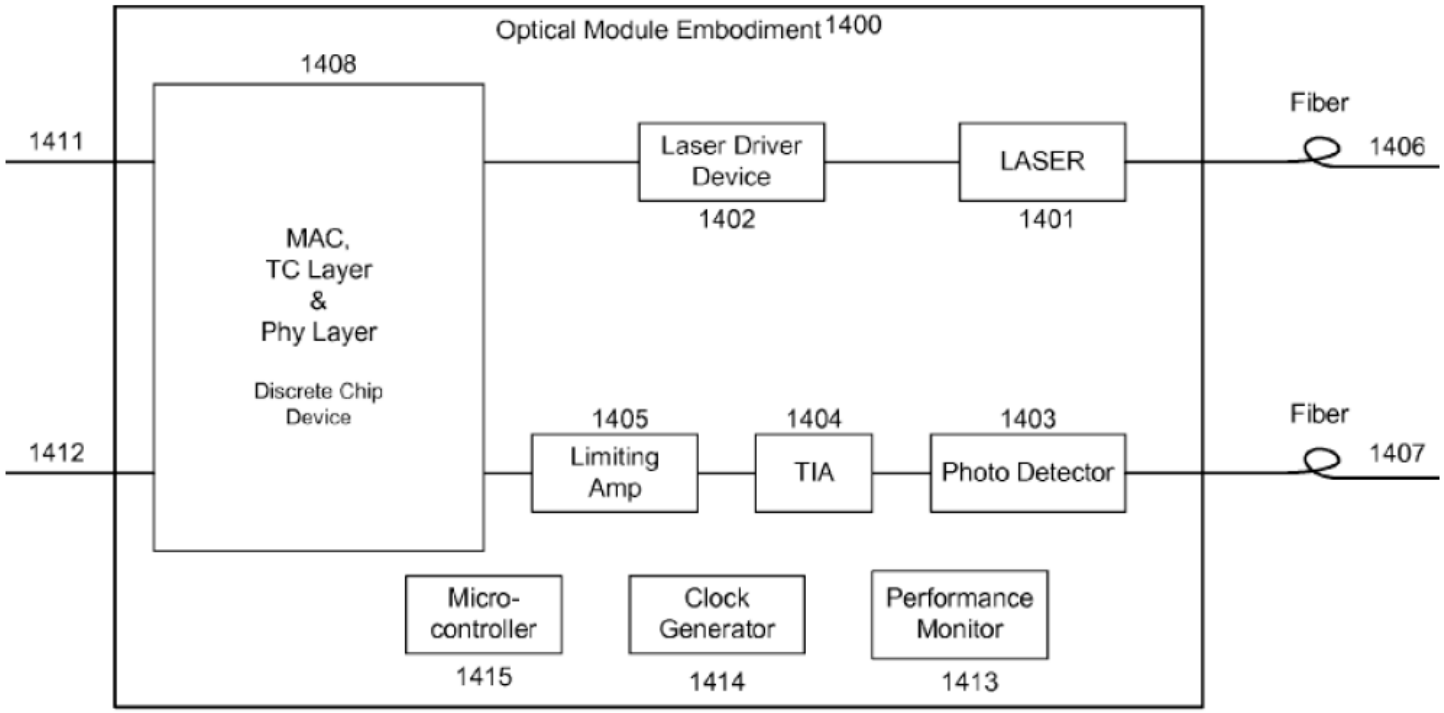
Figure 12 of the '754 patent is reproduced below and described as illustrating three levels of optical-module integration of the prior art. *Id.* at 1:65–66, Fig. 12 (heading).




**Prior art**

# U.S. Patent 8,238,754 (Ex. 1001)

Figure 17 of the '754 patent is reproduced below and described as illustrating an optical module with MAC, TC-Layer, and PHY-Layer components according to an exemplary embodiment of the invention. *Id.* at 5:34–36, 14:65–67.



# U.S. Patent 8,238,754 (Ex. 1001)

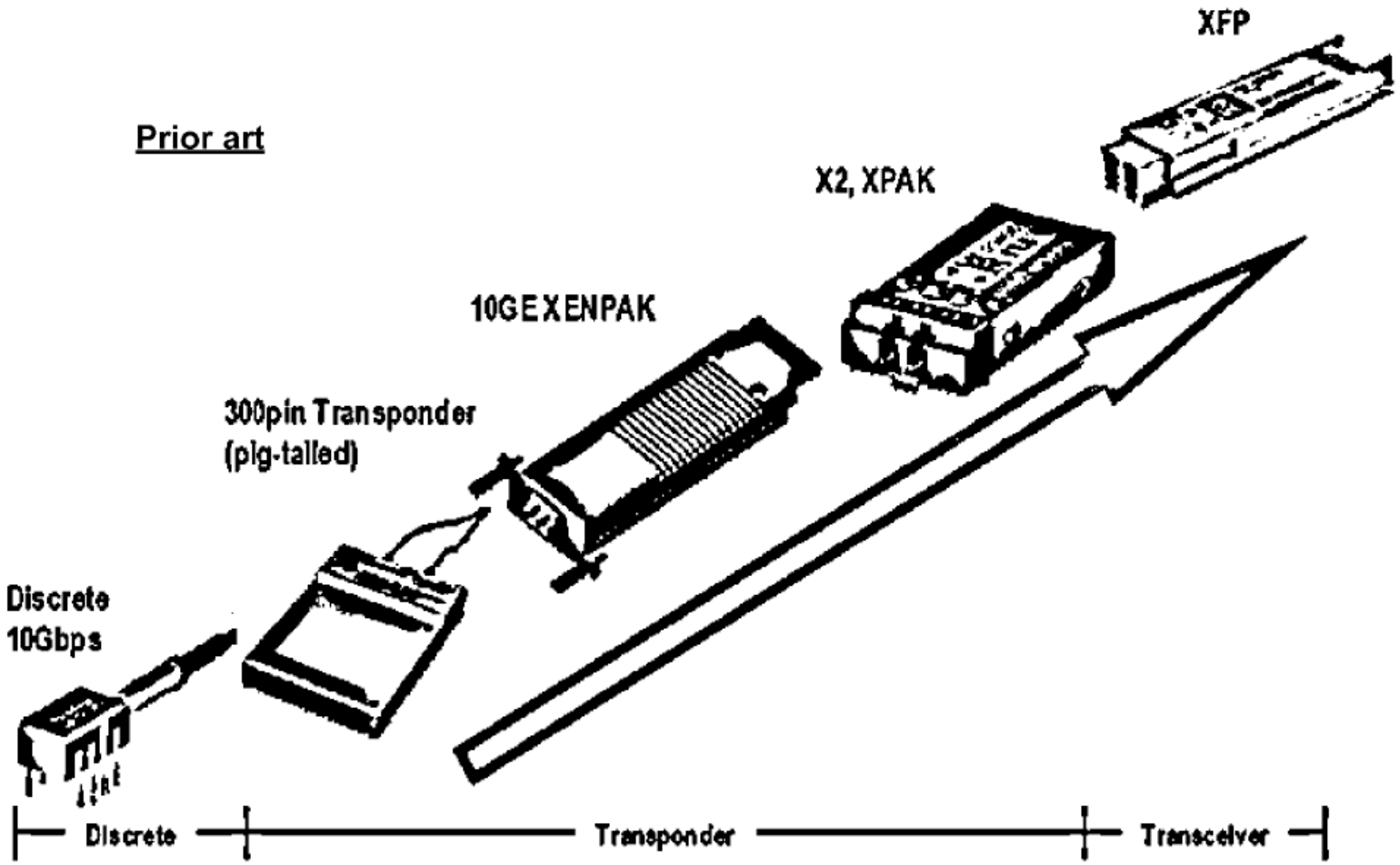



FIG. 13

Ex. 1001 at Fig. 13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

# U.S. Patent 8,238,754 (Ex. 1001)

In FIG. **13**, the evolution of MSA 10 Gb/s optical modules is shown. Beginning with discrete components, followed by 300pin, XENPAK, X2, and XPAK transponders and finally with XFP transceivers. The evolution of optical modules has been to reduce the size, power, and number of components in optical modules for the purpose of increasing port densities. The very nature of the intent of the invention is contrary to the evolution of MSA 10 Gb/s optical modules in that an increase in power and number of components result while enabling point-to-multipoint networks.

Ex. 1001 at 2:11–20

# Asserted Prior Art:
# Togami (SFP Transceiver)

# Togami (Ex. 1007)

US006439918B1

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

(10) **Patent No.: US 6,439,918 B1**
(45) **Date of Patent: Aug. 27, 2002**

(54) **ELECTRONIC MODULE HAVING AN INTEGRATED LATCHING MECHANISM**

(75) Inventors: **Chris Togami**, San Jose; **Guy Newhouse**, Freemont, both of CA (US)

(73) Assignee: **Finisar Corporation**, Sunnyvale, CA (US)

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

(21) Appl. No.: **09/971,885**

(22) Filed: **Oct. 4, 2001**

(51) **Int. Cl.**[7] ..... **H01R 13/64**

(52) **U.S. Cl.** ..... **439/372**; 439/638; 439/76.1; 439/157

(58) **Field of Search** ..... 439/372, 638, 439/76.1, 352, 157

(56) **References Cited**

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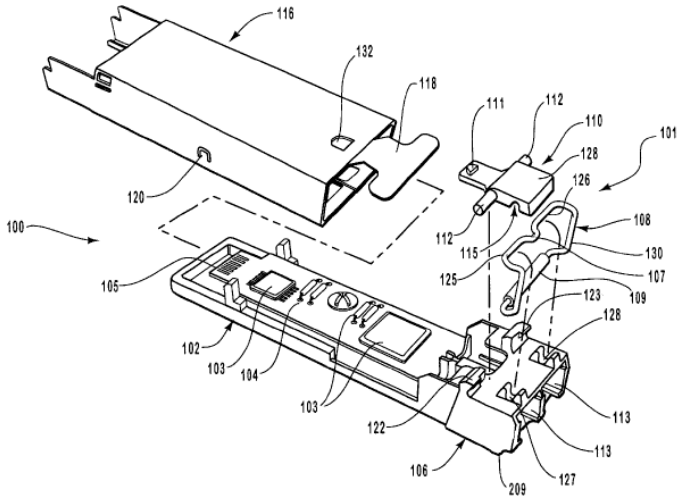
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*Primary Examiner*—Renee Luebke
*Assistant Examiner*—Briggitte R Hammond
(74) *Attorney, Agent, or Firm*—Workman, Nydegger & Seeley

(57) **ABSTRACT**

An integrated latching mechanism for use with a user pluggable electronic module, such as an opto-electronic transceiver module, is disclosed. The latching mechanism allows the user to selectively latch the module within a corresponding host port by manipulation of a lever formed on a bail. Movement of the bail causes a locking pin to extend and latch the module within the port. Conversely, movement of the bail can be used to disengage the locking pin and thereby allow the user to extract the module from within the port. Operatively movement of the lock pin is accomplished by forming a cam on the bail lever. Movement of the bail lever thus causes movement of the cam which corresponds to movement of a locking pin from a latched to a delatched position.

**18 Claims, 6 Drawing Sheets**



# Togami (Ex. 1007)

Togami teaches an opto-electronic transceiver module, used to interface an optical transmission cable to a host device, formed as a small form-factor pluggable ("SFP") device in accordance with existing industry standards, such as the hot-pluggable MSA standard. Ex. 1007, 2:45-62.

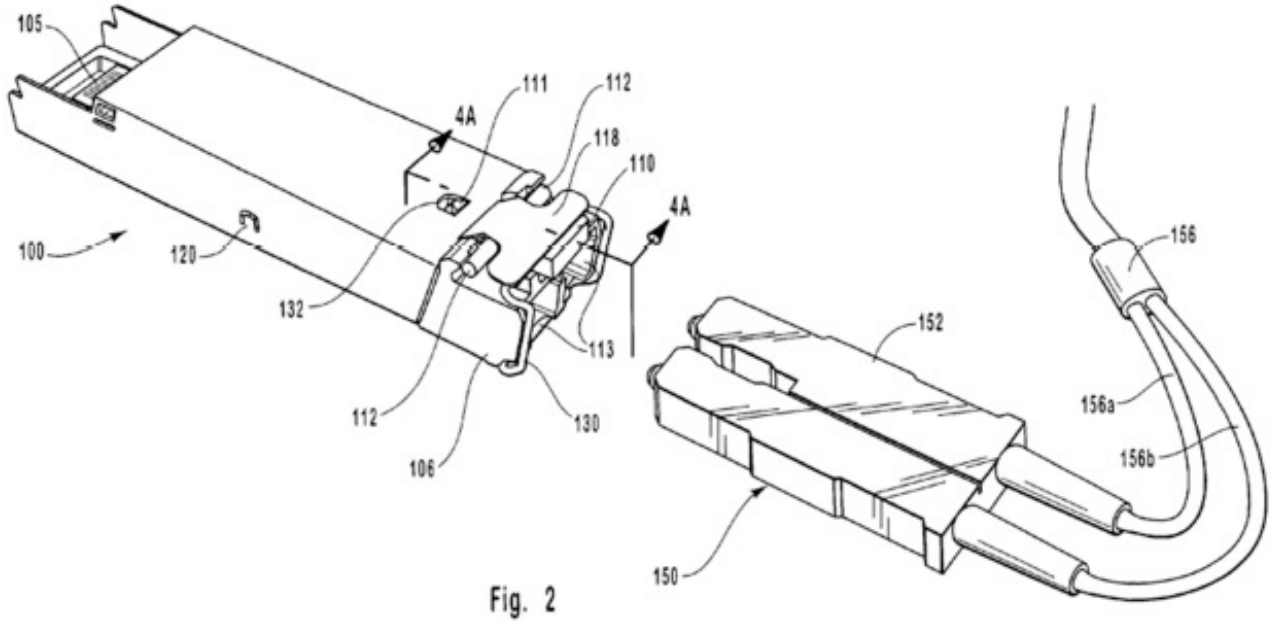



Fig. 2

# Togami (Ex. 1007)

53. Togami exemplifies a typical pluggable optical transceiver module in 2003. Ex. 1007. The primary purpose of this device was to convert electrical signals into representative optical signals, and vice versa. *See* Ex. 2021 at 35:14–20. The following picture from the POPR shows the electrical and optical ends of a pluggable optical transceiver module.

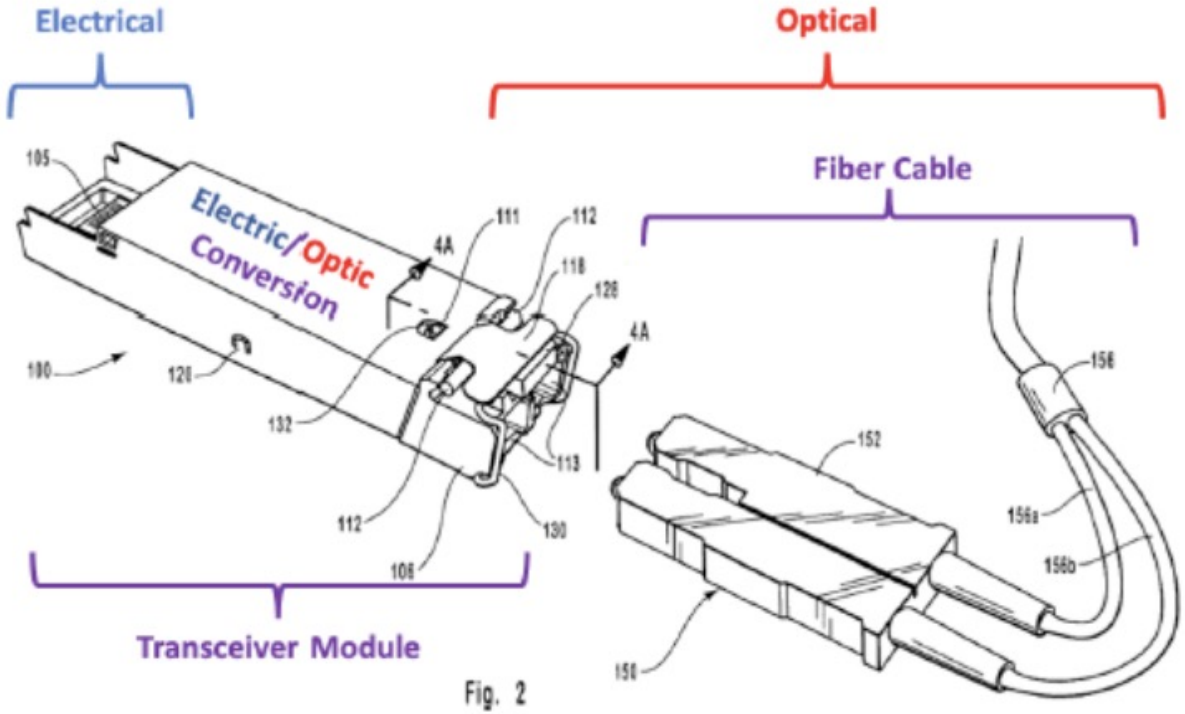


Fig. 2

# U.S. Patent 8,238,754 (Ex. 1001)

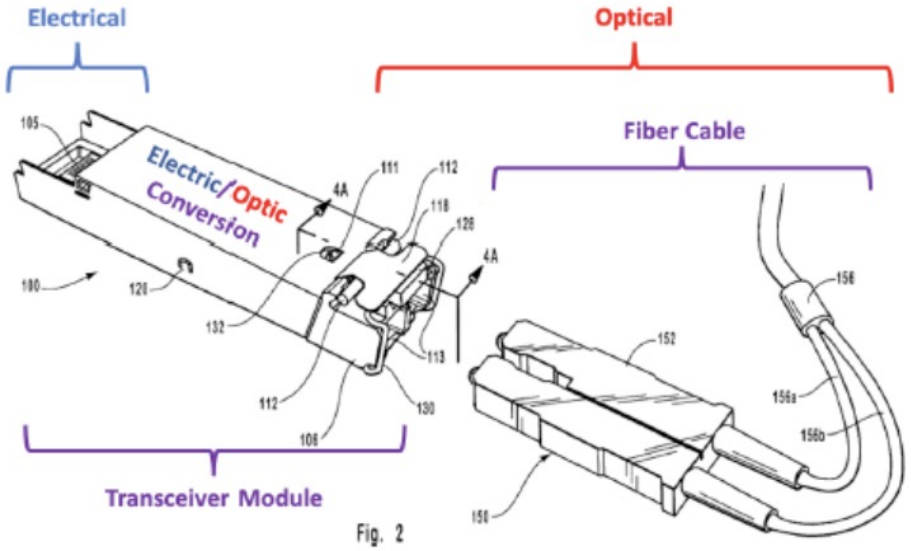
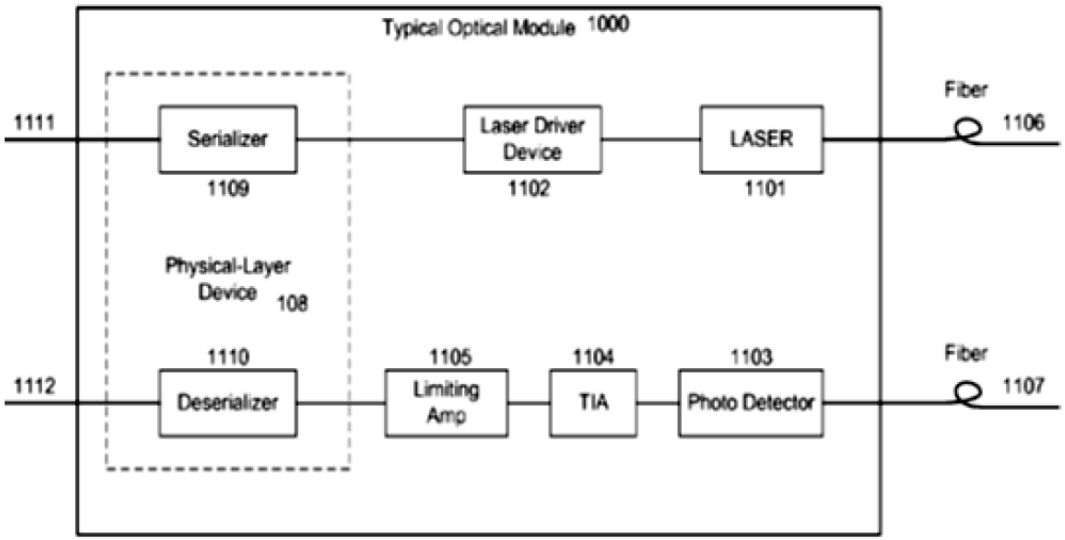



Fig. 2




**Ex. 2030 (Willner Dec.) at 13**
**Ex. 1001 (754 Pat.) at Fig. 11**

# Togami (Ex. 1007)

54. Togami's exemplary optical transceiver module is a "Small Form-factor Pluggable" module, also referred to as an "SFP" module. Ex. 1007 at 2:53–55; Ex. 2021 at 33:20–25. SFP is a standardized form factor defined by an SFP MultiSource Agreement that I will refer to as the "SFP MSA." Ex. 1007 at 1:60–64; Ex. 1016. In addition to other issues, the SFP MSA standardizes the size and power characteristics of SFP modules. *Id.*

13

Alexander and Walter Soto, Ex. 2030
Nokia of America v. Alexander and Walter Soto, IPR2023-00960

**Ex. 2030 (Willner Dec.) at 13.** DEMONSTRATIVE EXHIBIT – NOT EVIDENCE **14**

# SFP MSA (Ex. 1016)

** **Information Specification** ** INF-8074i Rev 1.0

SFF Committee documentation may be purchased in hard copy or electronic form
SFF specifications are available at ftp://ftp.seagate.com/sff

**SFF Committee**

INF-8074i Specification for

**SFP (Small Formfactor Pluggable) Transceiver**

Rev 1.0 May 12, 2001

Secretariat: SFF Committee

Abstract: This specification describes the SFP (Small Formfactor Pluggable) Transceivers developed by the MSA (Multiple Source Agreement) group. The following companies participated in the MSA.

Agilent Technologies
Blaze Network Products
E2O Communications
ExceLight Communications
Finisar
Fujikura Technology America
Hitachi Cable
Infineon Technologies
IBM
Lucent Technologies
Molex
Optical Communication Products
Picolight
Stratos Lightwave
Tyco Electronics

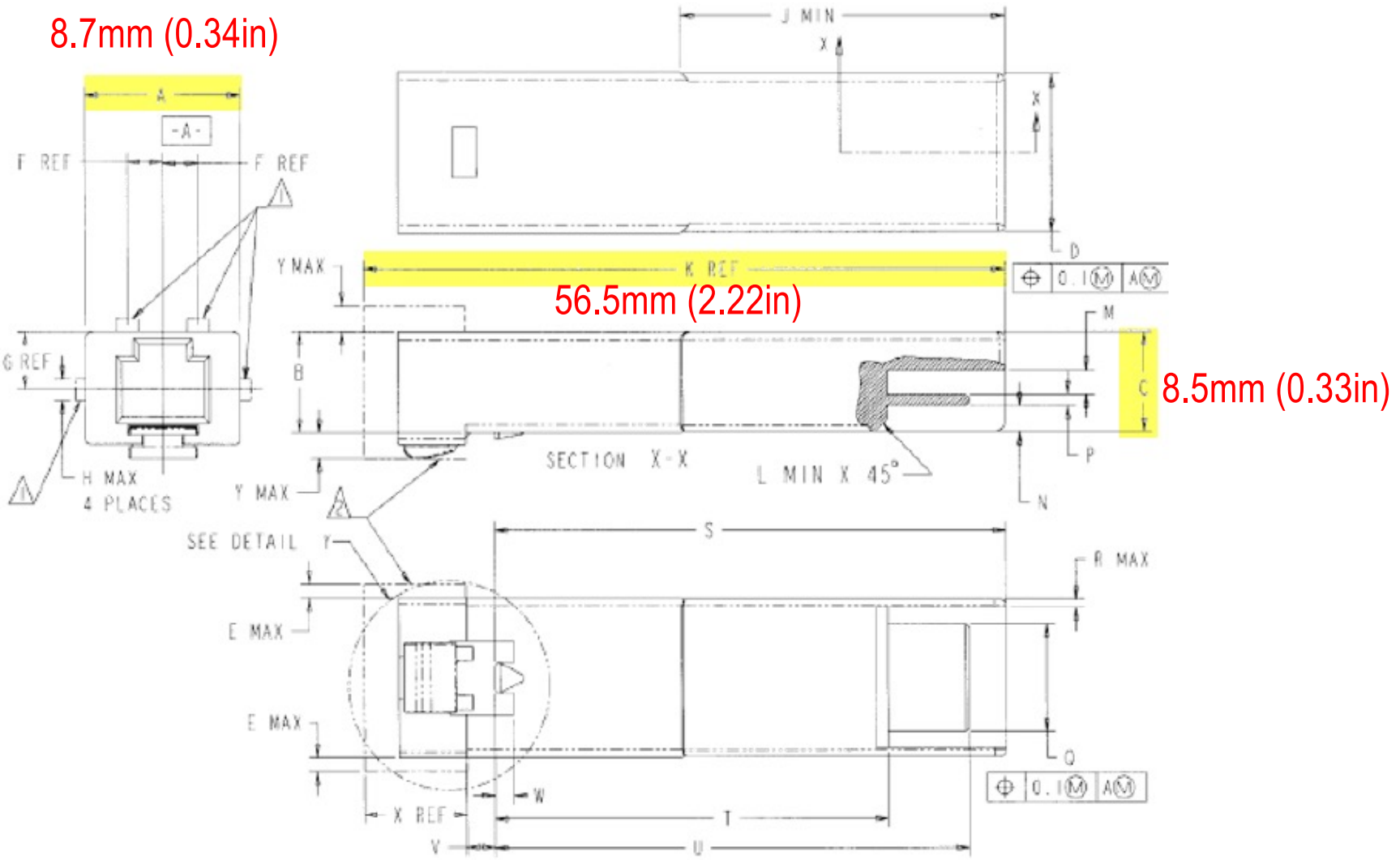
# SFP MSA (Ex. 1016)

**Table 1. Dimension Table for Drawing of SFP Transceiver**

| Designator | Dimension (mm) | Tolerance (mm) | Comments |
|---|---|---|---|
| A | 13.7 | ± 0.1 | Transceiver width, nosepiece or front that extends inside cage |
| B | 8.6 | ± 0.1 | Transceiver height, front, that extends inside cage |
| C | 8.5 | ± 0.1 | Transceiver height, rear |
| D | 13.4 | ± 0.1 | Transceiver width, rear |
| E | 1.0 | Maximum | Extension of front sides outside of cage, see Note 2 Figure 1B |
| F | 2.3 | Reference | Location of cage grounding springs from centerline, top |
| G | 4.2 | Reference | Location of side cage grounding springs from top |
| H | 2.0 | Maximum | Width of cage grounding springs |
| J | 28.5 | Minimum | Location of transition between nose piece and rear of transceiver |
| K | 56.5 | Reference | Transceiver overall length |
| L | 1.1x45° | Minimum | Chamfer on bottom of housing |

**Ex. 2030 (Willner Dec.) at 13**
**Ex. 1016 (SFP MSA) at 6.**

# SFP MSA (Ex. 1016)




**Ex. 2030 (Willner Dec.) at 14**
**Ex. 1016 at 7. (Printout)**

# SFP MSA (Ex. 1016)

**Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA)**

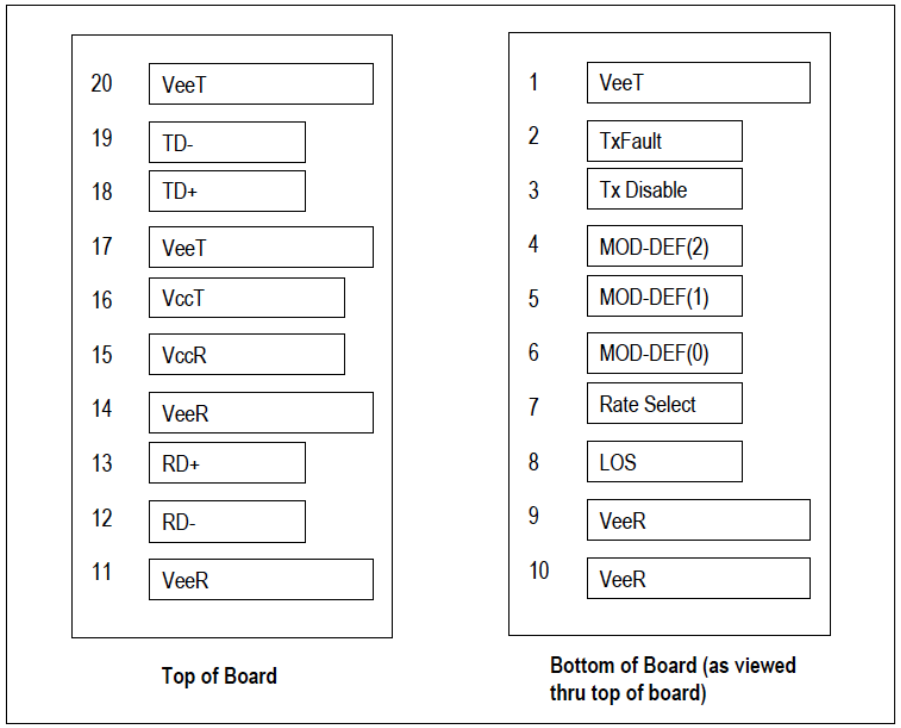



**Figure 3. SFP Transceiver Electrical Pad Layout**

## B2. Pin Definitions

Figure 1 below shows the pin names and numbering for the connector block on the host board. The diagram is in the same relative orientation as the host board layout (see Appendix A, Figure 4.). As mentioned, this pinout only applies to gigabit rate datacom applications. The pin functions are defined in Table 1 and the accompanying notes. Figure 2A shows the recommended power supply filtering network. Figure 2B shows an example of a complete SFP host board schematic with connections to SerDes and protocol ICs. For EMI protection the signals to the 20-pin connector should be shut off when the transceiver is removed. Standard board layout practices such as connections to Vcc and GND with Vias, use of short- and equal-length differential signal lines, use of microstrip-lines and 50Ω terminations are recommended. Chassis grounds and external electromagnetic interference shields should not be attached to circuit ground.

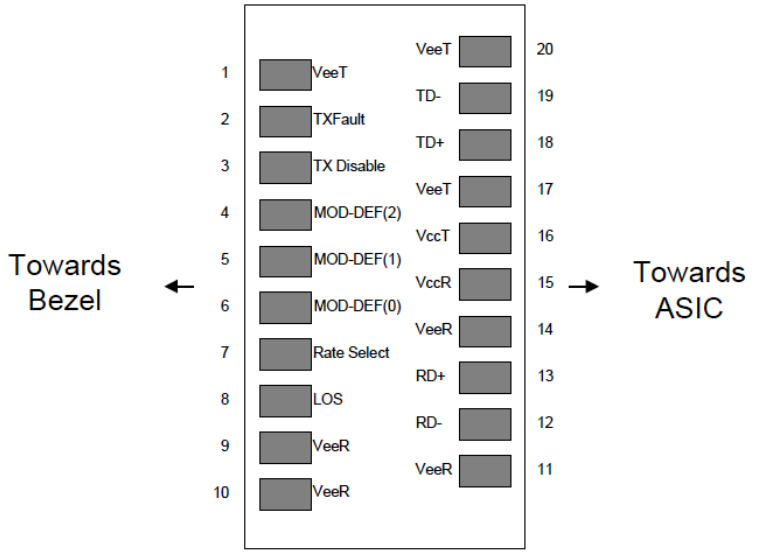



**Figure 1. Diagram of Host Board Connector Block Pin Numbers and Names**

# SFP MSA (Ex. 1016)

**Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA)**

**Table 1. Pin Function Definitions**

| Pin Num. | Name | Function | Plug Seq. | Notes |
|---|---|---|---|---|
| 1 | VeeT | Transmitter Ground | 1 | |
| 2 | TX Fault | Transmitter Fault Indication | 3 | Note 1 |
| 3 | TX Disable | Transmitter Disable | 3 | Note 2<br>Module disables on high or open |
| 4 | MOD-DEF2 | Module Definition 2 | 3 | Note 3, 2 wire serial ID interface |
| 5 | MOD-DEF1 | Module Definition 1 | 3 | Note 3, 2 wire serial ID interface |
| 6 | MOD-DEF0 | Module Definition 0 | 3 | Note 3, Grounded in Module |
| 7 | Rate Select | Select between full or reduced receiver bandwidth | 3 | Note 4<br>Low or Open – reduced bandwidth,<br>High– full bandwidth |
| 8 | LOS | Loss of Signal | 3 | Note 5 |
| 9 | VeeR | Receiver Ground | 1 | Note 6 |
| 10 | VeeR | Receiver Ground | 1 | Note 6 |
| 11 | VeeR | Receiver Ground | 1 | Note 6 |
| 12 | RD- | Inv. Received Data Out | 3 | Note 7 |
| 13 | RD+ | Received Data Out | 3 | Note 7 |
| 14 | VeeR | Receiver Ground | 1 | Note 6 |
| 15 | VccR | Receiver Power | 2 | 3.3 ± 5%, Note 8 |
| 16 | VccT | Transmitter Power | 2 | 3.3 ± 5%, Note 8 |
| 17 | VeeT | Transmitter Ground | 1 | Note 6 |
| 18 | TD+ | Transmit Data In | 3 | Note 9 |
| 19 | TD- | Inv. Transmit Data In | 3 | Note 9 |
| 20 | VeeT | Transmitter Ground | 1 | Note 6 |

# SFP MSA (Ex. 1016)

**Table 2. Timing Requirements of Control and Status I/0**

| Parameter | Symbol | Min | Max | Unit | Condition |
|---|---|---|---|---|---|
| TX Disable Assert Time | t_off | | 10 | µs | Time from rising edge of TX Disable to when the optical output falls below 10% of nominal |
| TX Disable Negate Time | t_on | | 1 | ms | Time from falling edge of TX Disable to when the modulated optical output rises above 90% of nominal |
| Time to initialize, including reset of TX_Fault | t_init | | 300 | ms | From power on or negation of TX Fault using TX Disable |
| TX Fault Assert Time | t_fault | | 100 | µs | Time from fault to TX fault on. |
| TX Disable to reset | t_reset | 10 | | µs | Time TX Disable must be held high to reset TX_fault |
| LOS Assert Time | t_loss_on | | 100 | µs | Time from LOS state to RX LOS assert |
| LOS Deassert Time | t_loss_off | | 100 | µs | Time from non-LOS state to RX LOS deassert |
| Rate-Select Change Time | t_ratesel | | 10 | µs | Time from rising or falling edge of Rate Select input until receiver bandwidth is in conformance with appropriate specification. |
| Serial ID Clock Rate | f_serial_clock | | 100 | kHz | |

# Asserted Prior Art:
# Shraga (PON Network, ONT)

# Shraga (Ex. 1005)

US006697374B1

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

(10) **Patent No.: US 6,697,374 B1**
(45) **Date of Patent: Feb. 24, 2004**

(54) **OPTICAL NETWORK COMMUNICATION SYSTEM**

(75) Inventors: **Eyal Shraga**, Kfar Saba (IL); **Oren Marmur**, Kiryat Ono (IL); **Ilan Ron**, Kfar Saba (IL); **Joseph Arol**, Kiryat Ono (IL)

(73) Assignee: **Flexlight Networks**, Kfar Saha (IL)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 52 days.

(21) Appl. No.: **10/016,584**

(22) Filed: **Dec. 5, 2001**

(51) **Int. Cl.**[7] ..... **H04L 12/43**
(52) **U.S. Cl.** ..... **370/458**; 370/468
(58) **Field of Search** ..... 370/294, 432, 370/442, 458, 459, 468, 470, 471, 473, 474, 498, 521

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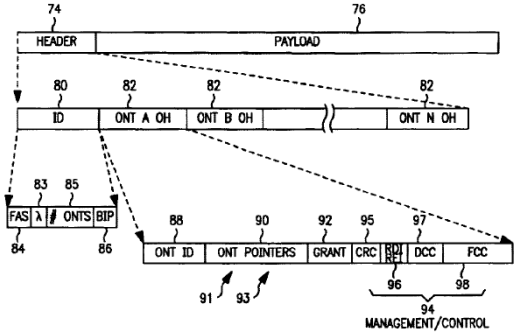
* cited by examiner

*Primary Examiner*—Chi Pham
*Assistant Examiner*—Anh-Vu H Ly
(74) *Attorney, Agent, or Firm*—Blakely, Sokoloff, Taylor & Zafman

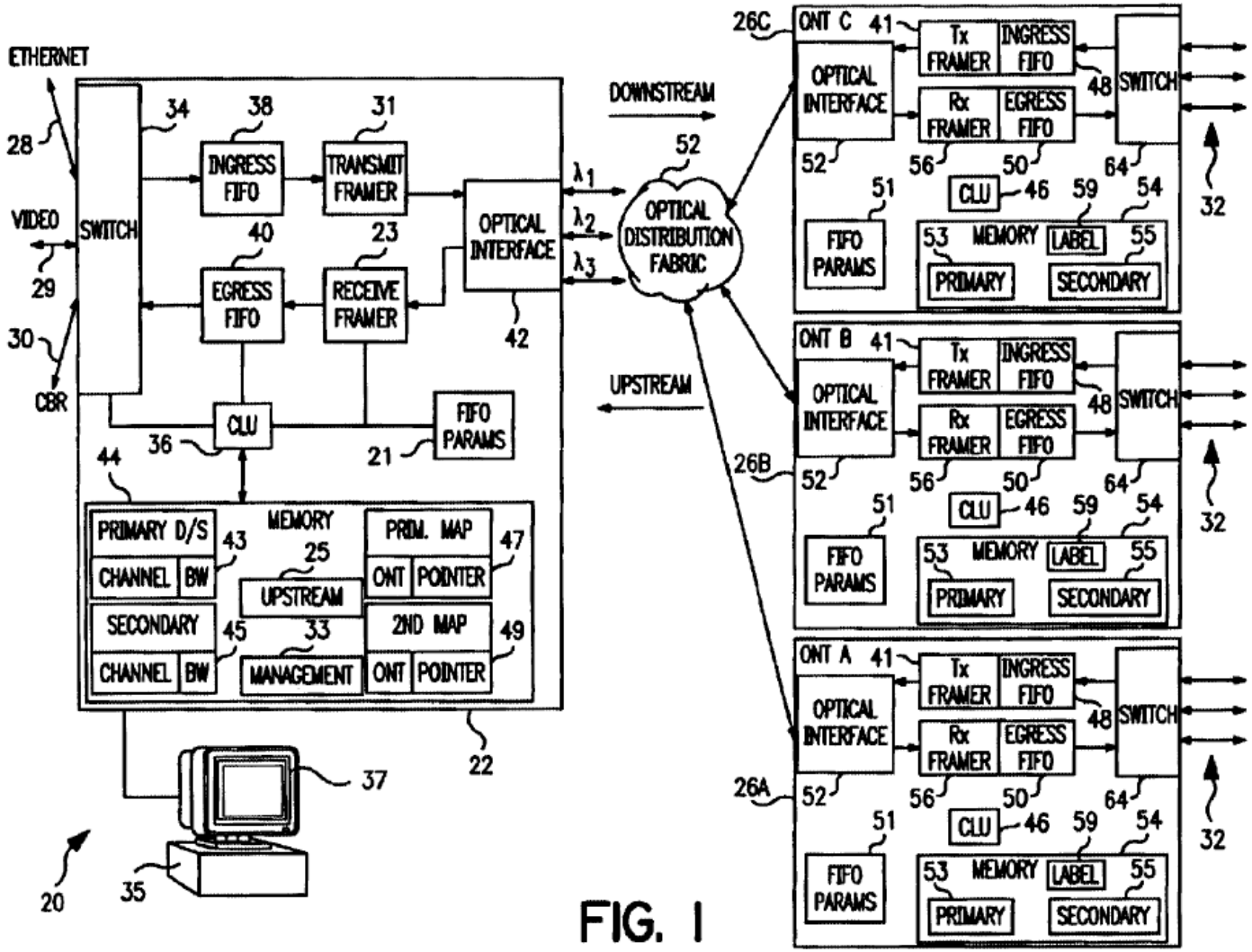
(57) **ABSTRACT**

A method for communication from a central point to end points by time division multiplexing of a sequence of frames divided into multiple timeslots, including receiving at the central point data for transmission to the end points, the data including at least a first quantity of first data for transmission to a first end point and a second quantity of second data for transmission to a second end point. The method further includes allocating in each of the frames a first number of timeslots to carry the first data to the first end point, and a second number of timeslots to carry the second data to the second end point, such that the first and second numbers are variable responsive to variations in the first and second quantities of the data, and transmitting the data from the central point to the end points during the allocated timeslots.

**35 Claims, 7 Drawing Sheets**

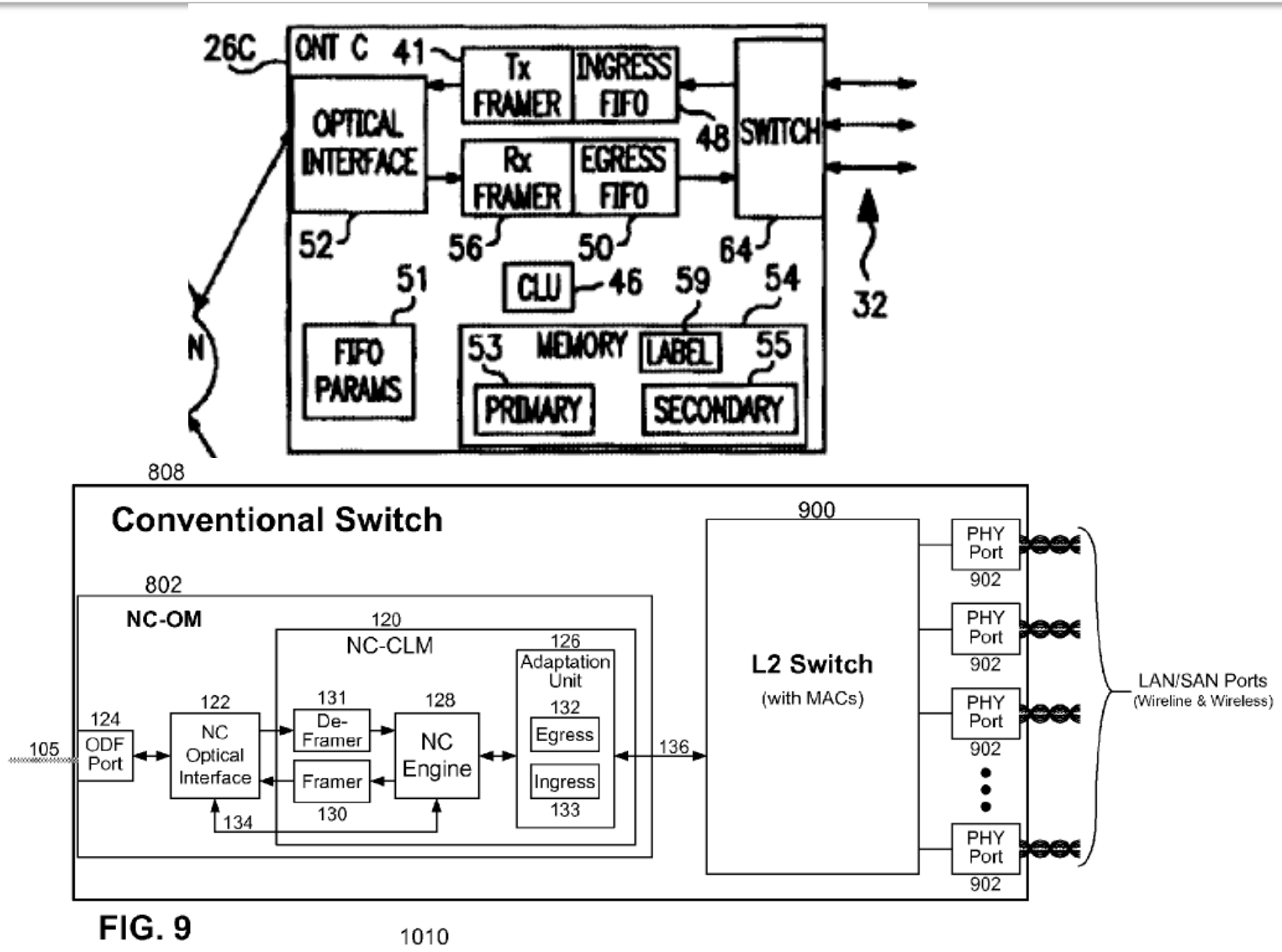


# Shraga (Ex. 1005)



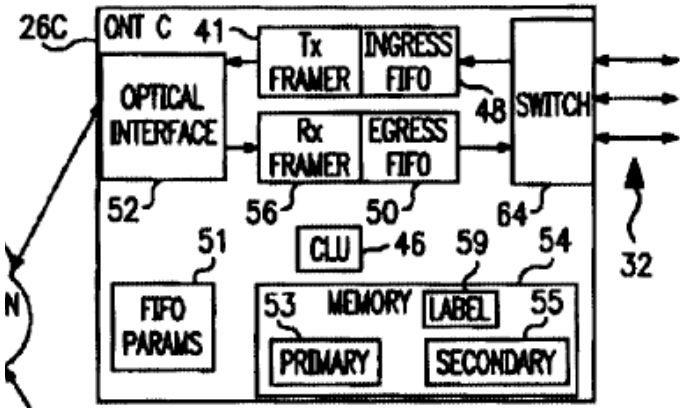

**Ex. 1005 (Shraga) at Fig. 1** DEMONSTRATIVE EXHIBIT – NOT EVIDENCE **23**

# Shraga (Ex. 1005)




**Ex. 1005 (Shraga) at Fig. 1**
**Ex. 1001 (754 Pat) at Fig. 9**

# Shraga (Ex. 1005)




10 Q. Could you describe what it looked like?
11 A. Sure. So, for example, the Verizon ONT at
12 that -- in that time frame -- and, again, I don't know
13 the exact dates. Generally, in the early 2000s, would
14 have been a -- would have been a -- the ONT would have
15 been a box.

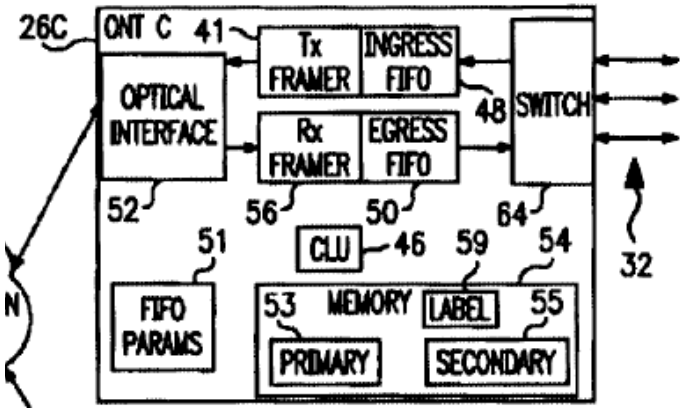
10 About how big was the box?
11 A. Maybe a foot by a foot and a half.
12 Q. Did that box have a power cable?
13 A. Yes.




**Ex. 2030 (Willner Dec.) ¶ 100**

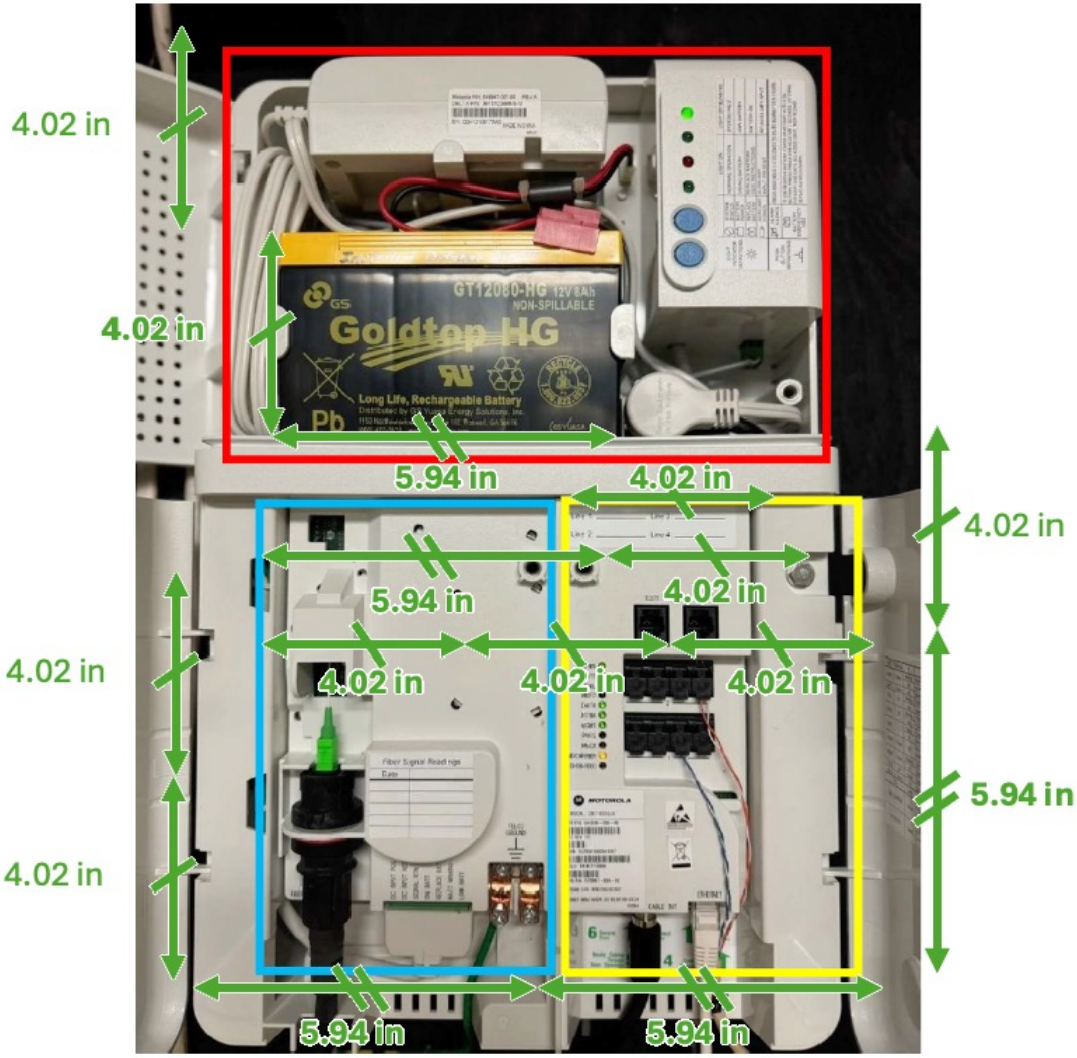
**Ex. 1005 (Shraga) at Fig. 1**
**Ex. 2021 (Prucnal Tr) at 41–43**

# Shraga (Ex. 1005)




10 Q. Could you describe what it looked like?
11 A. Sure. So, for example, the Verizon ONT at
12 that -- in that time frame -- and, again, I don't know
13 the exact dates. Generally, in the early 2000s, would
14 have been a -- would have been a -- the ONT would have
15 been a box.

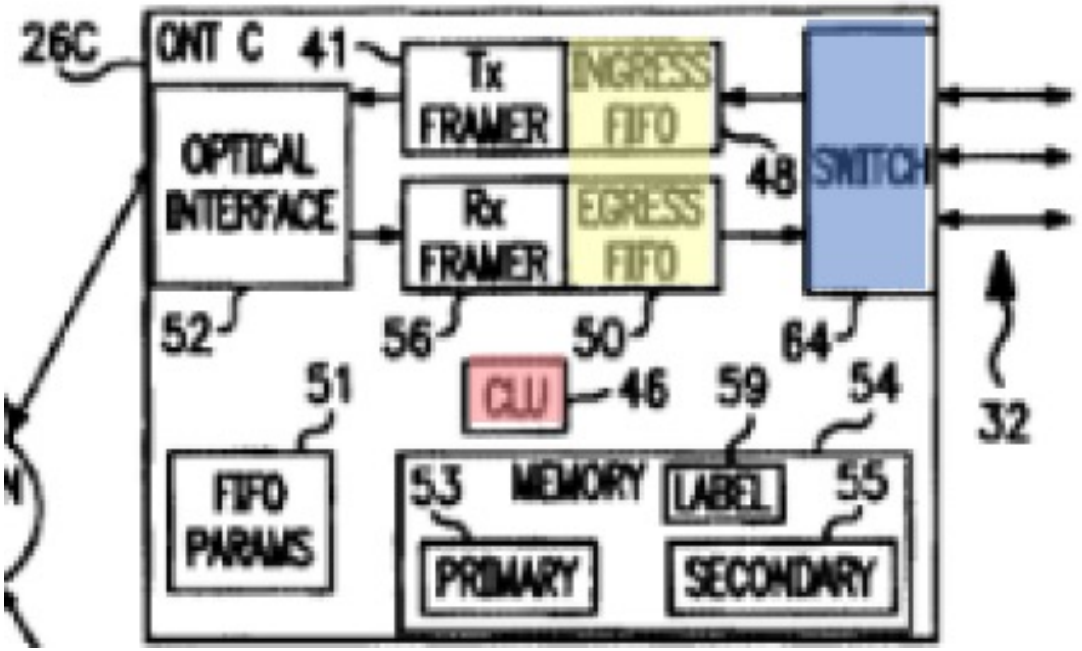
10 About how big was the box?
11 A. Maybe a foot by a foot and a half.
12 Q. Did that box have a power cable?
13 A. Yes.




**Ex. 1005 (Shraga) at Fig. 1; Ex. 1041 (Prucnal Supp) ¶ 33 (further annotated)**
**Ex. 2021 (Prucnal Tr) at 41–43**

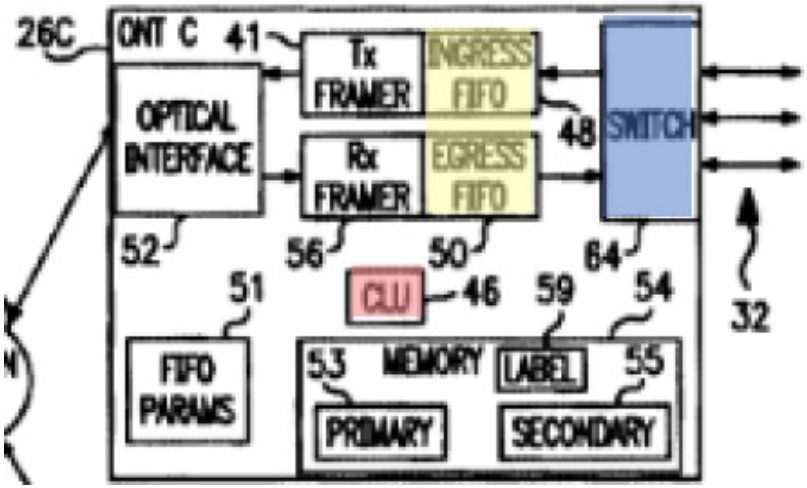
# Shraga (Ex. 1005) - Petitioner

data egress. Ex. 1003, ¶140; Ex. 1005, 8:2-5, 8:36-43. For the CLU to control data ingress/egress, it must be electrically coupled to the ingress FIFO and egress FIFO, which a POSITA would understand as the electrical network interface port. Ex. 1003, ¶140.



# Shraga (Ex. 1005) – Dr. Prucnal

141. Additionally, Shraga teaches that the ingress and egress FIFOs are electrically coupled to the inputs and outputs on the left side of a switch (shown in blue in Fig. 1 above), which is illustrated explicitly in Figure 1. *Id.* at 8:36-42. Shraga also teaches that the switch operates according to "controlling signals received from [the] CLU." *Id.* at 7:67-8:2. A POSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch. A POSITA also would have understood that



# Shraga (Ex. 1005) – Dr. Prucnal

Q. Why, in paragraph 141, did you say that, "A PHOSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch"?

A. Well, only because the -- the claim that this is -- this is -- is related to requires that the

Page 70

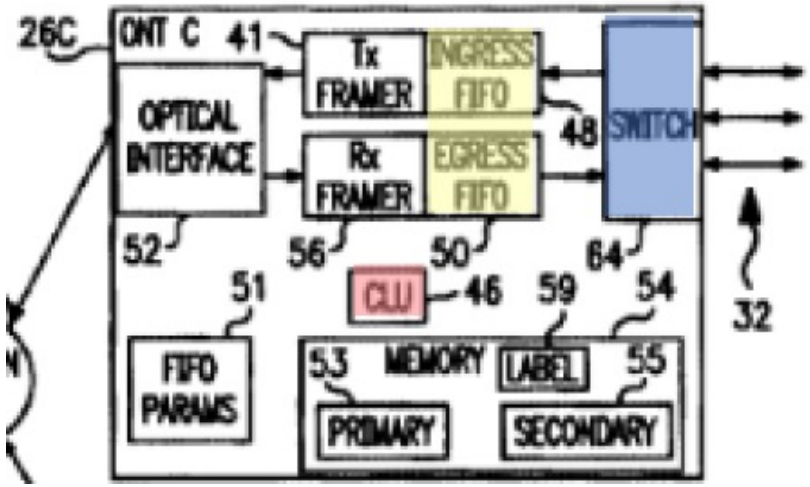
electrical network interface port must be electrically coupled to the control module and for electrically coupling into the optical module portion of the switch.

In other words, the control module has to be electrically coupled to the switch. And the logic that I'm presenting is that Shraga teaches that the switch is controlled by the CLU, and therefore, the CLU must be electrically coupled to the switch.

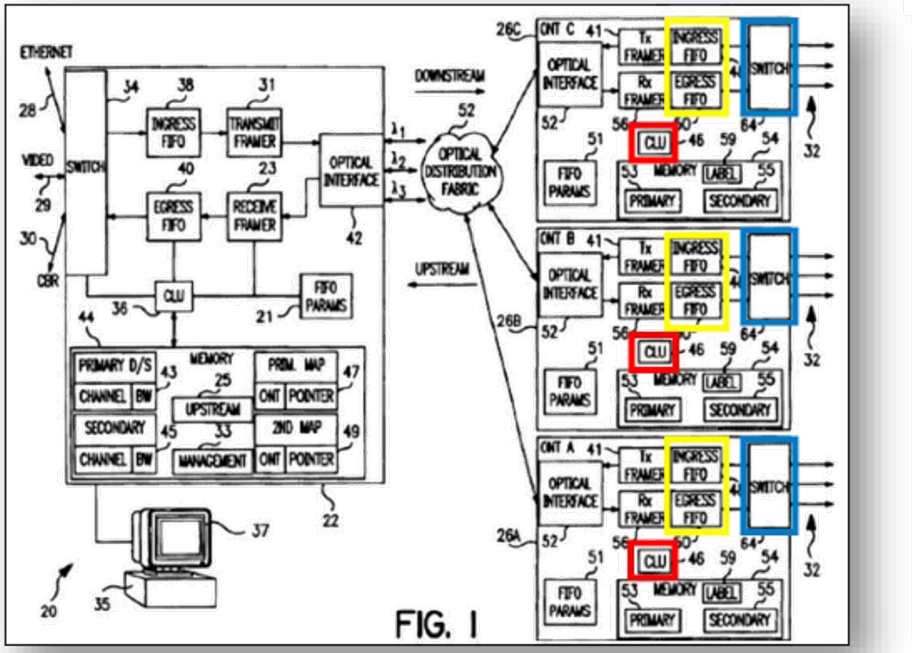
Q. What types of controlling operations does the CLU perform on the switch?

A. I have to look at Shraga for the details on that. One example of this is in Shraga, at the bottom of Column 7, top of Column 8, which I can just -- I can just paraphrase. So it says that the -- the ONT comprises a switch which switches between coupled services to the OLT, according to controlling signals received from the CLU.

So there can be different services coupled to the OL- -- OLT through the switch, and the CLU can control the state of the switch to determine which of those services are switched to the -- the data ingress of the FIFO.



# Shraga (Ex. 1005) – Dr. Prucnal




163. Additionally, Shraga teaches that the ingress and egress FIFOs are electrically coupled to the inputs and outputs on the left side of a switch (shown in blue in Fig. 1 above), which is illustrated explicitly in Figure 1.[179] Shraga also teaches that the switch operates according to "controlling signals received from [the] CLU."[180] A POSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch. A POSITA also would have understood that the inclusion of the switch within the ONT/ONU module itself, as shown in Shraga, is a design choice and that the switch could have been connected to the ONT/ONU internally or externally.

**Ex. 2023 (Prucnal Rpt.) at 60–61**

# Combinations (or lack thereof)

# Possibility 1:
# No Concrete Combination Articulated

# In the Petition

***1. Motivation to Combine***

Shraga and Togami are directed towards data communications in an optical network. Ex. 1005; Ex. 1007. Shraga discloses a method for transmitting and receiving data communications in an optical network, and Togami discloses a pluggable transceiver module for use in optical networks. *Id.*; Ex. 1003, ¶¶94-98, 99-102.

A POSITA would have been motivated to combine the optical transceiver module of Togami with the optical network data communications system of Shraga

18

to create a pluggable optical transceiver module for use in transmitting data communications over a PON for several reasons. Ex. 1003, ¶¶106-07.

Petition at 18

# Institution Decision

We disagree with Patent Owner. Dr. Prucnal did not argue, as Patent Owner contends, that "it would have been obvious for a POSITA to replace Shraga's 'optical interface' in the ONT/ONU with Togami's pluggable optical transceiver module." Rather, Dr. Prucnal testified that a person of ordinary skill in the art "would have been motivated to combine the optical transceiver module of Togami with the optical network data communications system of Shraga to create a pluggable optical transceiver module for use in transmitting data communications over a passive optical network." Ex. 1003 ¶ 106.

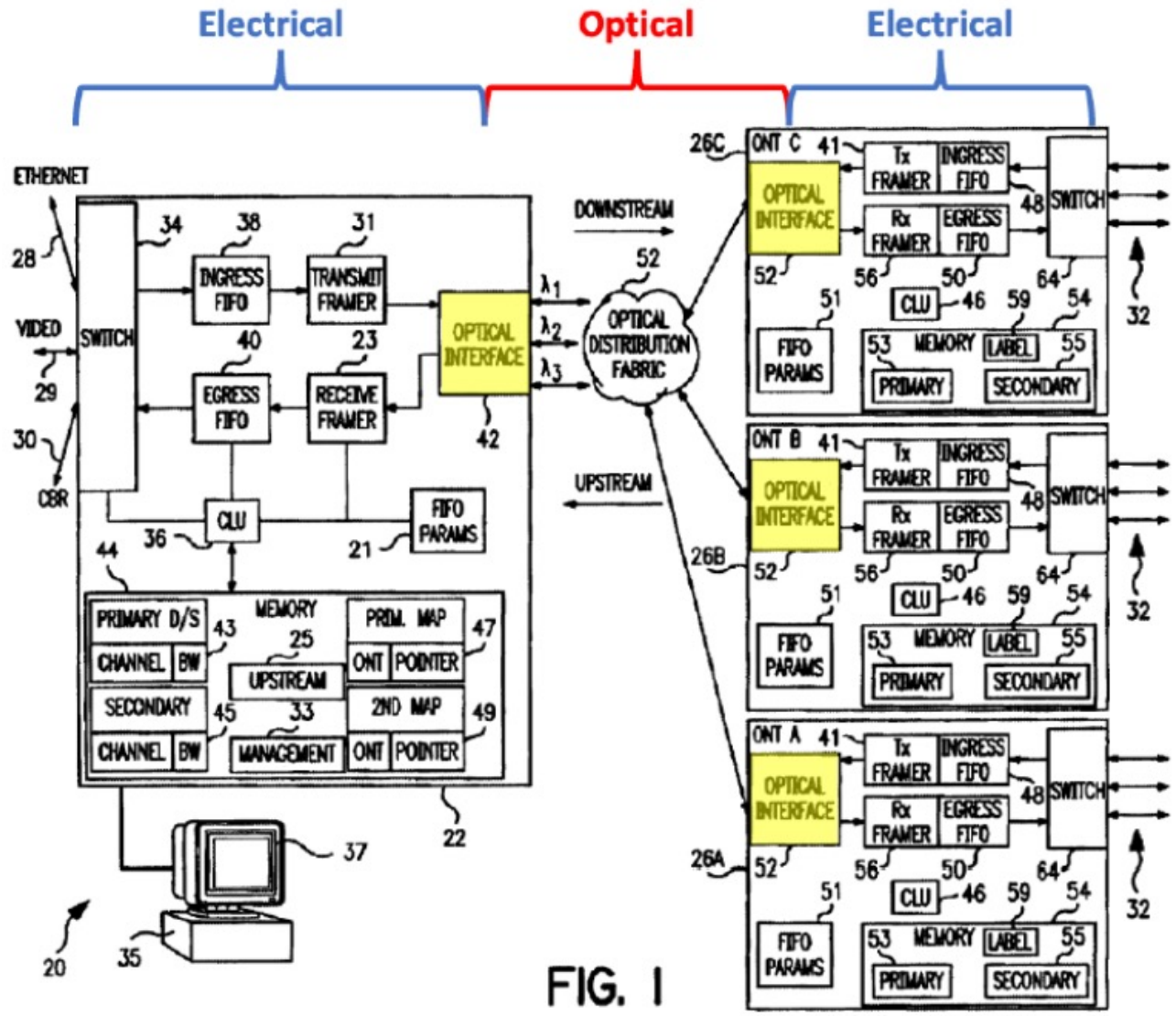
# Combination in Petition

Q. Which of Shraga or Togami is your primary reference that a PHOSITA would start with?
A. I'm not sure if I referred to it that way in my declaration, but I did start with Shraga.
Q. Okay. So let's say a PHOSITA has the Shraga reference, and they have this system shown in Figure 1 of Shraga. Okay? And that PHOSITA gets the Togami reference. What would that PHOSITA do to Shraga's system in order to modify it, in view of Togami?
MS. RIOLO: Objection. Form.
THE WITNESS: Well, Shraga describes the ONT as we see here in Figure 1, and Togami describes an optical transceiver module. And so the optical transceiver, which is the ONT in Shraga, will be combined with the pluggable module in Shraga -- I'm sorry. In Togami.

**Possibility 2:**
**Replace Shraga's Optical Interface with Togami SFP (unrebutted)**

**Undisputed Result: No CLU in SFP**

# Dr. Willner's Combination




Ex. 2030 (Willner Dec.) at 16

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

# Dr. Willner's Combination

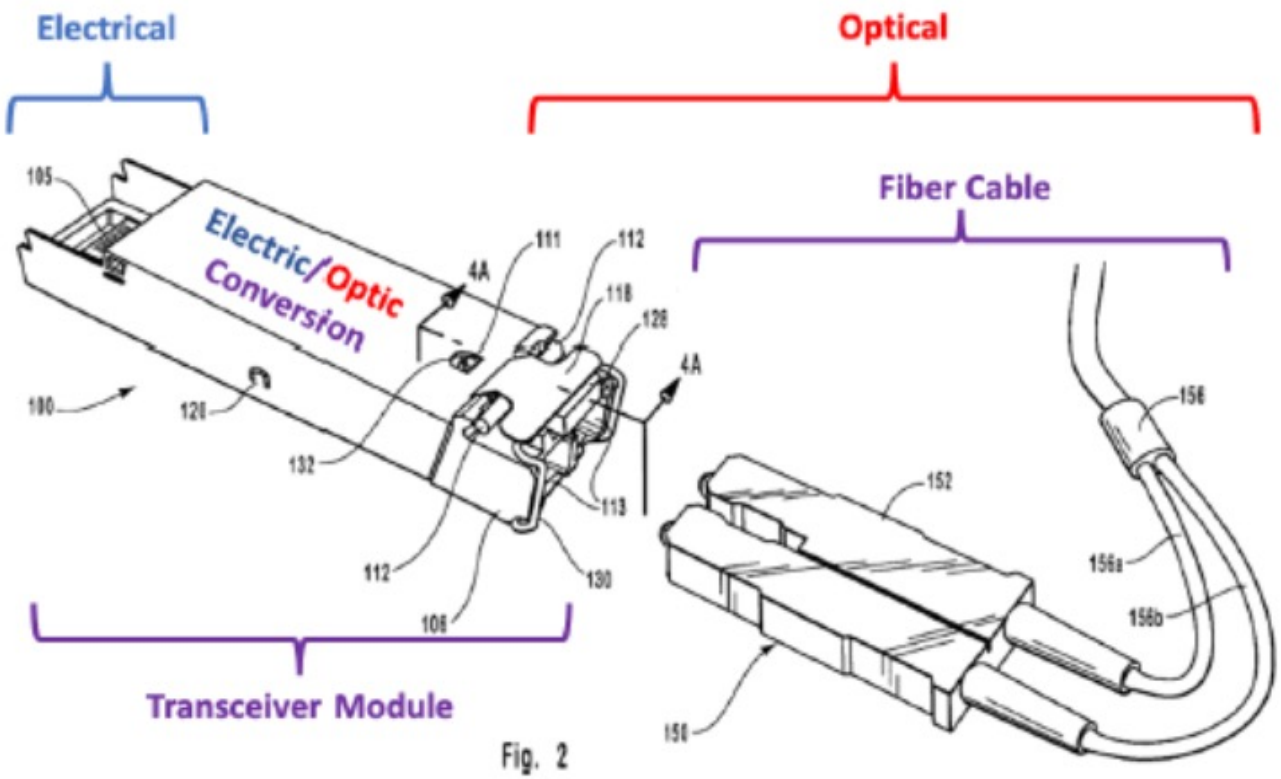


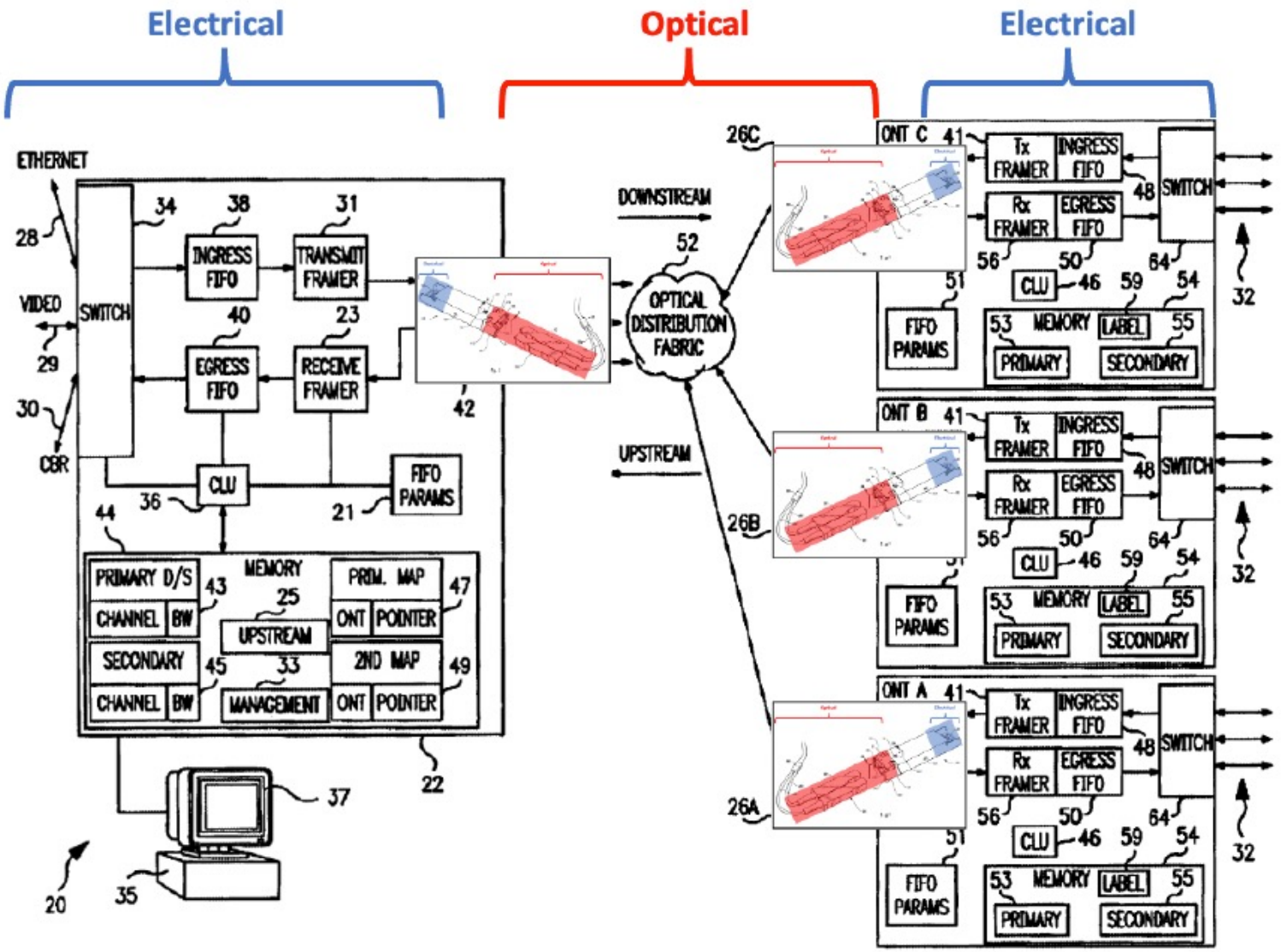
Fig. 2

# Dr. Willner's Combination

**1. *If* a POSITA Were Motivated to Combine Shraga and Togami, They Would Have Replaced Shraga's Optical Port with Togami's Pluggable Module**

85. As I discuss above, I disagree with the two resulting devices Dr. Prucnal opined a POSITA would find obvious. Instead, if a POSITA were motivated to combine Shraga and Togami, it is my opinion that a POSITA might have thought to replace Shraga's "Optical Interface" with Togami's pluggable transceiver module. I found this graphic in the POPR to be illustrative of how a POSITA might have considered combining Shraga with Togami:

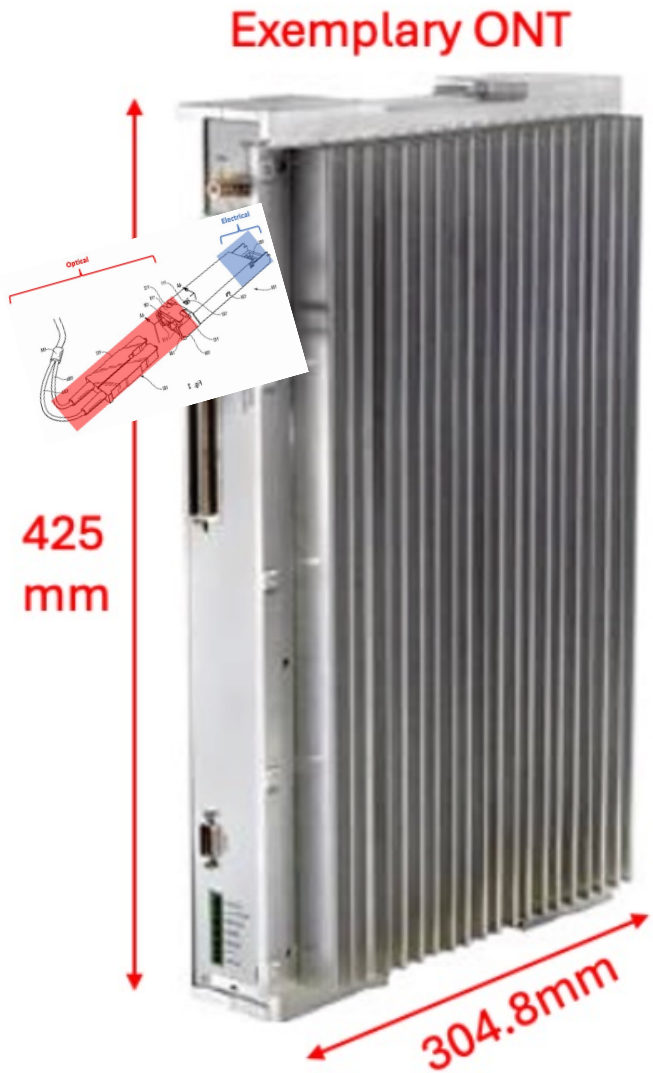
# Dr. Willner's Combination

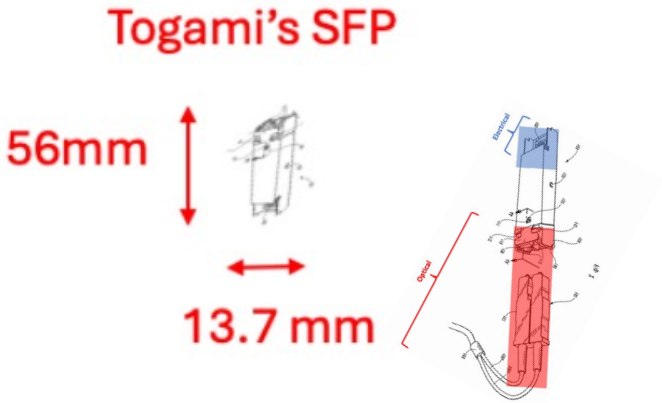



Ex. 2030 (Willner Dec.) at 32

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

# Dr. Willner's Combination

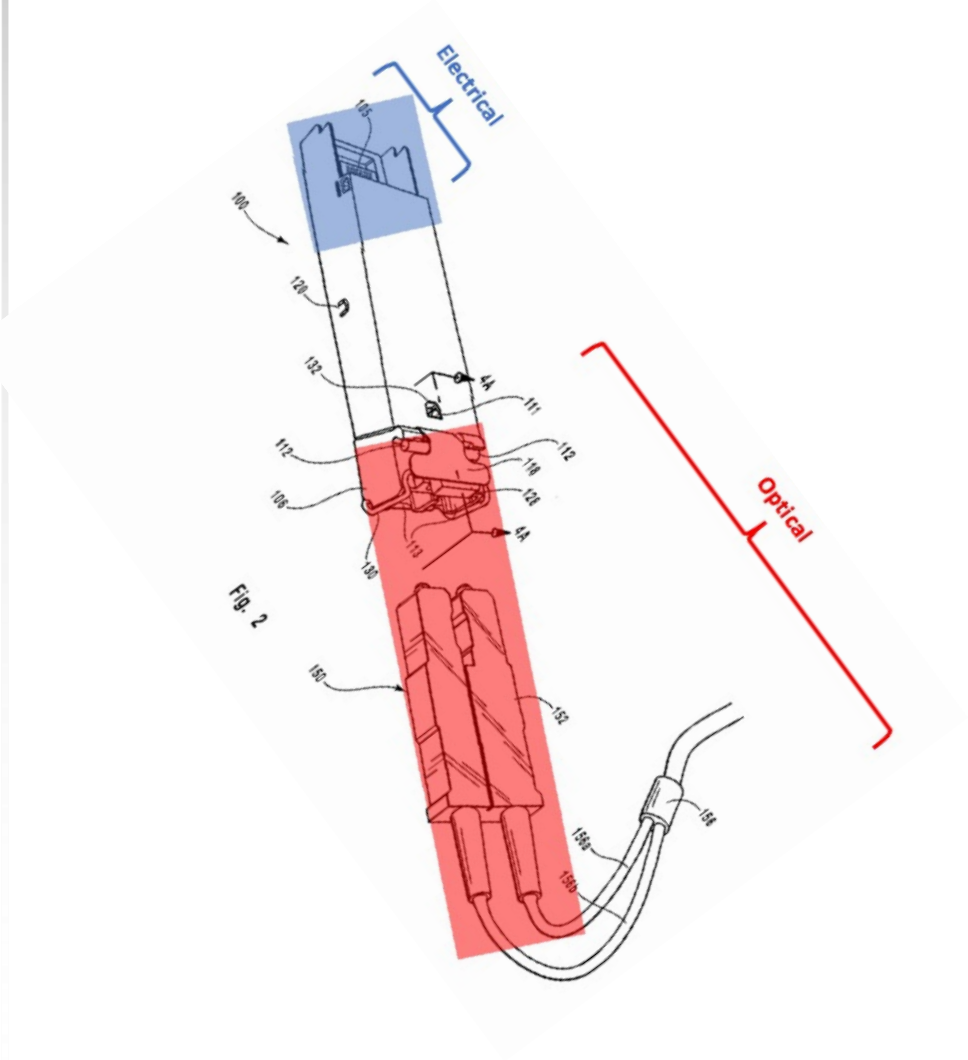


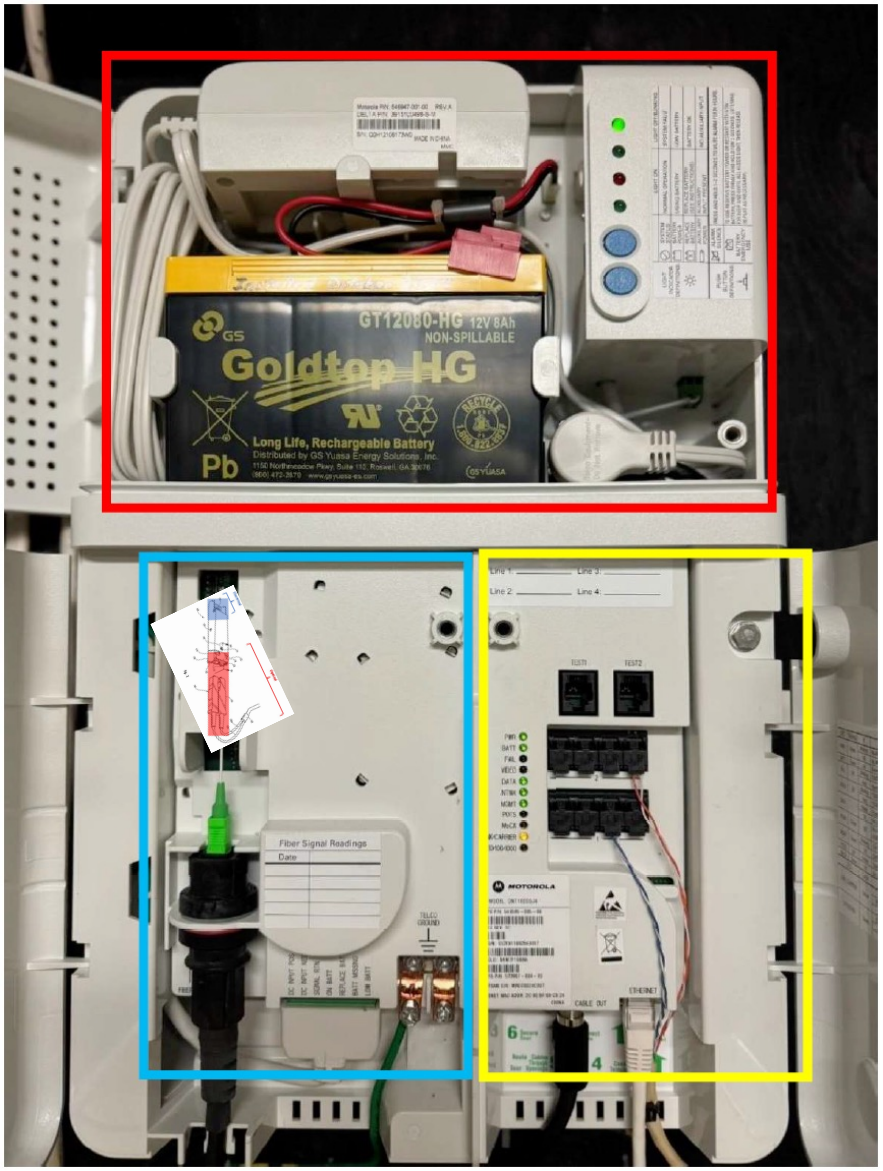




Paper 14 (POPR) at 12
Ex. 2030 (Willner Dec.) at 37

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE
(Printout)

# Dr. Willner's Combination




Paper 14 (POPR) at 12
Ex. 2030 (Prucnal Supp) at 32

# Combination in Petition

86. Shraga's Optical Interface provides transceiver functionality to convert electrical data to optical data, as well as converting optical data to electrical data. *E.g.*, Ex. 1005 at 8:10–19. Togami's device provides similar functionality, only in a pluggable format. *E.g.*, Ex. 1007 at 2:48–52. A POSITA could have seen the benefits of replacing Shraga's built-in optical interface with a pluggable module that could, for example, be more easily replaced or serviced.

87. Moreover, in this combination, the electrical and optical domains are respected. It is a much simpler substitution of a pluggable optical transceiver module for an optical interface that performs the same operation of opto-electrical conversion. Moreover, it does not require any 2003-contemporary ONT-sized components to be added into a size-restricted SFP.

# Possibility 3:
# Stick Everything From Shraga Into Togami's SFP (even the switch)

# Combination: Stick Everything In (With Switch)

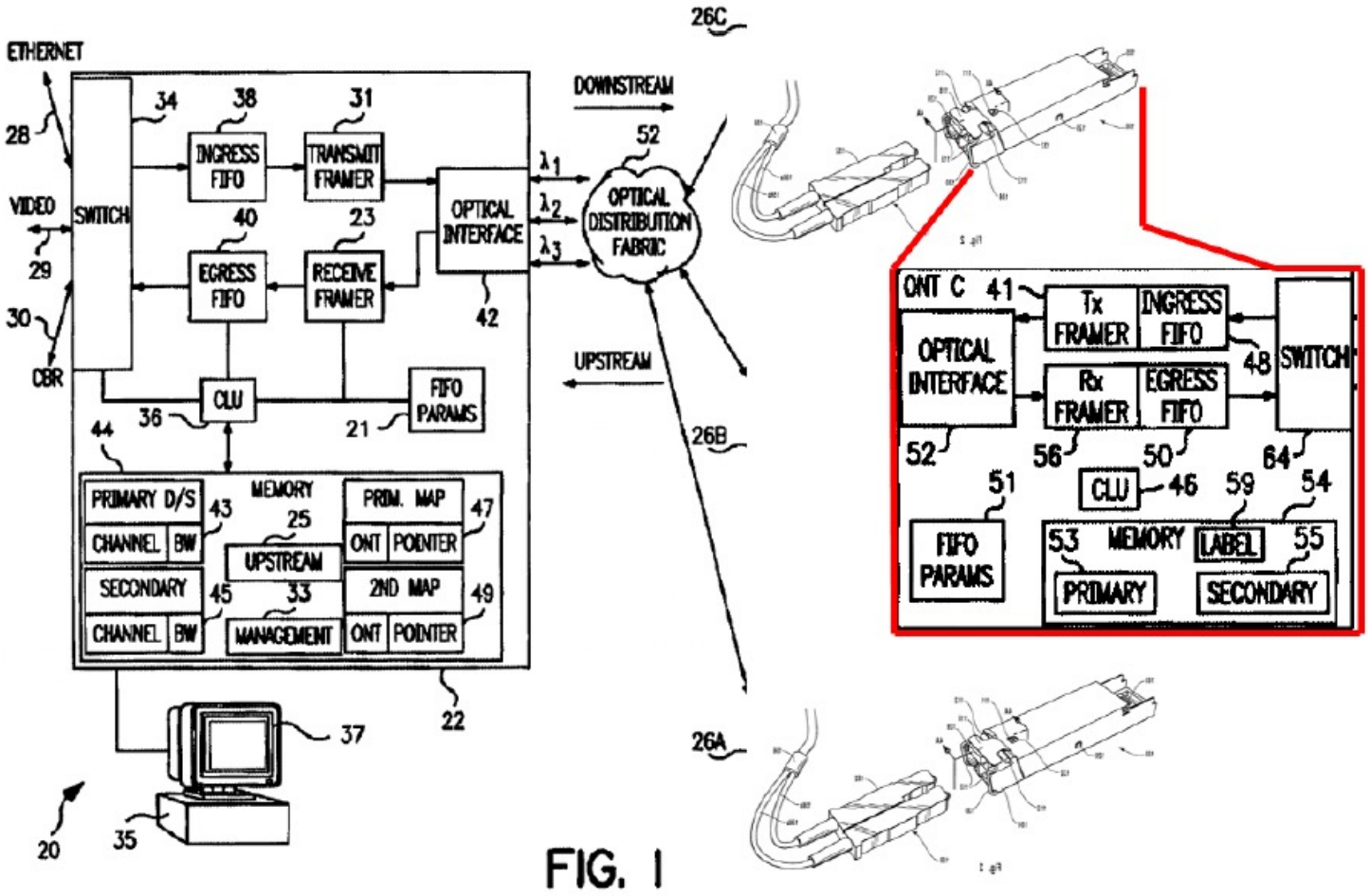


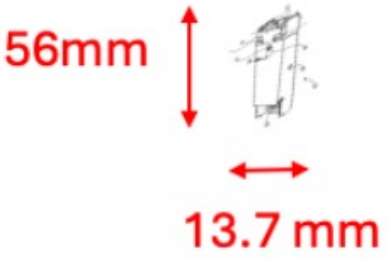

FIG. 1

# Sizes

Exemplary ONT



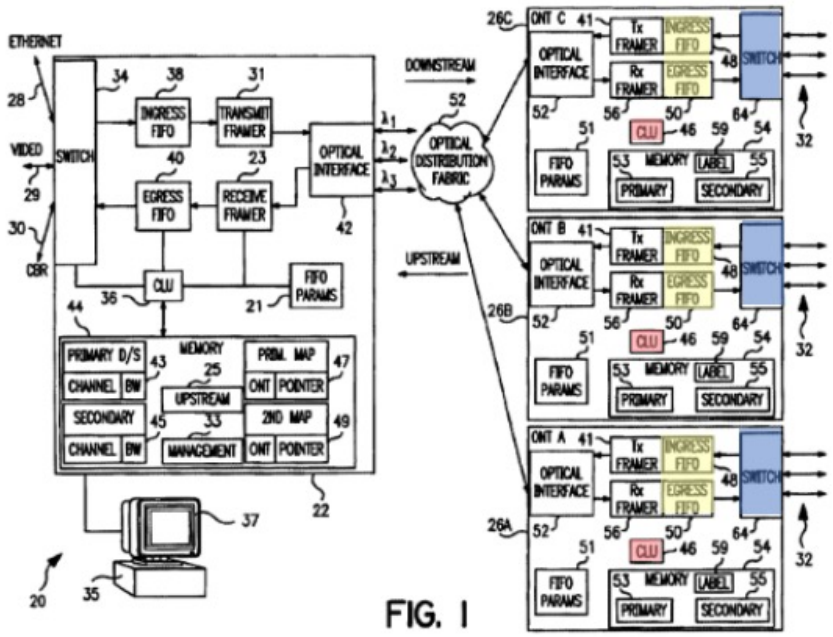

Togami's SFP



# Petition Relies on Switch 64

Element [1.D] *an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router* ***and for communicating with the switch or router****;*

Further, Shraga teaches those downstream clients, such as a switch or router, contains an optical module interface port for coupling to the ONT/ONU transceiver model to transfer data, in the form of electrical signals, between the module and client. Ex. 1003, ¶143.




Petition at 32–33
Highlighting **by Petitioner**

# Prucnal Relies on Switch 64

Element [1.D] *an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router* ***and for communicating with the switch or router****;*

143. Shraga also indirectly discloses that the host device, such as a switch or router, contains an optical module interface port. For the same reasons discussed above, the host device would contain a port for coupling to the ONT/ONU transceiver module in order to transfer data, in the form of electrical signals, between the transceiver module and host device. Specifically, in this case, the switch or router would contain an "optical module port" for interfacing with and coupling to the optical transceiver module. Thus, a POSITA would have understood that the host device, such as a switch or router, would have contained an optical module port for communicating with the ONT/ONU module.

# Prucnal Relies on Switch 64

Element [1.E] … *the network client optical transceiver module is configured to removably couple to the optical module port of* ***the switch or router and electrically communicate with the switch or router***

24 Q. And then Claim 1 continues, "and configured
25 to removably couple to an optical module port of a
Page 65

1 switch or router."
2 Did I read that correctly?
3 A. Yes.
4 Q. What would be the switch or router that is
5 taught by either of these references?
6 A. Well, that's -- that's described in some
7 detail in my report.
8 Q. Is that Switch 64 of Figure 1 of Shraga?
9 A. That's the switch. Yes, 64 is the switch.

1 page 66 and going through -- excuse me for a second.
2 No. It's -- it starts on page 71, Claim 1, Section D,
3 that's where there's the requirement of the electrical
4 interface port coupled for electrical coupling into the
5 optical module port of the switch or router for
6 communicating with the switch or router.
7 Q. So given that this is not described
8 explicitly in Shraga, what modification of Shraga are
9 you proposing, such that there would be an optical
10 module port in the switch?
11 A. Well, I -- I believe that I -- you know, as I
12 said, this -- this whole section talks about it, and I
13 address this in a couple of ways. And first of all, in
14 paragraph 141, I indicate that Shraga teaches that the
15 FIFO, both ingress and egress, is electrically coupled
16 to the inputs and outputs on the left side of the
17 switch.
18 So that's one place which is shown explicitly
19 in Shraga where the transceiver, as I've defined it,
20 is -- is connected to the switch as shown by 64.
21 Q. Okay. Thank you.
22 The connection between those FIFOs and the
23 switch, that's an electrical connection; correct?
24 A. Yes. Yes.
25 Q. Are the FIFO blocks themselves typically
Page 67

# Prucnal Relies on Switch 64

Could you please rephrase?
BY MR. TONG:
Q. Yeah. So at the end of the day and final network shown by Shraga Figure 1, would the ONT still have the components, other than the switch?
A. Yes. The ONT, the pluggable, the pluggable is going to have the components other than the switch and the pluggable would plug into the switch.
Now, I've also discussed, and I think I mentioned earlier, the possibility that the pluggable also has a switch inside of it and that the pluggable be plugged into another switch, a network switch of some kind. I think I mentioned that earlier.

Ex. 2021 (Prucnal Depo) at 95

# Prucnal Relies on Switch 64

23 THE WITNESS: The functionality of everything
24 in ONT C shown in Figure 1, except for the possibility
25 of the Switch 64, everything else would be in a

Page 96

1 pluggable module, as described by Togami as a pluggable
2 module.
3 BY MR. TONG:
4 Q. Thank you.
5 I just want to make clear that it's not the
6 situation where you're -- you're envisioning that
7 Togami's modified pluggable would be plugged into
8 Shraga's network as depicted, without modifications to
9 Shraga's network; correct?

10 A. I wouldn't describe it as modifying Shraga's
11 network, because the only modification would possibly
12 be leaving the switch out of the pluggable. So
13 Shraga's network still has a -- an OLT at the head end,
14 a distribution fabric, broadcasting to a number of
15 ONTs. The network still looks the same. Still a
16 passive optical network.
17 The only difference is that the -- the ONT
18 might or might not contain a switch; the pluggable may
19 or may not contain the switch. The switch can be
20 inside or outside of the pluggable. Otherwise,
21 everything remains the same.

# Prucnal Relies on Switch 64

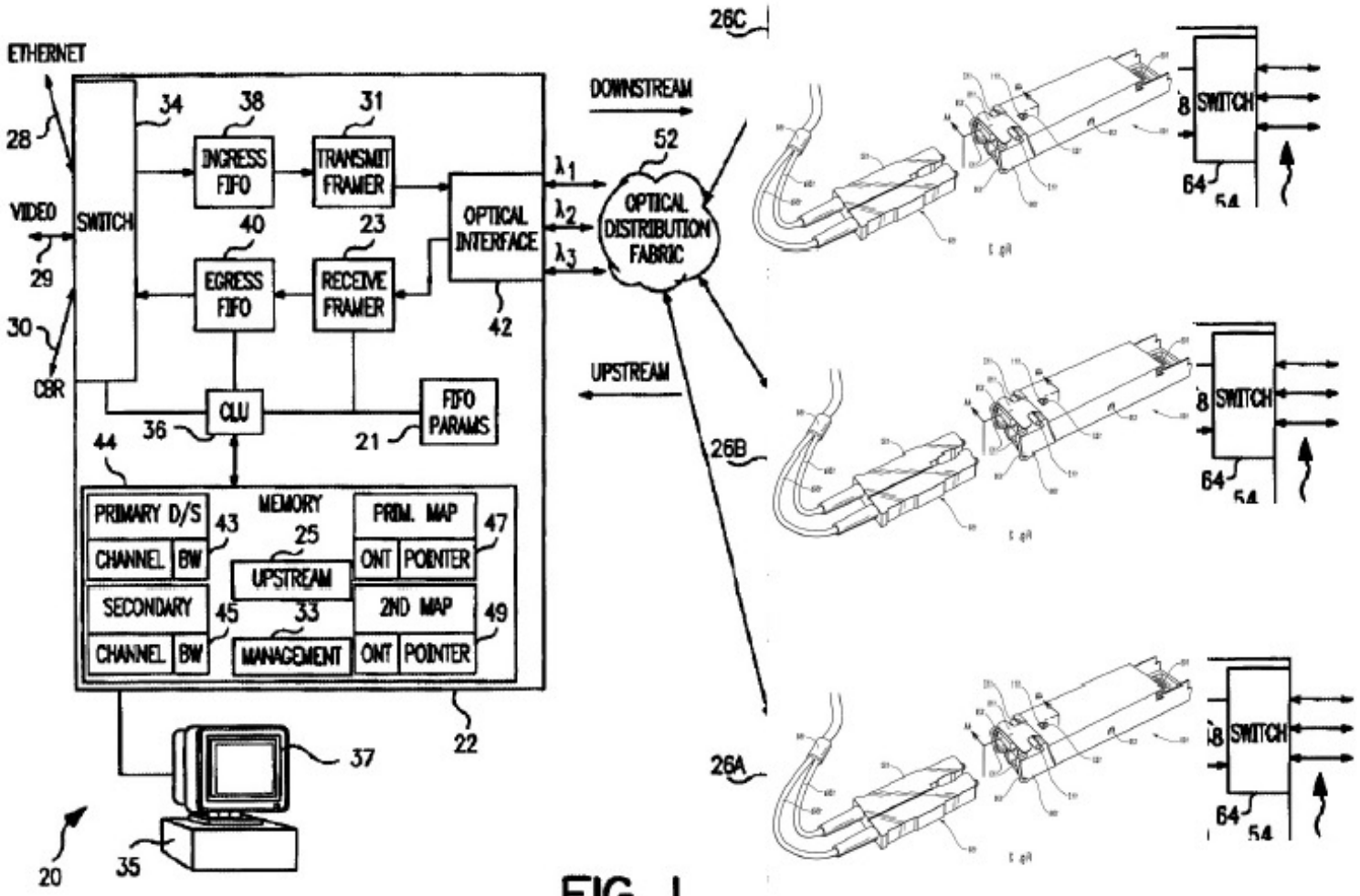



FIG. 1

PROPOSED COMBINATION

# Prucnal Relies on Switch 64

Q. This is my best understanding of what your proposed combination is, which is that we have most -- you know, we end up with a network generally as taught by Figure 1 of Shraga, and then we -- in place of many of Shraga's ONT functionality, we now have Togami's pluggable that includes all of that Shraga functionality that you had previously discussed. And that can be plugged into a switch, as depicted on the far right.

Is this what you were envisioning as the obvious result from reading Shraga and Togami?

MS. RIOLO: Objection. Form.

THE WITNESS: So this -- this is close. I've -- I've indicated that there are two possibilities, which are a design choice, as I said in my declaration. One of them being this. And the other one being that the Switch 64 is also included in Togami's module. And then it might be plugged into a different switch.

BY MR. TONG:

Q. In 2003, were you aware of any pluggable optical transceiver modules that included a switch?

A. No, I wasn't.

Page 100

Ex. 2021 (Prucnal Depo)

# But He Didn't Think In Detail

Q. If you were to implement switching functionality, like the Switch 64 of Shraga, where would it go in Togami's Figure 1?

A. Well, presumably, if the switch were inside this portable module, it would be closest to the -- it would be closest to the output connector. It wouldn't have to be, but that would be a logical place to put it.

Q. And where would the outputs of the switch, for example, the three lines coming out of the right side of Switch 64 of Shraga, where would those outputs go in Togami Figure 1?

A. I haven't thought in detail about how the circuit would be wired. But most likely, the outputs of the switch would need to go to the output connector.

Q. And by output connector, are we referring to the end marked with numeral 105?

A. If that were a switch, and the various services were coming from the outside, as we are assuming, then those services would be coupled through the output connector, which is 105.

Page 105

# "With Switch" Combination

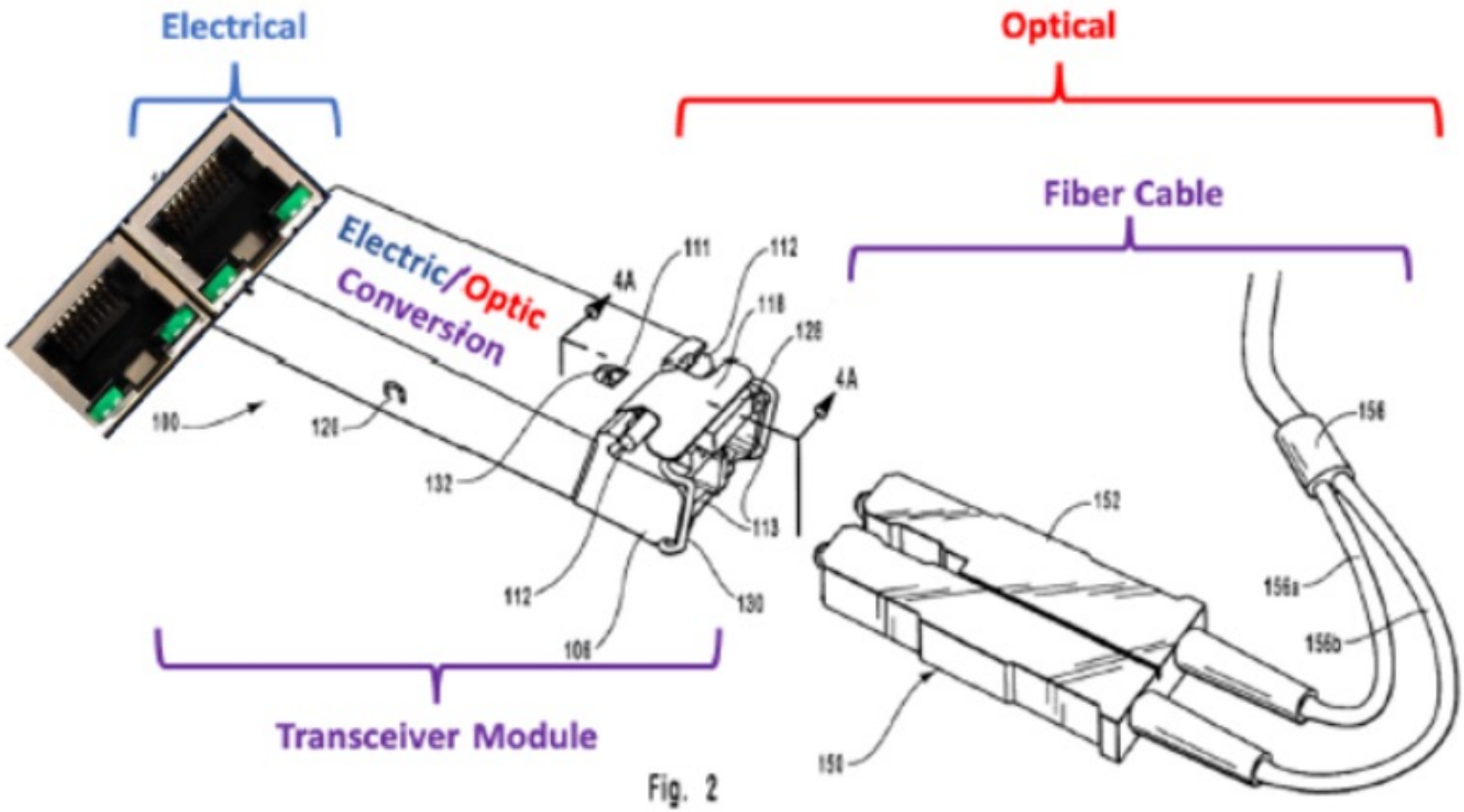



Fig. 2

# Possibility 4: Everything from Shraga, Without Switch, Into Togami

# Combination 4: Everything, without switch, into Togami

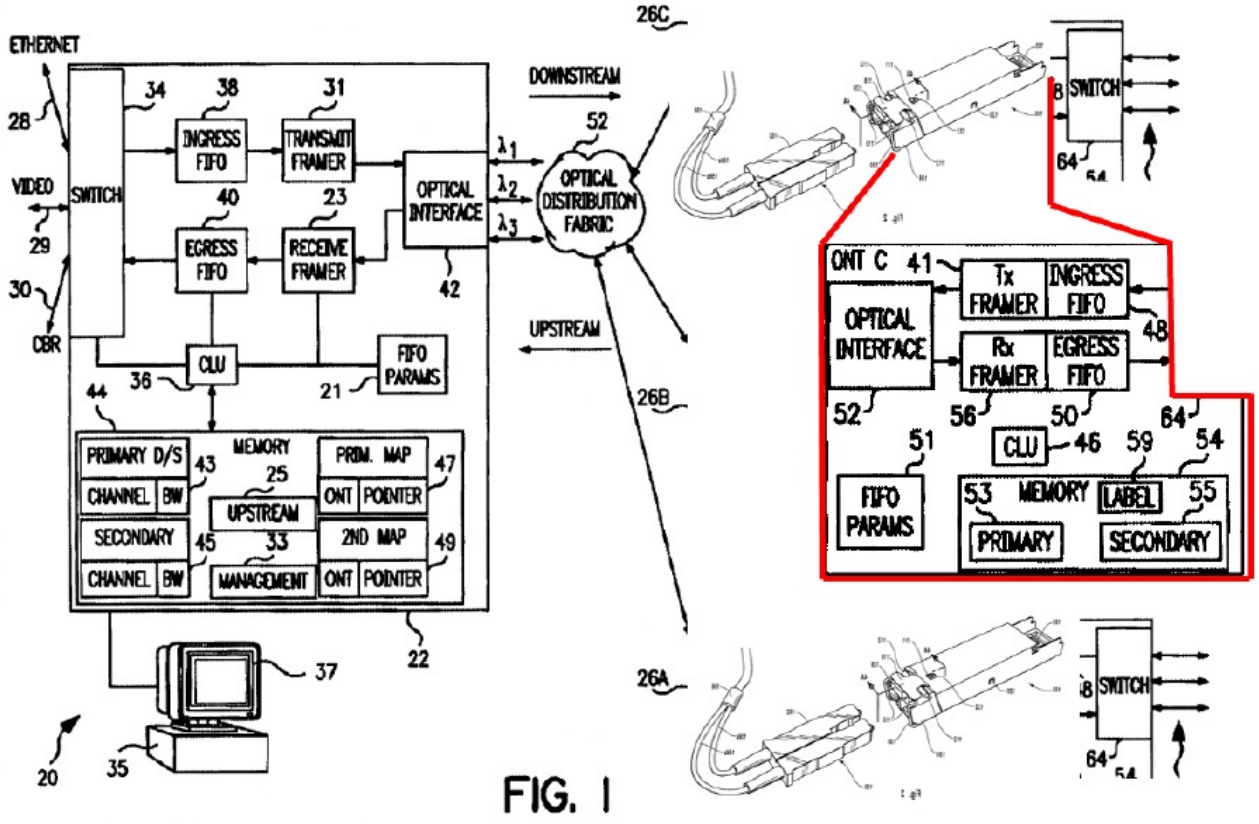


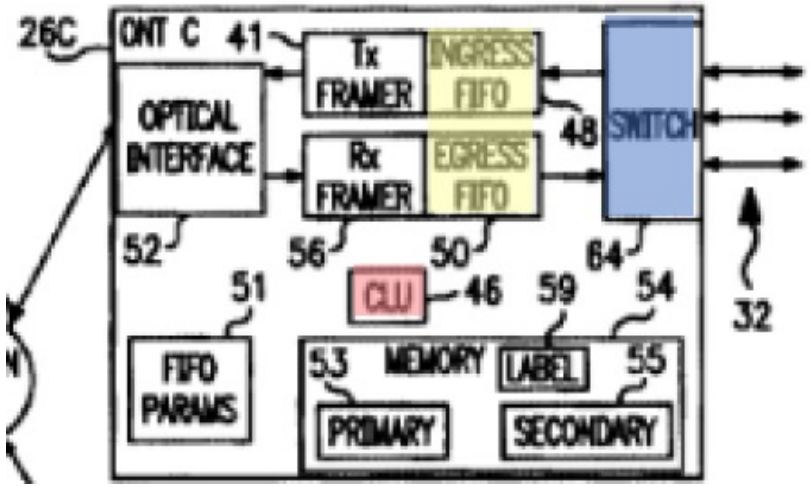

FIG. 1

PROPOSED COMBINATION 1: Separate Switch

Ex. 2030 (Willner Dec.) at 23

# Shraga (Ex. 1005) – Dr. Prucnal

141. Additionally, Shraga teaches that the ingress and egress FIFOs are electrically coupled to the inputs and outputs on the left side of a switch (shown in blue in Fig. 1 above), which is illustrated explicitly in Figure 1. *Id.* at 8:36-42. Shraga also teaches that the switch operates according to "controlling signals received from [the] CLU." *Id.* at 7:67-8:2. A POSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch. A POSITA also would have understood that




Ex. 1003 (Prucnal Dec.) at 72

# Shraga (Ex. 1005) – Dr. Prucnal

Q. Why, in paragraph 141, did you say that, "A PHOSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch"?

A. Well, only because the -- the claim that this is -- this is -- is related to requires that the



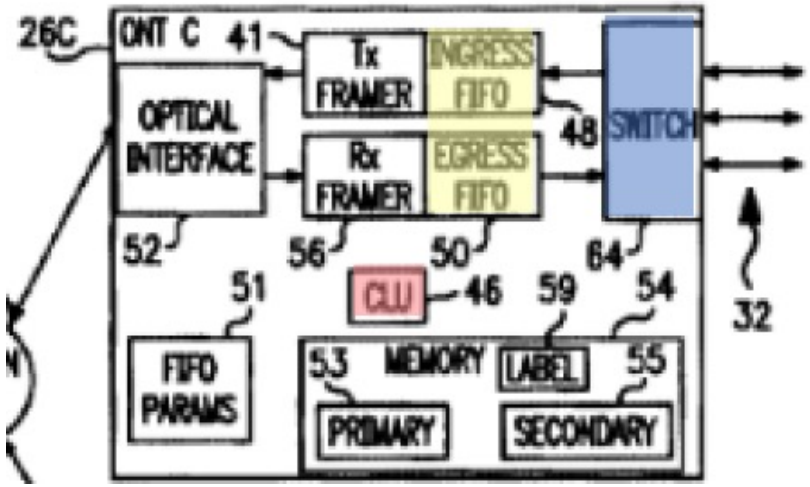
electrical network interface port must be electrically coupled to the control module and for electrically coupling into the optical module portion of the switch.

In other words, the control module has to be electrically coupled to the switch. And the logic that I'm presenting is that Shraga teaches that the switch is controlled by the CLU, and therefore, the CLU must be electrically coupled to the switch.

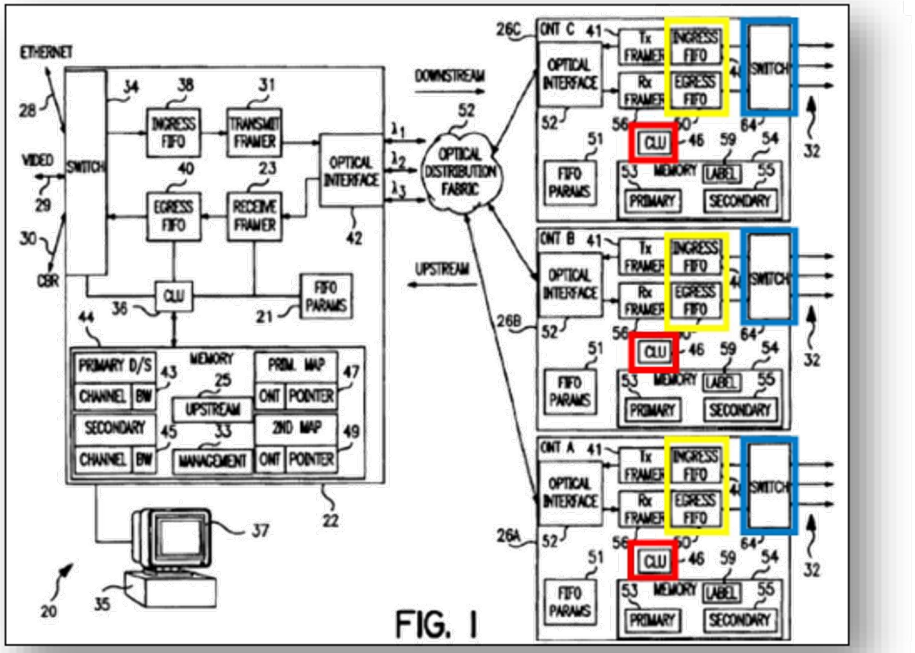
Q. What types of controlling operations does the CLU perform on the switch?

A. I have to look at Shraga for the details on that. One example of this is in Shraga, at the bottom of Column 7, top of Column 8, which I can just -- I can just paraphrase. So it says that the -- the ONT comprises a switch which switches between coupled services to the OLT, according to controlling signals received from the CLU.

So there can be different services coupled to the OL- -- OLT through the switch, and the CLU can control the state of the switch to determine which of those services are switched to the -- the data ingress of the FIFO.



# Shraga (Ex. 1005) – Dr. Prucnal




163. Additionally, Shraga teaches that the ingress and egress FIFOs are electrically coupled to the inputs and outputs on the left side of a switch (shown in blue in Fig. 1 above), which is illustrated explicitly in Figure 1.[179] Shraga also teaches that the switch operates according to "controlling signals received from [the] CLU."[180] A POSITA would have understood that, for the switch in Shraga to operate according to controlling signals from the CLU, it must have been electrically coupled to the switch. A POSITA also would have understood that the inclusion of the switch within the ONT/ONU module itself, as shown in Shraga, is a design choice and that the switch could have been connected to the ONT/ONU internally or externally.

Ex. 2023 (Prucnal Rpt.) at 60–61 DEMONSTRATIVE EXHIBIT – NOT EVIDENCE 

# Expectation of Success?

130. Second, it is unclear how signals from the FIFO blocks and control signals from the CLU will all be connected through the SFP interface to the switch. A POSITA would have understood that, when originally implemented on a circuit board in an ONT, the FIFO blocks and CLU can have multiple connections (e.g., through traces or physical wires) to the switch, all inside of the ONT. But as modified by Dr. Prucnal, the two FIFO blocks and the CLU all need to be connected *through the SFP electrical interface* to the switch. An SFP interface has various standardized pins. Ex. 1016.021–023. There are not extra pins in the SFP interface for accommodating control signals from the CLU to the switch. In my opinion, it would not have been obvious for a POSITA to accommodate this proposal.

# SFP MSA (Ex. 1016)

**Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA)**

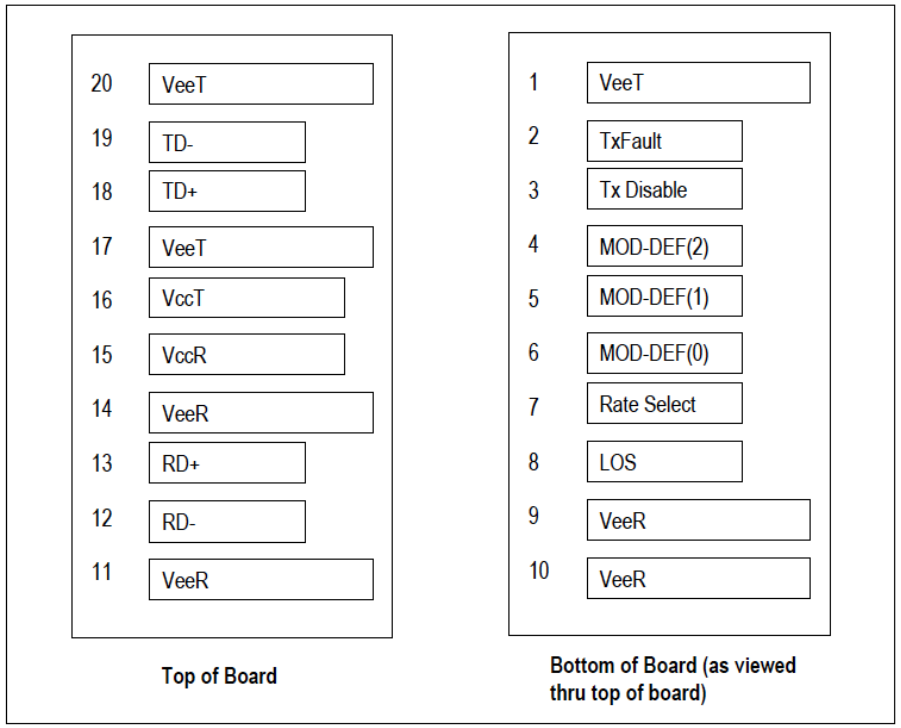



**Figure 3. SFP Transceiver Electrical Pad Layout**

## B2. Pin Definitions

Figure 1 below shows the pin names and numbering for the connector block on the host board. The diagram is in the same relative orientation as the host board layout (see Appendix A, Figure 4.). As mentioned, this pinout only applies to gigabit rate datacom applications. The pin functions are defined in Table 1 and the accompanying notes. Figure 2A shows the recommended power supply filtering network. Figure 2B shows an example of a complete SFP host board schematic with connections to SerDes and protocol ICs. For EMI protection the signals to the 20-pin connector should be shut off when the transceiver is removed. Standard board layout practices such as connections to Vcc and GND with Vias, use of short- and equal-length differential signal lines, use of microstrip-lines and 50Ω terminations are recommended. Chassis grounds and external electromagnetic interference shields should not be attached to circuit ground.

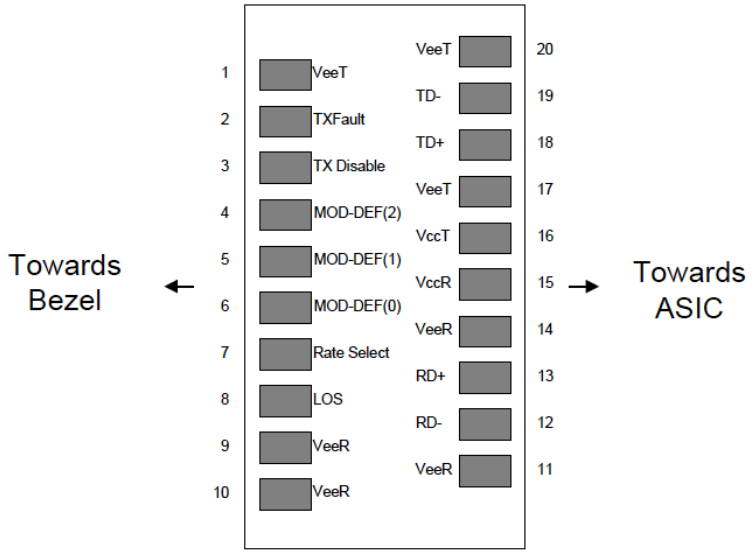



**Figure 1. Diagram of Host Board Connector Block Pin Numbers and Names**

# SFP MSA (Ex. 1016)

**Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement (MSA)**

**Table 1. Pin Function Definitions**

| Pin Num. | Name | Function | Plug Seq. | Notes |
|---|---|---|---|---|
| 1 | VeeT | Transmitter Ground | 1 | |
| 2 | TX Fault | Transmitter Fault Indication | 3 | Note 1 |
| 3 | TX Disable | Transmitter Disable | 3 | Note 2<br>Module disables on high or open |
| 4 | MOD-DEF2 | Module Definition 2 | 3 | Note 3, 2 wire serial ID interface |
| 5 | MOD-DEF1 | Module Definition 1 | 3 | Note 3, 2 wire serial ID interface |
| 6 | MOD-DEF0 | Module Definition 0 | 3 | Note 3, Grounded in Module |
| 7 | Rate Select | Select between full or reduced receiver bandwidth | 3 | Note 4<br>Low or Open – reduced bandwidth,<br>High– full bandwidth |
| 8 | LOS | Loss of Signal | 3 | Note 5 |
| 9 | VeeR | Receiver Ground | 1 | Note 6 |
| 10 | VeeR | Receiver Ground | 1 | Note 6 |
| 11 | VeeR | Receiver Ground | 1 | Note 6 |
| 12 | RD- | Inv. Received Data Out | 3 | Note 7 |
| 13 | RD+ | Received Data Out | 3 | Note 7 |
| 14 | VeeR | Receiver Ground | 1 | Note 6 |
| 15 | VccR | Receiver Power | 2 | 3.3 ± 5%, Note 8 |
| 16 | VccT | Transmitter Power | 2 | 3.3 ± 5%, Note 8 |
| 17 | VeeT | Transmitter Ground | 1 | Note 6 |
| 18 | TD+ | Transmit Data In | 3 | Note 9 |
| 19 | TD- | Inv. Transmit Data In | 3 | Note 9 |
| 20 | VeeT | Transmitter Ground | 1 | Note 6 |

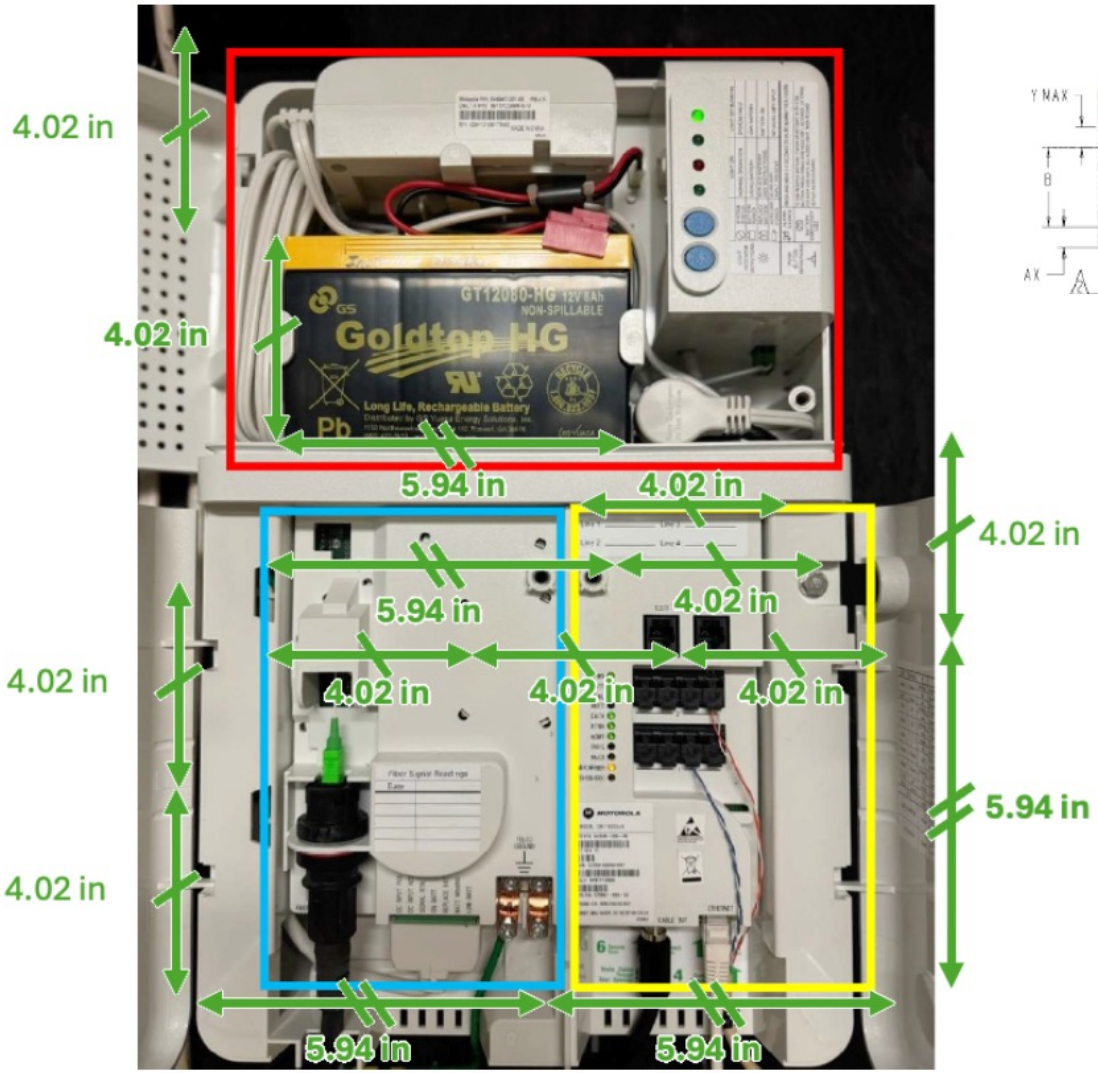
**Ex. 1016 at 21**

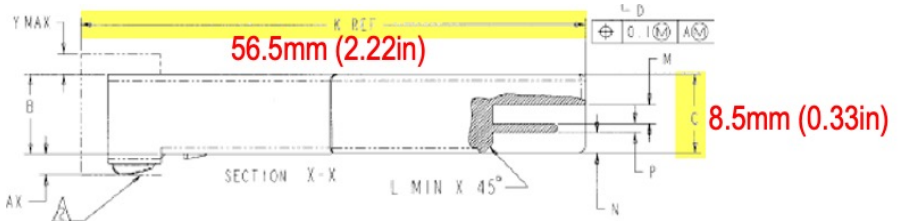
# Expectation of Success?




Ex. 2030 (Willner Dec.) ¶ 100 (printout)

# Expectation of Success?




Not to scale

56.5mm (2.22in)



8.5mm (0.33in)

Approximately to scale

Ex. 2030 (Willner Dec.) at 14
(citing Ex. 1016) (further annotated)

Paper 43 at 3
Ex. 1041 (Prucnal Supp) at 17

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE
(Printout)

## Possibility 5:
## Shraga, Without Switch,
## Into Togami + CLU Split

???

# Original Evidence of CLU Split in Initial Petition

(none)

# Original Evidence of CLU Split in Initial Prucnal Decl.

(none)

# What is this theory?

**B. A POSITA would have been motivated to "separate" Shraga's PON or ONT functionality from Shraga's switch.**

POs present a number of arguments as to why a POSITA would not have been motivated to implement certain functional components of Shraga in the pluggable optical module of Togami. In particular, POs state a POSITA would not have implemented the functionality of Shraga's ONT in a pluggable optical transceiver module, such as that of Togami, because doing so would "separate" said components from Shraga's switch 64—but separating the PON- or ONT-related components from the remaining non-PON-related components poses no impediment.

# Shraga (Ex. 1005)

PON Functionality

"ONT functionality"

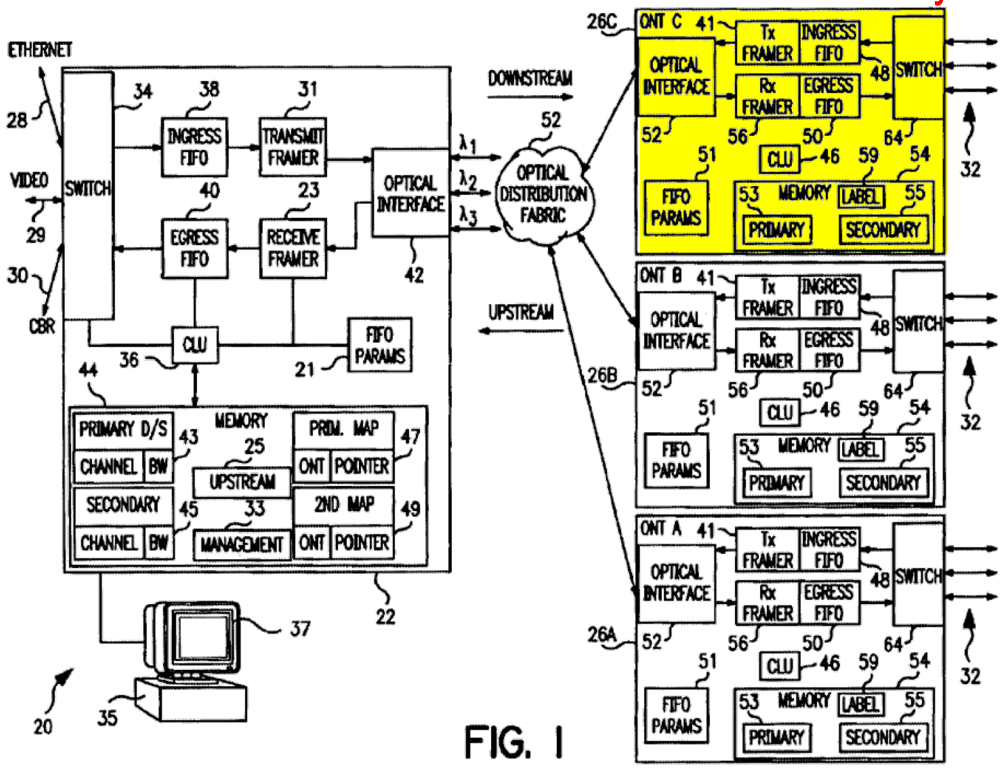



FIG. 1

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a passive optical network, according to a preferred embodiment of the present invention;

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference is now made to FIG. **1** which is a schematic diagram of a passive optical network (PON) **20**, according to a preferred embodiment of the present invention. PON **20** comprises an optical line terminal (OLT) **22** at the head end of a passive optical distribution fabric **24**, the OLT acting as a central transmission point and an overall controlling device for PON **20**. Fabric **24** is terminated at its downstream side by a plurality of generally similar optical network terminations (ONTs) **26**A, **26**B, **26**C, . . . acting as respective receiving end points. Hereinbelow ONT **26**A, ONT **26**B, ONT **26**C, . . . are also referred to herein collectively as ONTs **26**, and respectively as ONT A, ONT B, ONT C, . . . . OLT **22** and ONTs **26** operate as data modems, so that OLT **22** is coupled at its upstream side to

Ex. 1005 (Shraga) at 6:54–57, 7:14–30 DEMONSTRATIVE EXHIBIT – NOT EVIDENCE **70**

# What is this theory?

**B. A POSITA would have been motivated to "separate" Shraga's PON or ONT functionality from Shraga's switch.**

Shraga teaches a method for communication over a PON from a central-point to end-points by time division multiplexing of a sequence of frames divided into multiple timeslots. Ex. 1005, Abstract. Specifically, Shraga discloses an OLT (in yellow below), which transmits optical signals downstream to a plurality of ONTs (in red below), which are coupled via a passive optical distribution fabric (in blue below), forming a PON. Ex. 1005, 2:32-36.

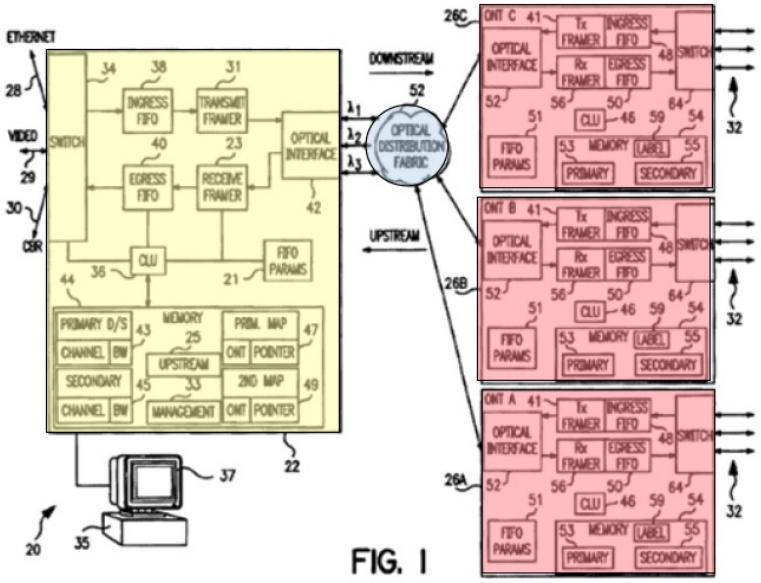



FIG. 1

Paper 38 (Petitioner Reply) at 5

Petition at 11–12

# Shraga's CLU

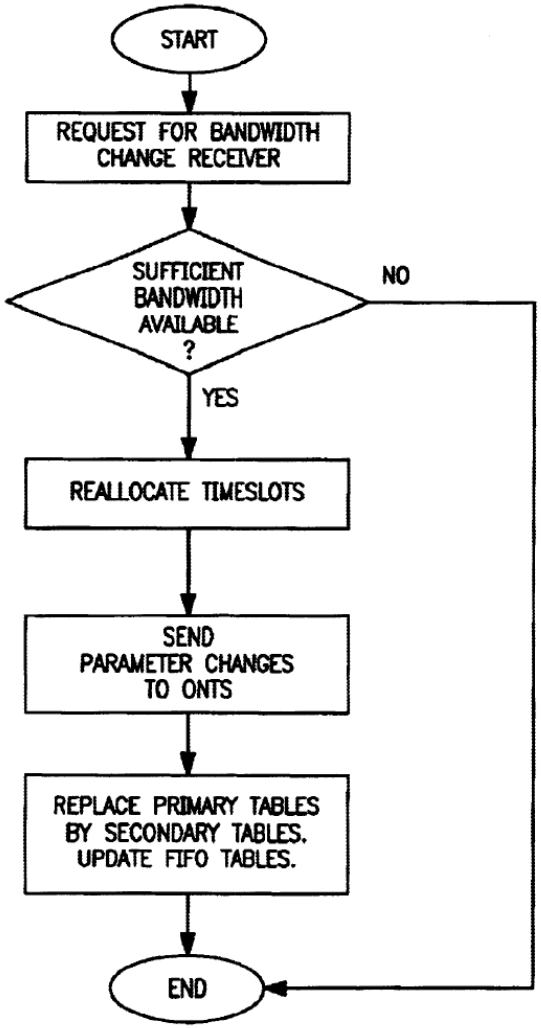



FIG. 8

Ex. 1005 (Shraga) at Fig. 8

## No Reasonable Combination For:

***an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router***

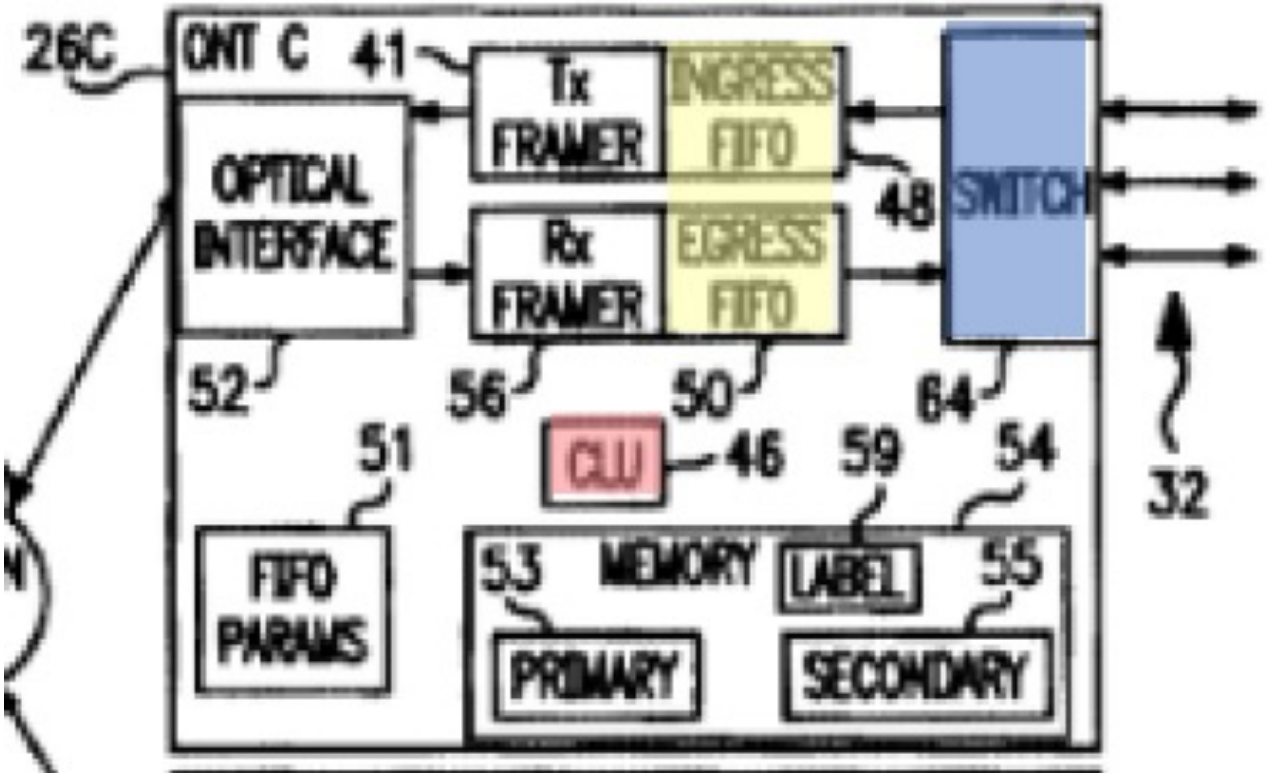
[1.pre]; Ex. 1003, ¶¶139-46. Shraga teaches that each ONT/ONU contains an ingress FIFO and egress FIFO (in yellow below) which functionally contain the claimed electrical network interface port. Ex. 1003, ¶¶140-41; Ex. 1005, 8:36-43. The electrical network interface port is electrically connected to the claimed control module because the taught ingress FIFO and egress FIFO are electrically connected to the CLU (in red below)—the CLU "*controls* the operation" of data ingress and

31

data egress. Ex. 1003, ¶140; Ex. 1005, 8:2-5, 8:36-43. For the CLU to control data ingress/egress, it must be electrically coupled to the ingress FIFO and egress FIFO, which a POSITA would understand as the electrical network interface port. Ex. 1003, ¶140.

Petition at 31–32

*an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router*



*an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router*

Q. Moving on to the next claim element. If you want to follow along, we're now at the top of Column 17 of the '754 patent.

It is, "An electrical network interface port

Page 114

electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router."

Do you see that in the '754 patent?

A. Yes.

Q. Okay. You're going to have to help me understand your theory of what exactly teaches this. In your declaration, you address this in paragraphs 139 to 146; correct?

A. Yes.

Q. Now, you do use the word "electrical network interface port" several times in this section. What exactly are you pointing to as the electrical network interface port in the final combination that a PHOSITA would find obvious?

A. There's quite a bit covered in this section, but the electrical interface port, as I described in paragraph 140, is the connection between the FIFO and the CLU.

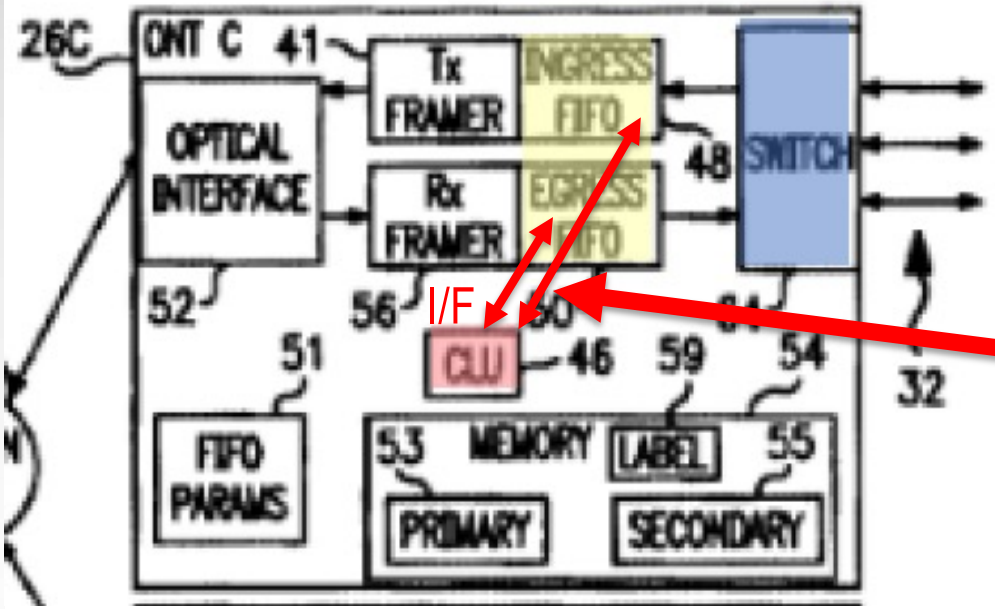
Q. Okay. Thank you.

And if we look at Figure 1 of Shraga, there is no line that's explicitly drawn between the FIFO and the CLU, but it's -- it would -- it would have been a PHOSITA's understanding that there is some type of

Page 115

Ex. 2021 (Prucnal Dep.)

*an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router*



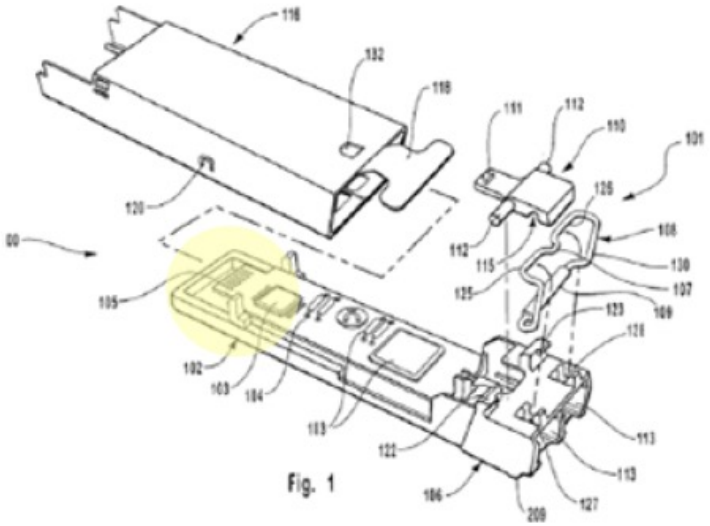

12 Q. Now, you do use the word "electrical network
13 interface port" several times in this section. What
14 exactly are you pointing to as the electrical network
15 interface port in the final combination that a PHOSITA
16 would find obvious?
17 A. There's quite a bit covered in this section,
18 but the electrical interface port, as I described in
19 paragraph 140, is the connection between the FIFO and
20 the CLU.
21 Q. Okay. Thank you.
22 And if we look at Figure 1 of Shraga, there
23 is no line that's explicitly drawn between the FIFO and
24 the CLU, but it's -- it would -- it would have been a
25 PHOSITA's understanding that there is some type of

Page 115

Petition at 32;
Ex. 2021 (Prucnal Dep.)

*an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router*

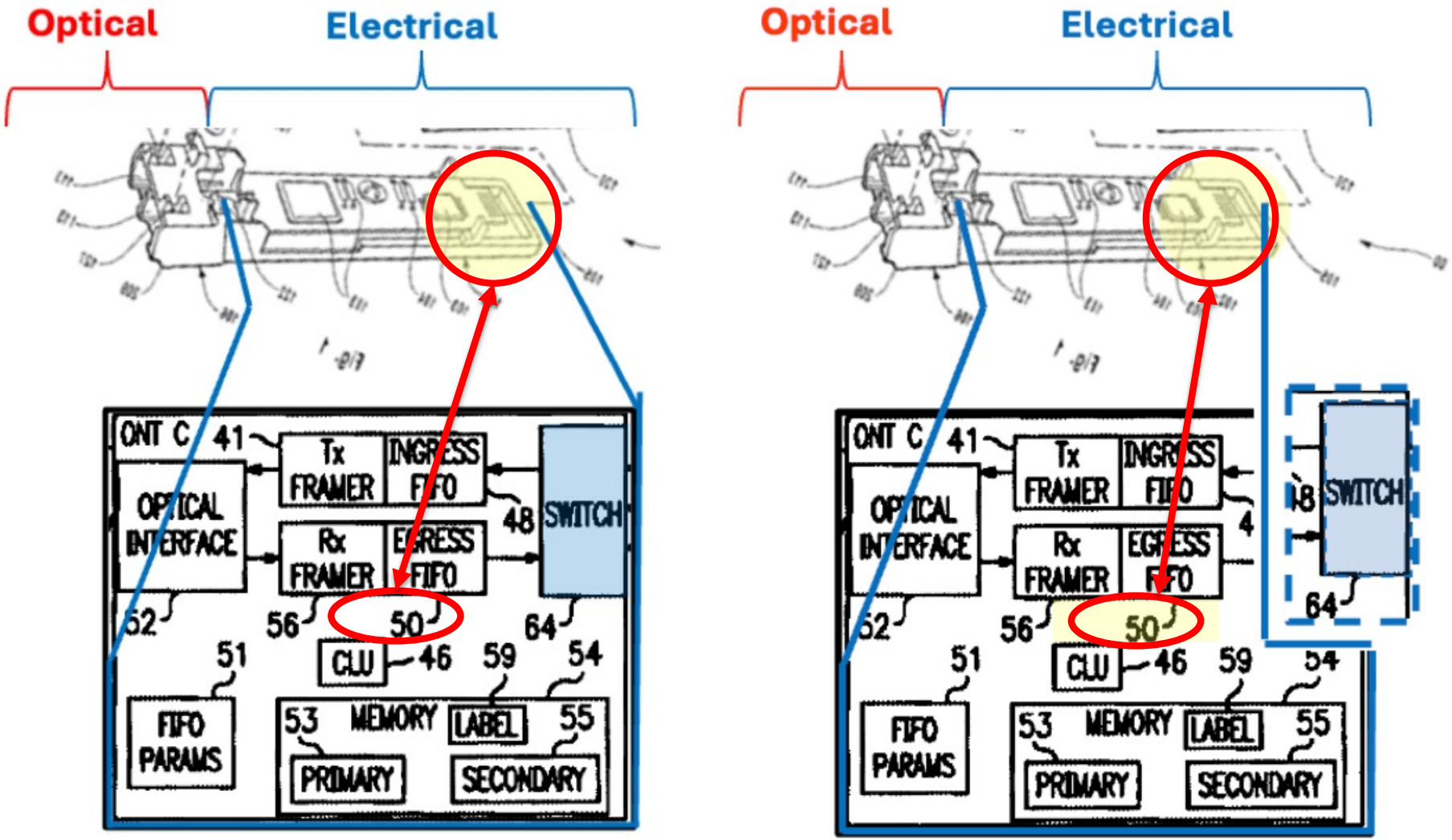
Likewise, Togami discloses that, typically, a pluggable transceiver module is electrically interfaced with a host device via a compatible connection port (i.e., the electrical network interface port) (in yellow below) and that the pluggable optical transceiver module is capable of being operatively received within a compatible port provided by the host device (i.e., the optical module port). Ex. 1003, ¶144; Ex. 1007,




Ex. 1007, Fig. 1 (annotated).

Petition at 33–34
Highlighting by Petitioner

*an electrical network interface port electrically coupled to the control module and for electrically coupling into the optical module port of the switch or router and for communicating with the switch or router*



# Motivations, Objective Indicia

# PONs

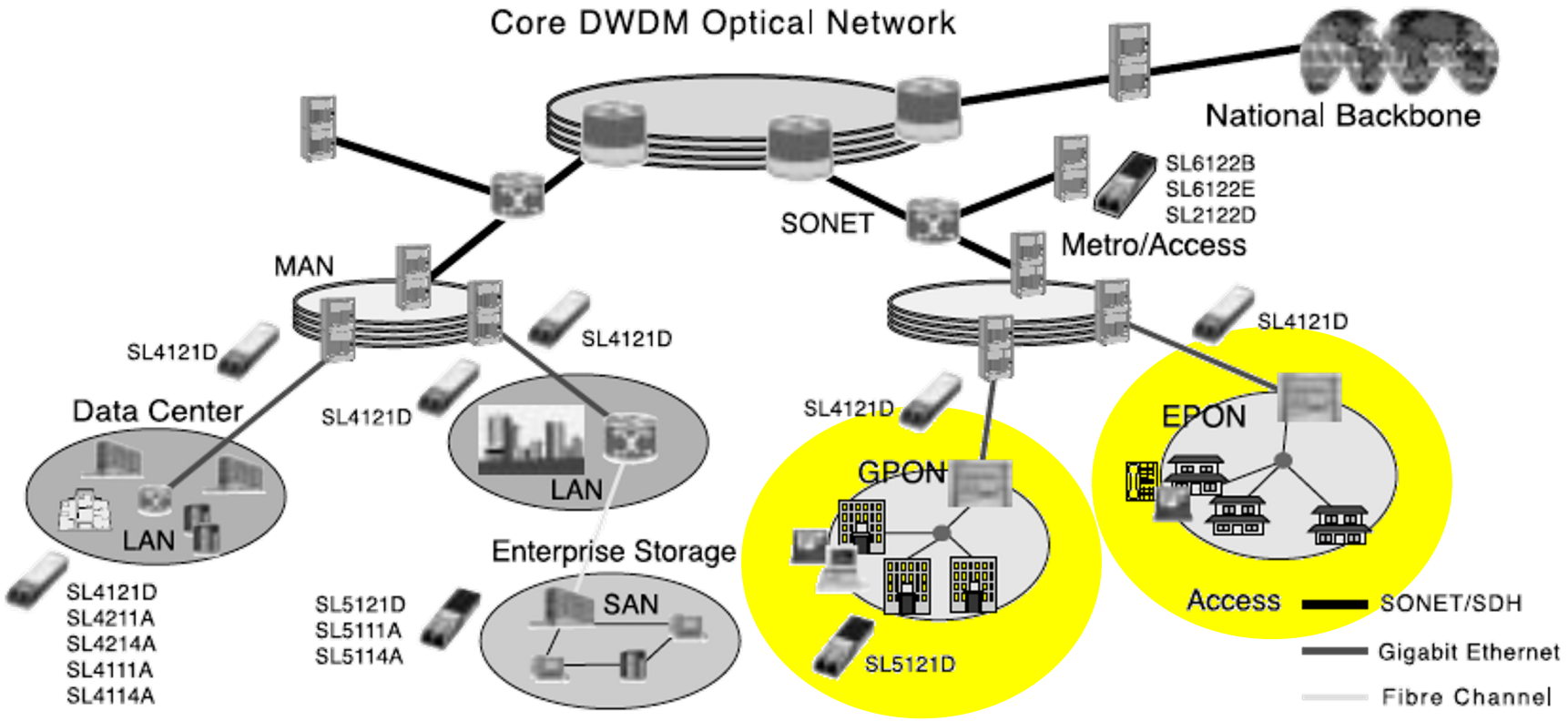



Fig. 1 Optical communications network for the broadband era

# Motorola and Verizon

Though I do not recall the exact date, this ONT was installed in my house in the 2007 time-frame, the same year that is dated on Dr. Willner's ONT6000GVT data sheet.



DATA SHEET



Motorola ONT6000GVT

GPON ONT FOR MULTI-DWELLING UNIT

Ex. 2025 (Datasheet) at 1
Ex. 1041 (Prucnal Supp.) at 15–16

# No VC Funding

899. Further, it is my understanding that Walter Soto, an inventor and patent owner of the '754 Patent, admitted during deposition testimony that, when he and his company approached venture capitalists in hopes of funding to develop products related to the '754 Patent, these venture capitalists were not interested in funding their endeavors.[1017] Mr. Soto's deposition testimony

Q: Did you ever have any working prototypes of products that you were trying to bring to market?

**A: We contemplated doing so, but it would require a lot of custom boards, and that was expensive to do, and again, why we were seeking funding.**

Q: So you never made a functional product at UBI?

**A: Correct.**

Ex. 2023 (Prucnal Rpt.) ¶ 899

# No VC Funding

Q: Did you ever have any working prototypes of products that you were trying to bring to market?

**A: We contemplated doing so, but it would require a lot of custom boards, and that was expensive to do, and again, why we were seeking funding.**

Q: So you never made a functional product at UBI?

**A: Correct.**

…

Q: Did you ever have a working prototype of any products?

**A: Again, to get a working prototype, we tried at times to get a working prototype would have been expensive because again, what we were doing was -- would have been state of the art and would have required custom boards. And at some point we tried perhaps getting some off-the-shelf components for some parts that could have, you know, brought the overall cost to something that we could afford. But off-the-shelf stuff at the time would not have been able to do development required at speed that we were looking at. So again, it gets back to needing funding to be able to afford and build proper development –**

Ex. 2023 (Prucnal Rpt.) ¶ 908

# U.S. Patent 8,238,754 (Ex. 1001)

In FIG. **13**, the evolution of MSA 10 Gb/s optical modules is shown. Beginning with discrete components, followed by 300pin, XENPAK, X2, and XPAK transponders and finally with XFP transceivers. The evolution of optical modules has been to reduce the size, power, and number of components in optical modules for the purpose of increasing port densities. The very nature of the intent of the invention is contrary to the evolution of MSA 10 Gb/s optical modules in that an increase in power and number of components result while enabling point-to-multipoint networks.

Ex. 1001 at 2:11–20

# Expert Evidence of Dr. Prucnal

# Dr. Prucnal's Contradictory Opinions

**UNITED STATES DISTRICT COURT**
**EASTERN DISTRICT OF TEXAS**
**MARSHALL DIVISION**

| | | |
|---|---|---|
| NEXTGEN INNOVATIONS, LLC<br><br>v.<br><br>FUJITSU NETWORK COMMUNICATIONS, INC., et al. | §<br>§<br>§<br>§<br>§<br>§ | CASE NO. 2:22-cv-00307-JRG-RSP<br>(Lead Case) |
| NEXTGEN INNOVATIONS, LLC<br><br>v.<br><br>INFINERA CORPORATION | §<br>§<br>§<br>§<br>§ | CASE NO. 2:22-cv-00306-JRG-RSP<br>(Member Case) |
| NEXTGEN INNOVATIONS, LLC<br><br>v.<br><br>AT&T SERVICES, INC., et al. | §<br>§<br>§<br>§<br>§ | CASE NO. 2:22-cv-00308-JRG-RSP<br>(Member Case) |
| NEXTGEN INNOVATIONS, LLC<br><br>v.<br><br>NOKIA OF AMERICA CORPORATION, et al. | §<br>§<br>§<br>§<br>§ | CASE NO. 2:22-cv-00309-JRG-RSP<br>(Member Case) |

**OPENING EXPERT REPORT OF DR. PAUL PRUCNAL REGARDING INVALIDITY OF U.S. PATENT NO. 8,238,754**

3. For my work on this matter, I am being compensated at my standard consulting rate of $725/hour. The outcome of this case has no bearing on my compensation. I expect to be available for deposition and to testify at trial in this Litigation.

Ex. 2023 (Prucnal Rpt.)

7. I am being compensated at my usual consulting rate of $725 per hour for my time spent working on issues in this matter. My compensation does not depend on the outcome of this matter or the opinions I express.

Ex. 1003 (Prucnal Dec.)

Exhibit
PRUCNAL 002

# Dr. Prucnal's Contradictory Opinions

## XI. INVALIDITY OF THE '754 PATENT BASED ON § 112

905. Under NextGen's apparent theory of infringement, the Asserted Claims are invalid under 35 U.S.C. § 112 for failure to meet the written description and/or enablement requirement.

906. **As discussed throughout this Report**, the Asserted Claims of the '754 Patent include the requirement that the claimed "control module" configured to perform certain functionality of a traditional ONT/ONU be located on a "pluggable optical transceiver module."[1020] The incorporation of these functionalities onto the pluggable, separating the invention from a traditional optical transceiver module, was an alleged point of novelty of the '754 Patent in light of the prior art. The inventors and patent owners of the '754 Patent admit, in the specification of the patent and in deposition testimony, that putting this kind of functionality within a pluggable optical transceiver module is "the basis of the invention" and that all other components described in the claims were already well know.[1021] This means a POSITA would not inherently know how to make the "control module" of the claimed optical transceiver pluggable. Nor would I expect a POSITA to know how to do this in the early 2000s.

# Dr. Prucnal's Contradictory Opinions

907. At no point in the specification, claims, or drawings, however, does the patent teach a POSITA how to make or package the ONT/ONU functionality components capable of performing MAC and TC-Layer functionality within a small, pluggable optical transceiver module. Further, it is my understanding that the inventors of the '754 Patent, through their deposition testimony, emphasized that the "control module" of the claims was *not* similar to a controller found in a traditional ONT/ONU capable of performing the identical, claimed functionality.[1022] As an example, produced below is a section of the deposition transcript of Walter Soto, one of the two named inventors:[1023]

910. Therefore, because the patents are noticeably devoid of any description sufficient to teach a POSITA how to make the claimed functional components within the pluggable optical transceiver module, and because even the inventors themselves admittedly couldn't produce a working prototype, a POSITA would not have been able to utilize the alleged invention.

Ex. 2023 (Prucnal Rpt.)

**CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))**

The undersigned hereby certifies that the above document was served on November 27, 2024, by filing this document through P-TACTS as well as delivering a copy via electronic mail upon the following attorneys of record for Petitioners on both November 25 and 27, 2024:

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