

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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DISH NETWORK CORPORATION; DISH NETWORK L.L.C.; AND DISH  
NETWORK SERVICE L.L.C.,

Petitioners

v.

ENTROPIC COMMUNICATIONS, LLC,

Patent Owner.

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PTAB Case No. IPR 2023-00392

Patent No. 7,542,715

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**PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NO. 7,542,715**

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## EXHIBIT LIST AND CHALLENGED CLAIM INDEX

Ex.1001	U.S. Patent No. 7,542,715 (“’715 patent”)
Ex.1002	Declaration of Dr. Dan Schonfeld (“Schonfeld”) and Appendices A-C Thereto (including CV)
Ex.1003	International Publication No. WO 2002/065771 (“Fisk”)
Ex.1004	European Patent No. EP0740434B1 (“Carnero”) (Certified English Translation with Translator’s Affidavit)
Ex.1005	U.S. Patent No. 5,073,930 (“Green”)
Ex.1006	U.S. Patent Pub. No. 2002/0154055 (“Davis”)
Ex.1007	U.S. Patent No. 5,959,592 (“Petruzzelli”)
Ex.1008	U.S. Patent No. 6,134,419 (“Williams”)
Ex.1009	<i>Entropic Communications v. DirectTV, LLC</i> , Case No. 2:22-cv-07775-JWH-JEM, C.D. Cal., Plaintiff’s Claim Construction Statement, December 1, 2022
Ex.1010	File History - U.S. Patent No. 7,542,715 (“’715 FH”)
Ex.1011	European Patent No. EP0740434B1 (“Carnero”) (Original German Publication)
Ex.1012	Telstar, Wikipedia (2022), <a href="https://en.wikipedia.org/wiki/Telstar">https://en.wikipedia.org/wiki/Telstar</a>
Ex.1013	U.S. Patent No. 4,455,651 (“Baran”)
Ex.1014	Dan Logan, The Scoop on the Dish, Los Angeles Times (1996), <a href="https://www.latimes.com/archives/la-xpm-1996-09-07-hm-41715-story.html">https://www.latimes.com/archives/la-xpm-1996-09-07-hm-41715-story.html</a>
Ex.1015	U.S. Patent No. 4,675,732 (“Oleson”)
Ex.1016	File History - U.S. Patent No. 7,130,576 File History (family member of ’715 patent) (“’576 FH”)
Ex.1017	File History - U.S. Patent No. 7,130,576 Reexamination History (family member of ’715 patent) (“’576 Reexam”)
Ex.1018	IEEE 802.11, Wikipedia (2022), <a href="https://en.wikipedia.org/wiki/IEEE_802.11">https://en.wikipedia.org/wiki/IEEE_802.11</a>
Ex.1019	Customer Experience, What is the Difference Between RG59 and RG6?, Sewell Direct (2019), <a href="https://sewelldirect.com/blogs/learning-">https://sewelldirect.com/blogs/learning-</a>

	<a href="#">center/what-is-the-difference-between-rg59-and-rg6</a>
Ex.1020	Site Editor, RG6 vs RG59: Which Should You Buy?, Foshan New King Cable Industrial Co., Ltd. (2020), <a href="https://newkingcable.com/rg6-vs-rg59-which-one-to-choose.html">https://newkingcable.com/rg6-vs-rg59-which-one-to-choose.html</a>
Ex.1021	Coaxial cable, Wikipedia (2022), <a href="https://en.wikipedia.org/wiki/Coaxial_cable">https://en.wikipedia.org/wiki/Coaxial_cable</a>
Ex.1022	Product Coaxial Cable, Caledonian (2022), <a href="https://www.caledonian-cables.co.uk/products/coaxial-cable/CT_Series/CT125.shtml">https://www.caledonian-cables.co.uk/products/coaxial-cable/CT_Series/CT125.shtml</a>
Ex.1023	Products Coaxial Cable, Addison (2022), <a href="https://www.addison-cables.com/product/coaxial%20cables/CT%20Series%20Coaxial%20Cables/CT125.htm">https://www.addison-cables.com/product/coaxial%20cables/CT%20Series%20Coaxial%20Cables/CT125.htm</a>
Ex.1024	Virtual Channel, Wikipedia (2022), <a href="https://en.wikipedia.org/wiki/Virtual_channel">https://en.wikipedia.org/wiki/Virtual_channel</a>
Ex.1025	U.S. Patent No. 7,376,387 (“Eck”)
Ex.1026	U.S. Patent No. 6,493,873 (“Williams ’873”)
Ex.1027	U.S. Patent No. 6,441,797 (“Shah”)
Ex.1028	U.S. Patent No. 6,889,385 (“Rakib”)
Ex.1029	U.S. Provisional Patent Application No. 60/284,593 (“Davis Provis.”)
Ex.1030	S.J. Crowley, “Capacity Trends in Direct Broadcast Satellite and Cable Television Services,” National Association of Broadcasters, National Religious Broadcasters, and National Black Religious Broadcasters (2013) <a href="https://www.nab.org/documents/newsroom/pdfs/100813_capacity_trends_in_dbs_and_cable_tv_services.pdf">https://www.nab.org/documents/newsroom/pdfs/100813_capacity_trends_in_dbs_and_cable_tv_services.pdf</a>
Ex.1031	DVB-S, Wikipedia (2022), <a href="https://en.wikipedia.org/wiki/DVB-S">https://en.wikipedia.org/wiki/DVB-S</a>
Ex.1032	B.R. Elbert, Introduction to Satellite Communication. Artech House, Third Edition, 2008
Ex.1033	<i>Gateway</i> Definition, Dictionary of Computer and Internet Terms, Fifth Edition, 1996
Ex.1034	U.S. Patent No. 5,442,630 (“Gagliardi”)
Ex.1035	U.S. Patent No. 4,677,588 (“Benjamin”)
Ex.1036	U.S. Patent No. 7,123,649 (“Smith”)

Ex.1037	U.S. Patent No. 6,408,436 (“de Haas”)
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Claim No.	Claim Language
Claims Asserted in District Court Litigation	
9[pre]	A signal distribution system for distributing a plurality of low-noise amplifier and block converter (LNB) output signals from a satellite outdoor unit (ODU) comprising:
9[a]	a gateway in communication with the ODU and at least one set top box (STB);
9[b]	a signal selector that receives a plurality of broadband LNB signals comprising a plurality of transponder signals, the signal selector is responsive to transponder select information transmitted by the gateway and selects a plurality of transponder signals from at least one broadband LNB signal based on the transponder select information;
9[c]	a frequency translator coupled to the signal selector that is capable of shifting the selected transponder signals to new carrier frequencies to produce RF signals; and
9[d]	a signal combiner coupled to at least one frequency translator capable of combining at least two RF signals to produce a composite signal;
9[e]	wherein the modulation of the composite signal is the same as the modulation of the broadband LNB signals and
9[f]	wherein the composite signal is transmitted to the gateway
9[g]	and the gateway receives the composite signal, decodes specific programs, and distributes the programs over a digital local area network (LAN) to STBs
10	The signal distribution system of claim 9 wherein a translation table maps original channel locations on the selector input to new channel locations on the selector output.
11	The signal distribution system of claim 10 wherein the translation table is maintained by a controller located in the gateway and the translation table is communicated to devices in the network.
12	The signal distribution system of claim 10 wherein the translation table is maintained by a controller located in the ODU and the translation table is communicated to devices in the network.
Claims Not Asserted in District Court Litigation	
1[pre]	A signal distribution system for distributing a plurality of video programs from a satellite outdoor unit (ODU) over a digital network

Claim No.	Claim Language
	comprising:
1[a]	a signal selector that receives LNB signals comprising a plurality of transponder channels, the signal selector is responsive to transponder information transmitted over the digital network, and selects at least one transponder channel from the broadband LNB signal based on the transponder select information
1[b]	at least one transport stream demultiplexer coupled to the signal selector to extract a specific video program from the transponder channel
1[c]	a data combiner coupled to the transport stream demultiplexers to combine video programs and produce a multiplexed signal
1[d]	wherein the multiplexed signal is formatted for transmission on the digital network and the digital network connects to the ODU.
2	The signal distribution system of claim 1 further comprising a plurality of set top boxes (STBs) connected to the digital network wherein all STBs extract channels from the multiplexed signals.
3	The signal distribution system of claim 1 wherein the digital network is a local area network (LAN).
4	The signal distribution system of claim 3 wherein the LAN is an Ethernet LAN.
5	The signal distribution system of claim 3 wherein the LAN uses data packets.
6	The signal distribution system of claim 1 wherein transponder select information is transmitted over the digital network by a gateway.
7	The signal distribution system of claim 1 wherein transponder select information is transmitted over a wireless link.
8	The signal distribution system of claim 1 further comprising a gateway connected to the digital network that receives the video program in the multiplexed signal and distributes the video programs over a local area network (LAN) to STBs.
13[pre]	A signal distribution system for distributing a plurality of transponder channels to new and legacy set top boxes (STBs) comprising:
13[a]	a signal selector that receives broadband LNB signals comprising a plurality of transponder channels, the signal selector is responsive to transponder select information transmitted from at least one STB, and selects at least one transponder channel from the broadband LNB signal based on the transponder select information and outputs a composite signal comprising selected transponder channels:



Claim No.	Claim Language
13[b]	a multiport switch that receives a plurality of broadband LNB signals, selects a broadband LNB signal responsive to an LNB select signal from an STB, and outputs the selected LNB signal.
14	The signal distribution system of claim 13 wherein the composite signal is output to a first cable, the selected LNB signal is output to a second cable; new STBs connect to the first cable to receive the composite signal; and legacy STBs connect to the second cable to receive the selected LNB signal.
15	The signal distribution system of claim 13, wherein the composite signal and the selected LNB signal are output to a single cable and the composite signal is transmitted in regions of the spectrum unoccupied by the selected LNB signals.
16	The signal distribution system of claim 15 wherein new STBs receive and decode the composite signal and legacy STBs receive and decode the LNB signals.
17	The signal distribution system of claim 16 further comprising a controller that polls the STBs to determine the presence of new STBs, and if new STBs are present accept transponder select information from the new STBs and remap the selected transponder channels to regions of the spectrum unoccupied by the selected LNBs.
18	The signal distribution system of claim 17 further comprising a controller for maintaining a channel map specifying the assigned frequency slots for transponder channels and for communicating the channel map to the STBs.
19	The signal distribution system of claim 13 further comprising a controller that polls the STBs to determine the presence of new STBs, and if new STBs are present the controller accepts transponder select information from the new STBs and remaps the selected transponder channels to regions of the spectrum unoccupied by broadband LNB signals.

Petitioners DISH Network Corporation, DISH Network L.L.C., and Dish Network Service L.L.C. (collectively, “DISH”) respectfully requests *inter partes* review (“IPR”) of claims 1-19 of U.S. Patent No. 7,542,715 (“’715 patent”).

## **I. INTRODUCTION**

Cutting through the lengthy recitation of conventional signal processing and video distribution details, the ’715 patent’s alleged invention is simple. The purportedly novel idea is to distribute video data through a gateway. But this concept is old and—not surprisingly—was already used in the satellite television signal distribution industry long before the ’715 patent’s 2001 priority date. Try as it might, the ’715 patent’s recitation of conventional components and functionality, including an outdoor unit (“ODU”), a low-noise block (“LNB”) filter, signal selector, frequency translator, signal combiner, and gateways for distributing television channels to multiple set-top boxes (“STBs”) cannot and does not camouflage the fact that nothing was novel or patent-worthy about this idea.

Because the claimed invention was both well-known and obvious to a person of ordinary skill in the art (“POSITA”), Petitioners ask the Board to institute this Petition and cancel claims 1-19.

## **II. MANDATORY NOTICES**

### **A. Real Party-in-Interest**

DISH Network Corporation, DISH Network L.L.C., and Dish Network

Service L.L.C. are the real parties-in-interest for this Petition.

**B. Related Matters**

Patent Owner asserted that Petitioners infringe the '715 patent along with U.S. Patent Nos. 7,130,576 ("576 patent") and 8,792,008 ("008 patent") in a district-court lawsuit captioned *Entropic Communications, LLC v. DIRECTV, LLC. et al*, No. 2:22-cv-07775-JWH-JEM (C.D. Cal.) (transferred from No. 2:22-cv-75 (E.D. Tex.) on November 3, 2022; consolidated from No. 2:22-cv-07959 (C.D. Cal.) on December 13, 2022).

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Power of Attorney is concurrently filed with this Petition.

### **III. REQUIREMENTS FOR *INTER PARTES* REVIEW**

#### **A. Grounds for Standing**

Petitioners certify that the '715 patent is available for IPR and that Petitioners are not barred or estopped from requesting IPR challenging the claims of the '715 patent on the grounds presented here. This Petition is filed less than one year after Petitioners were served with a complaint alleging infringement.

#### **B. Overview of Challenges and Requested Relief**

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)-(2), Petitioners request cancellation of claims 1-19 of the '715 patent under pre-AIA 35 U.S.C. §103.

##### **1. Identification of Prior Art**

In this Petition, Petitioners rely on the patents listed in the Table of Exhibits, including:

<b>Exhibit No.</b>	<b>Prior Art Basis</b>
<b>Ex. 1003: (Fisk)</b> WIPO Publication No. 02/065771	Fisk has an international filing date of Feb. 9, 2001, designates the United States, and published in English on Aug. 22, 2002 and is prior art at least under pre-AIA 35 U.S.C. §102(e).
<b>Ex. 1004, 1011: (Carnero)<sup>1</sup></b> E.P. Patent No. 0 740 434	Carnero published on Oct. 30, 1996 and is prior art at least under pre-AIA 35 U.S.C. §§102(a) and (b).
<b>Ex. 1005: (Green)</b> U.S. Patent No. 5,073,930	Green issued on December 17, 1991 and is prior art at least under pre-AIA 35 U.S.C. §§102(a), (b) and (e).
<b>Ex. 1006: (Davis)</b> U.S. Patent Pub. No. 2002/0154055	Davis claims priority to U.S. Provisional Patent Application No. 60/284,593, Apr. 18, 2001, and published on October 24, 2002, and is prior art at least under pre-AIA 35 U.S.C. §102(e).

The Examiner did not cite to or discuss any of the prior art now used as grounds in this Petition during the prosecution of the '715 patent.<sup>2</sup>

## **2. Grounds for Challenge**

The table below summarizes the grounds challenging the independent and dependent claims.

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<sup>1</sup> All citations herein are to the certified English translation of Carnero at Ex. 1004.

<sup>2</sup> Green was, however, cited for certain dependent claims in the *ex parte* reexamination of the '576 patent, parent to the '715 patent, during the pendency of the '715 patent's prosecution.

Grounds for Challenge		
Ground 1	Ind. Claim 9 Dep. Claims 10-12	Obvious over Fisk in view of Carnero, and in further view of the general knowledge of a POSITA
Ground 2	Ind. Claim 9 Dep. Claims 10-12	Obvious over Green in view of Davis, and in further view of the general knowledge of a POSITA
Ground 3	Ind. Claim 1 Dep. Claims 2-8	Obvious over Fisk in view of the general knowledge of a POSITA
Ground 4	Ind. Claim 13 Dep. Claims 14-19	Obvious over Carnero in view of the general knowledge of a POSITA

This Petition is supported by the Declaration of Dr. Dan Schonfeld (“Schonfeld”) which is attached as Ex. 1002 and demonstrates a reasonable likelihood that Petitioners will prevail with respect to the cancellation of at least one challenged claim. *See* 35 U.S.C. § 314(a).

#### **IV. STATE OF THE ART AND APPLICANT ADMITTED PRIOR ART (AAPA)**

In the Background Section of the ’715 patent, the applicant described the state of the art and problems allegedly solved by referencing and incorporating two prior art patents—U.S. Patent Nos. 5,959,592 (“Petruzzi”) and 6,134,419 (“Williams”)—and directed the reader to a “general” “descri[ption]” of “[s]atellite systems” in a textbook titled “Communication Services via Satellite” (collectively “AAPA”). The AAPA establishes that the ’715 patent claims conventional components and functionality including at least ODU, STBs, LNBs, signal selectors

and combiners, frequency translators and gateways. Petitioners and Dr. Schonfeld rely on the '715 patent AAPA throughout this Petition in accordance with the PTAB's June 9, 2022 "Updated Guidance on the Treatment of Statements of the Applicant in the Challenged Patent in Inter Partes Review under Section 311" at least to establish background knowledge possessed by a POSITA, to furnish a motivation to combine, to assess whether a patent's claims would have been obvious, and/or to supply a missing limitation. (*See generally* Ex.1002-Schonfeld, §IV.) While Dr. Schonfeld provides a detailed description of the state of the art and AAPA in his Declaration, the chart below provides a summary of the claimed element admitted as being in the prior art by the '715 patent applicant. (Ex.1002-Schonfeld, ¶¶35-36, §IV.G.)

Concepts Relevant to Challenged Claims	Disclosure of Concept in State of Art as Shown in AAPA and Prosecution History
Receiving and down-converting broadband satellite signals at an ODU.	Ex.1001-'715 patent, 1:21-55 (Background); Ex.1007-AAPA Petruzzelli, 1:21-62, 2:11-21, 2:54-65, 4:23-45, 4:58-5:15, 5:1-15, 5:61-6:21; Ex.1008-AAPA Williams, 2:11-40; Ex.1026-Williams '873, 5:59-6:11, Fig. 4; Ex.1027-Shah, 1:64-3:6, Figs. 1, 4 (Ex.1016-'576 FH, 96); "Eutelsat Installers Guide," Figs. 8, 11 (Ex.1017-'576 Reexam, 276-77); Ex.1015-Oleson, 4:35-50.
Selecting transponder signals from broadband satellite signals based on request information.	Ex.1026-Williams '873, 3:56-4:33, 5:45-6:9, Figs. 1, 3 (Ex.1016-'576 FH, 67); "Eutelsat Installers Guide," 19, 26, Figs, 7, 11 (Ex.1017-'576 Reexam, 277-79).

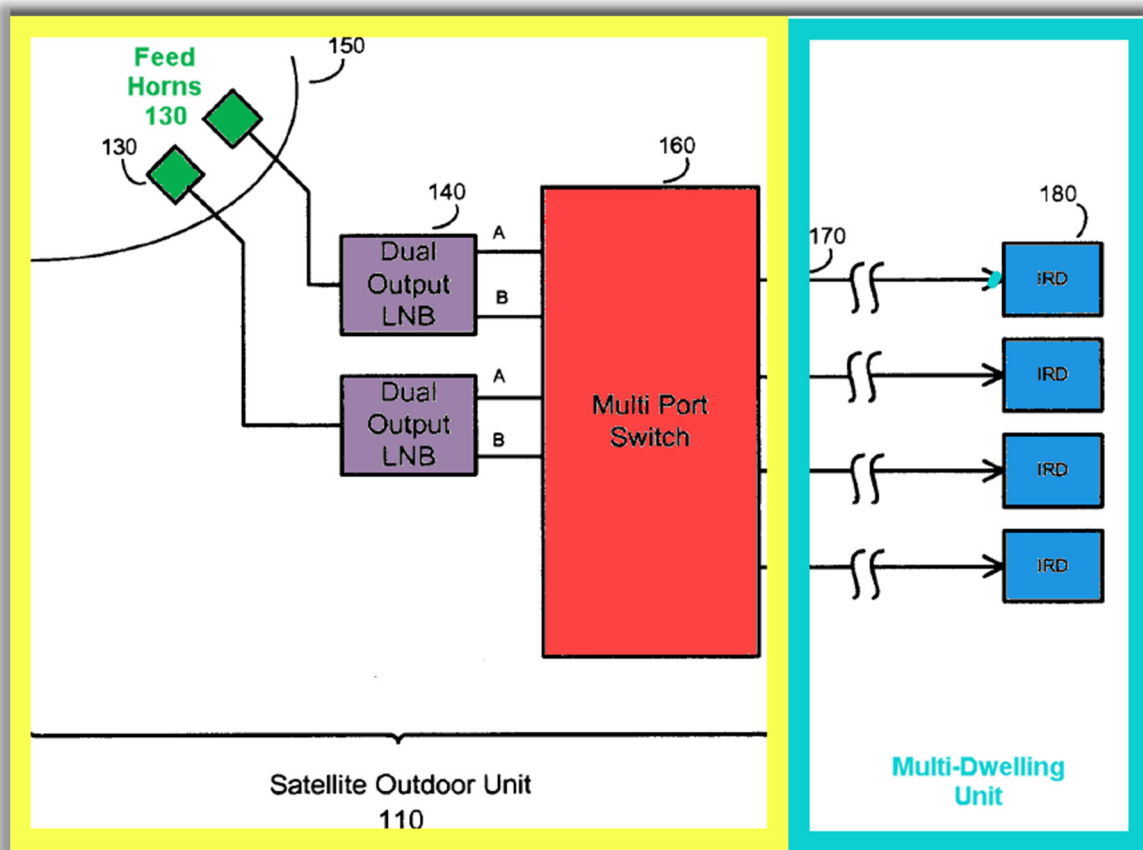
Concepts Relevant to Challenged Claims	Disclosure of Concept in State of Art as Shown in AAPA and Prosecution History
Frequency translating selected transponder signals.	Ex.1007-AAPA Petruzzelli, Abstract, 5:45-6:50, 7:64-8:39; Ex.1026-Williams '873, 3:56-4:33, 6:12-21, 9:40-48, Figs. 1, 3 (Ex.1016-'576 FH, 67); Ex.1027-Shah, 2:66-3:3, 4:61-67, Figs. 1, 4 (Ex.1016-'576 FH, 96); "Eutelsat Installers Guide," 15, 19, Figs. 7, 11 (Ex.1017-'576 Reexam, 281-82); Ex.1015-Oleson, 1:14-58, 7:21-35.
Combining selected transponder signals for distribution.	Ex.1007-AAPA Petruzzelli, Abstract, 5:45-6:50, 7:64-8:39; Ex.1026-Williams '873, 3:56-4:33, 10:24-39, Figs. 1, 3 (Ex.1016-'576 FH, 67-68); Ex.1027-Shah, 3:55-4:38, Figs. 1, 4 (Ex.1016-'576 FH, 96-97); "Eutelsat Installers Guide," 15, 19, 27, Figs. 7, 11 (Ex.1017-'576 Reexam, 281-82, 284-85); Ex.1015-Oleson, 1:14-58, 7:21-35.
Distributing decoded programs via gateway over a local area network	Ex.1036-Smith, 25:29-26:5; Ex.1037-de Haas, 1:11-31, 6:4-7:25; Ex.1028-Rakib, 23:54-24:48.
Distributing selected transponder signals in the same modulation as received in broadband satellite signals.	Ex.1007-AAPA Petruzzelli, Abstract, 5:45-6:50, 7:64-8:39; Ex.1015-Oleson, 1:14-58, 7:21-35; Ex.1026-Williams '873, 4:57-60, 7:15-23, 15:15-27; Ex.1027-Shah, 3:47-54, 4:28-38, Figs. 3, 4 (Ex.1016-'576 FH, 99); "Eutelsat Installers Guide," Fig. 7 (Ex.1017-'576 Reexam, 281-82).
Maintaining and distributing information about frequency locations for selected transponder signals.	Ex.1026-Williams '873, 10:53-11:67 (Ex.1016-'576 FH, 69); Shah, 4:28-52 (Ex.1016-'576 FH, 98); "Eutelsat Installers Guide," 27 (Ex.1017-'576 Reexam, 287); Ex.1025-Eck, 1:21-35, 1:54-64, 2:10-25.



## V. OVERVIEW OF THE '715 PATENT

### A. The Alleged Invention of the Challenged Claims

The '715 patent addresses an age-old problem within video distribution systems: how to efficiently deliver satellite video signals to more than one set-top box ("STB") within a multiroom building such as house or hotel. A conventional satellite video distribution system including an ODU and multiple STBs is depicted below in Figure 1 of the '715 patent.

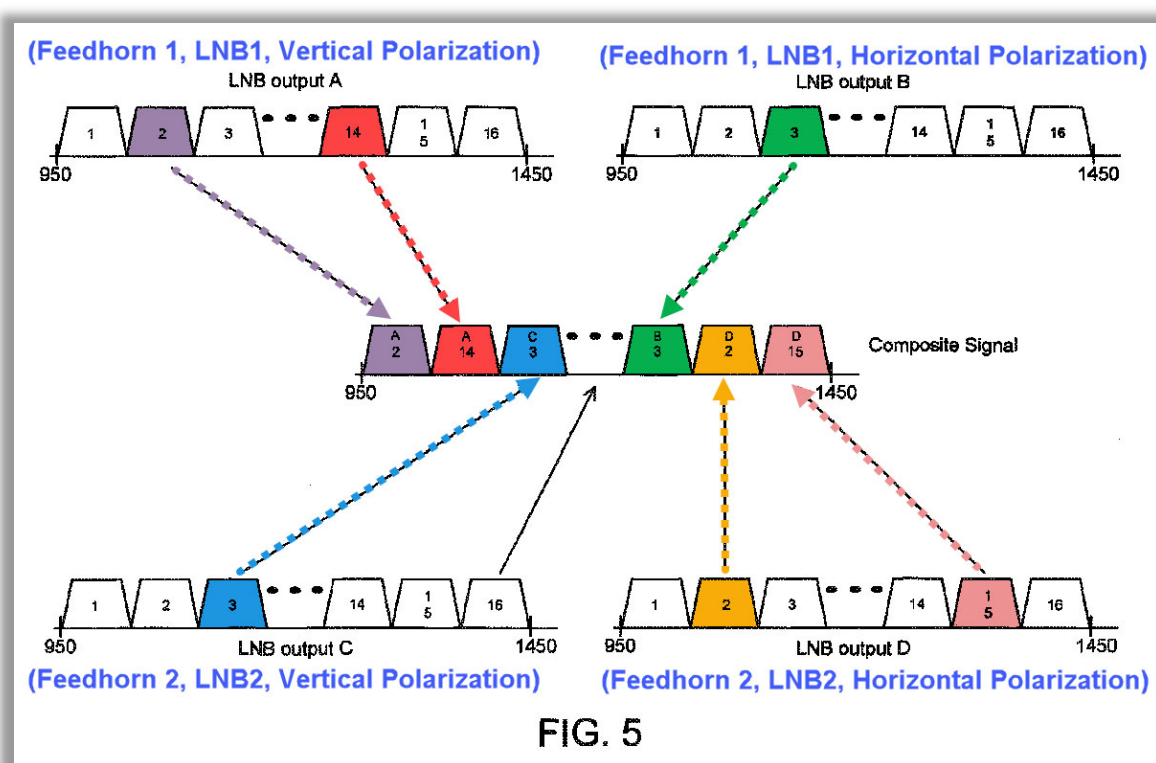


**Figure 1 — Video Signal Distribution System (AAPA).**

The '715 patent explains that under “the conventional” approach, requiring

separate cables between the ODU and each STB was inconvenient when adding additional STBs to new locations within a building. (Ex.1001-'715 patent, 1:45-55.) As explained by Dr. Schonfeld, the '715 patent's purported solution draws on known techniques, including those summarized in the table above, to transmit desired channels as a combined signal that is outputted to all STBs. (Ex.1002-Schonfeld, ¶77.) Specifically, the '715 patent teaches “selecting” requested satellite signals (e.g., selecting transponder signals from a broadband LNB output signal), “translating” those transponder signals to various frequencies for transmission within an intermediate frequency (IF) signal, and “combining” the selected, translated transponder signals into a composite IF signal for output to all STBs. (Ex.1001-'715 patent, 2:53-3:2.)

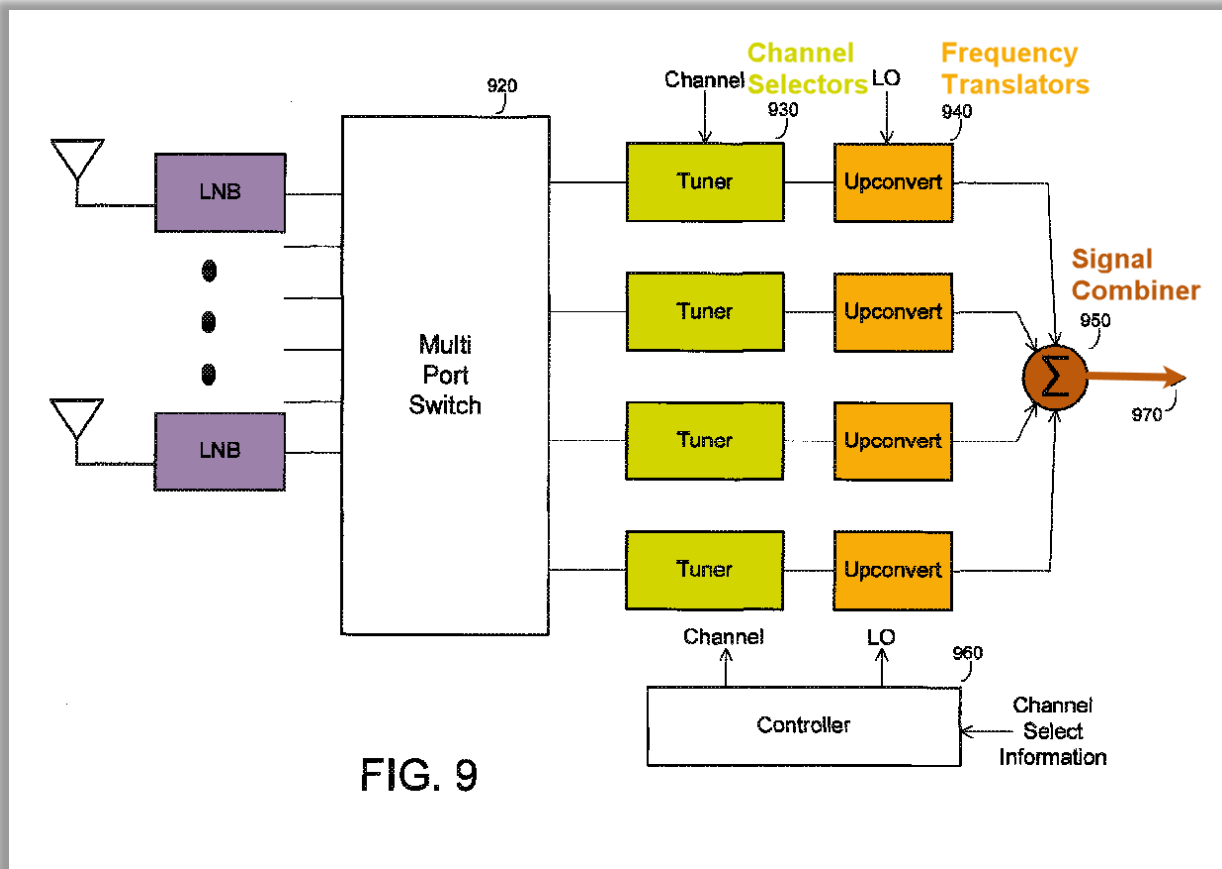
The '715 patent's process for creating a “composite signal” is illustrated in Figure 5 below.



**Figure 5 — The '715 Patent's "Composite Signal" For Transmission Over a Single Cable.**

Here, each numbered frequency block represents a transponder channel having a transponder signal comprising one or more television channels. The transponder channels are grouped together into four satellite signals (*i.e.*, broadband LNB outputs), labeled A-D, that correspond to the satellite hardware (*i.e.*, transponder) and signal polarization (*i.e.*, left- or right-polarity) of the satellite signals received by the feedhorns on the satellite antenna. (Ex.1002-Schonfeld, ¶79.) Upon receiving these four satellite signals, selected transponder channels from the broadband LNB output signals are combined into a "composite" IF signal having a frequency range of 950 to 1450 MHz. (Ex.1001-'715 patent, 7:32-38.) Figure 9

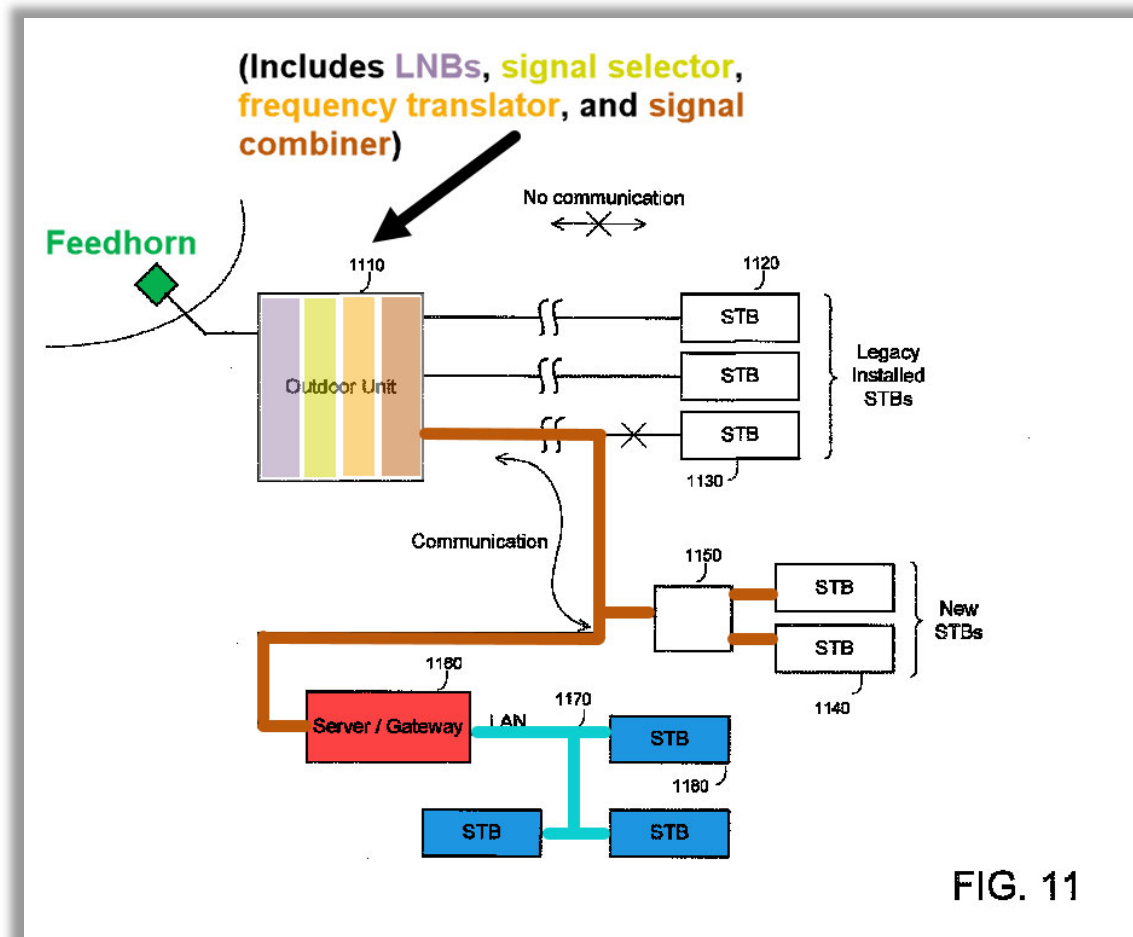
depicts system components for selection, translation, and combination to create the composite IF signal. (Ex.1002-Schonfeld, ¶79.)



**Figure 9 — Tuners and Upconverters Used to Select and Combine Channels.**

Figure 9 illustrates that each LNB output signal carries frequencies corresponding to particular satellite transponder channels that communicate video data. Desired transponder channels are selected by tuners 930. (Ex.1001-'715 patent, 8:55-57.) The frequency range for selected satellite transponder channels is shifted by up converters 940. (Ex.1001-'715 patent, 8:55-9:14.) Finally, all transponder channels selected for distribution are combined into a composite signal for

distribution over a single cable 970. (Ex.1001-'715 patent, 8:55-57.)



**Figure 11 — The '715 Patent's Signal Distribution System Using a Gateway.**

When distributing the composite signal to the STBs, the '715 patent teaches outputting the composite signal through a gateway. (Ex.1001-'715 patent, 2:59-65.) Admittedly, the gateway “can be a simple power splitter/summer” (Ex.1001-'715 patent, 4:40-41), or more advanced and capable of both “decod[ing] specific programs,” and distributing those programs over a digital local area network to the plurality of STBs, as shown in Figure 11. (Ex.1001-'715 patent, 9:44-48.)

“Gateways” were well-known components used in communications networking that performed signal processing operations (such as decoding) on received data to facilitate distribution of that data to networked devices. (Ex.1002-Schonfeld, ¶¶72-74.)

### **B. The Prosecution History**

The ’715 patent is a continuation of U.S. Patent No. 7,130,576 (“’576 patent”), and claims priority to several provisional applications, the earliest filed on November 7, 2001. (Ex.1001-’715 patent, Cover.) The uneventful prosecution record has no substantive impact on this Petition. The file history and reexamination record of the ’576 patent—a family member of the ’715 patent—reveals additional prior art disclosing key limitations of the challenged claims, but otherwise also has no substantive impact on this Petition. (Ex.1002-Schonfeld, ¶82.)

### **C. The Alleged Priority Date**

For the purposes of this proceeding only, Petitioners assume the ’715 patent’s priority date is November 7, 2001.

## **VI. CLAIM CONSTRUCTION**

Petitioners interpret the claim terms according to their plain and ordinary meanings as understood by a POSITA at the time of the invention in view of the specification and the prosecution history. 37 C.F.R. § 42.100 (b); *Phillips v. AWH Corp.*, 415 F.3d 1302, 1312-13 (Fed. Cir. 2005). Petitioners reserve the right to

construe terms in the litigation and/or to respond to any constructions that Patent Owner presents in this proceeding.

Petitioners note, however, that some terms used in the '715 patent were known to POSITAs to have multiple meanings and uses in the field of satellite television. While the term does not require a construction because it can be understood by a POSITA and its meaning is not likely to be disputed, explanation may be helpful to the Board.<sup>3</sup>

As Dr. Schonfeld explains, “transponder” and “channel” are two important terms POSITAs use to describe the distribution of television data by satellites, but these terms may differ when referring to different aspects of the signal distribution system. A POSITA would understand a “transponder”—by itself—to be physical hardware on the satellite that receives, processes, and broadcasts signals to ODU receivers on the ground. (Ex.1002-Schonfeld, ¶¶38-39.) A POSITA would also understand that “transponder” is also used to refer either to the signal broadcast by

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<sup>3</sup> In the District Court litigation, Patent Owner proposed that all terms in claims 9-12 of the '715 patent be given their plain and ordinary meaning. (Ex.1009.) Petitioners reserve the right to respond if Patent Owner changes its construction or otherwise defines the “plain and ordinary meaning” associated with a term.

the transponder, or alternatively to the frequency channel through which the signal is communicated. (Ex.1002-Schonfeld, ¶¶38-41.) This is consistent with the '715 patent which differentiates between the two by using two precise terms “transponder signal” and “transponder channel.” (*See id.*)

The word “channel” also has multiple meanings in the satellite signal distribution context, including: a frequency communication channel (*i.e.*, a frequency band), or an individual television channel (e.g., ESPN). Most lay people think of “channel” as referring to a television channel—ESPN™, HBO™, Disney™, etc.—and POSITAs sometimes do the same. To be precise and consistent with the '715 patent, this Petition and Dr. Schonfeld use the terms “transponder channel” and “television channel” to distinguish these two kinds of channels. (Ex.1002-Schonfeld, ¶¶40, 42; AAPA Williams 1:52-55.)

## **VII. LEVEL OF ORDINARY SKILL**

As of the alleged November 7, 2001 priority date, a POSITA is a person having at least: (i) a bachelor-level degree in electrical engineering, computer engineering, or a related field, and three or more years of experience working in television signal processing and satellite communications; (ii) a master's degree in electrical engineering, computer engineering, or a related field, and at least one year of experience in television signal processing and satellite communications; or (iii) a doctoral degree in electrical engineering, computer engineering, or a related field,



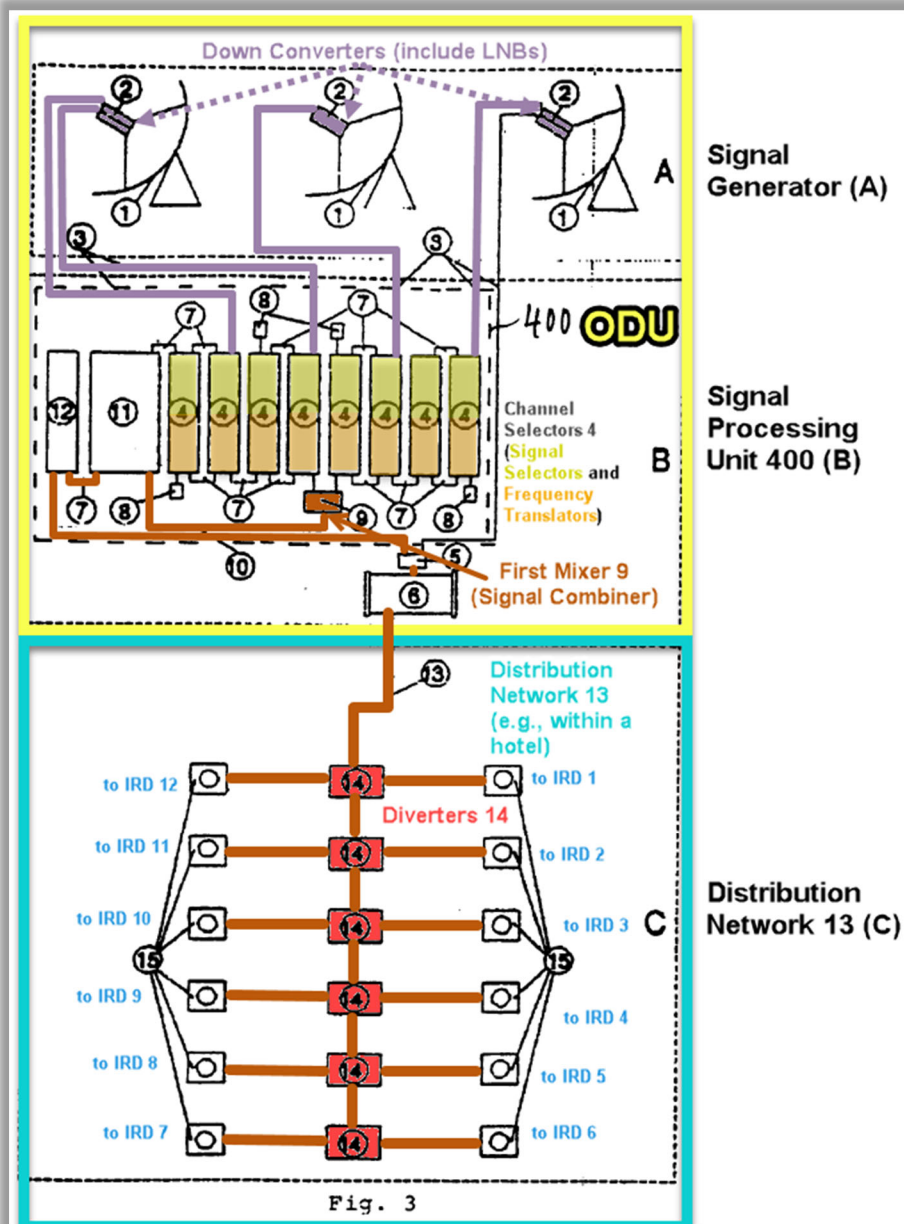
and at least some experience in television signal processing and satellite communications. Additional education may substitute for professional experience, and significant work experience may substitute for formal education. (Ex.1002-Schonfeld, ¶¶33-34.)

## **VIII. DESCRIPTION OF THE PRIOR ART**

### **A. Carnero**

Carnero addresses the same problem as the '715 patent—how to send pre-selected satellite TV channels to multiple STBs in a multiroom environment over a single cable. However, Carnero solved the problem five years earlier.

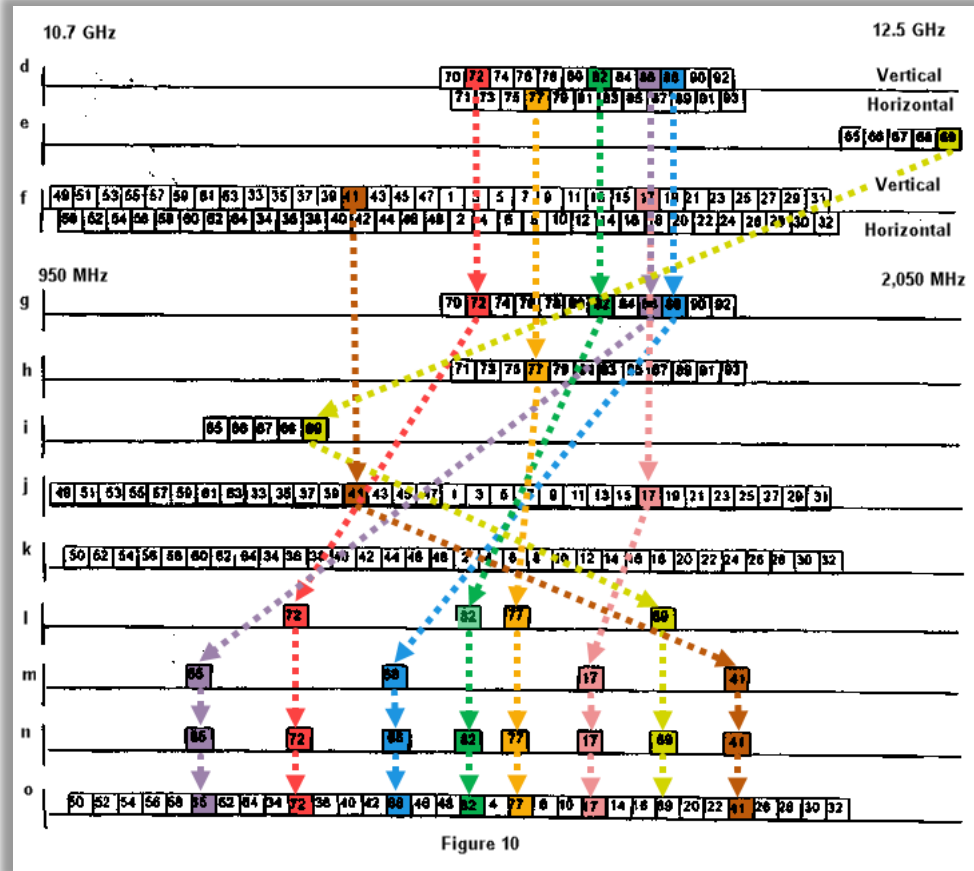
In Carnero's system, a user is provided "with pre-definable channels, via only one distribution cable, which are individually selected from signals originating from one antenna or from several antennas." (Ex.1004-Carnero, 3:9-12, Abstract.)



**Figure 3 — Carnero's Signal Distribution System.**

Carnero's Figure 3 depicts its satellite television distribution system including signal generators (block A), signal processors (block B), and a distribution network (block C). (Ex.1004-Carnero, 4.) Carnero describes how its signal processing device 400 selects specific transponder channels (which Carnero refers to simply as

“channels,” although Dr. Schonfeld confirms these are “transponder channels”) from the received satellite signal to generate an output signal of user-specified transponder channels. Specifically, antennas 1 receive the signals from satellites that are passed through LNBS 3 and translated from broadband signals into an IF band (*e.g.*, 950 MHz - 1450 MHz). (Ex.1004-Carnero, 4:30-45, Claim 1; Ex.1002-Schonfeld, ¶¶85-86.) The IF signals are then processed by the plurality of channel-specific converters 4 that “convert a pre-definable channel in the IF band, into another channel in the intermediate frequency band.” (Ex.1004-Carnero, 4, Abstract.) For each converter, a microprocessor “designat[es] a predeterminable input channel frequency” corresponding to a desired channel to be distributed, and also designates “a predeterminable output channel frequency” corresponding to the frequency at which the channel will be distributed over the distribution cable. (Ex.1004-Carnero, 3:48-53.) As a result, “a channel is selected and converted from an input frequency, in the IF range, to a predeterminable output frequency in the IF range,” without any remodulation. (Ex.1004-Carnero, 5:29-41; Ex.1002-Schonfeld, ¶86.) The outputs of the channel-specific converter are combined and distributed via a single cable.



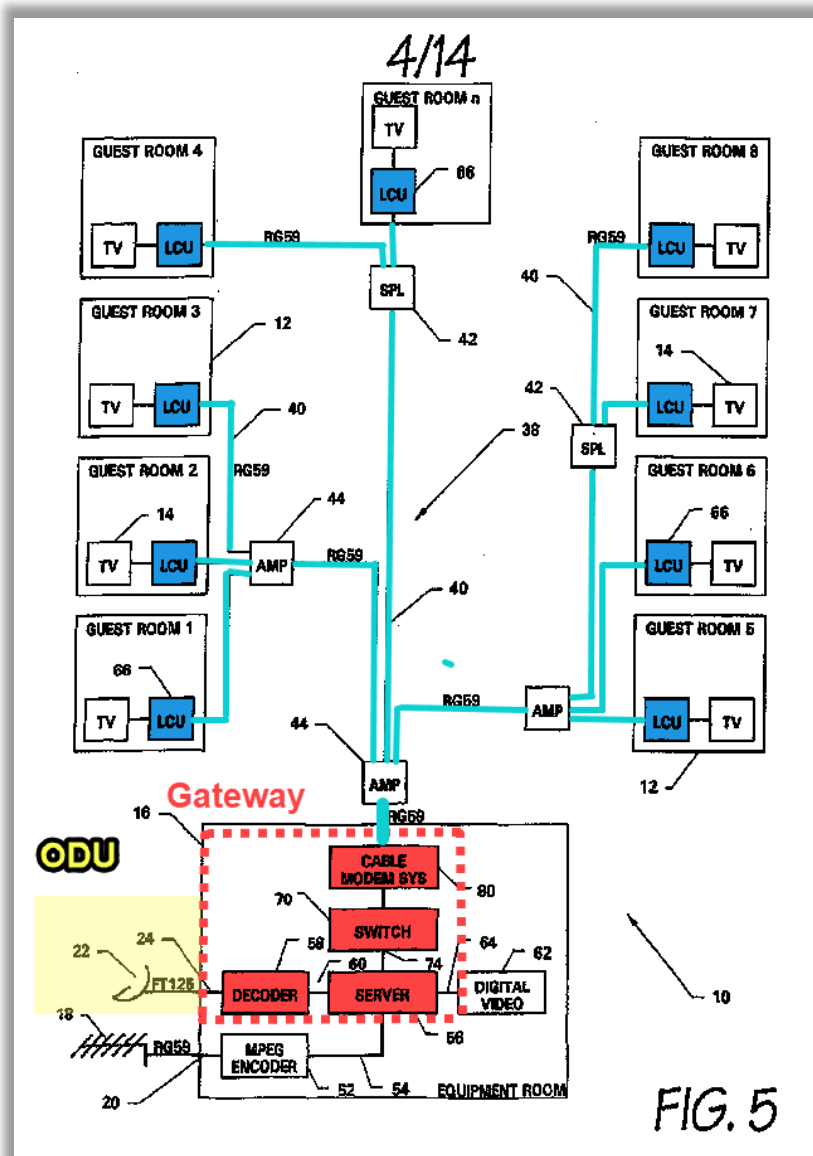
**Figure 10 — Process to Create a Combined Signal for Distribution on a Single Cable.**

Carnero’s Figure 10 depicts the channel selection and combination process and is annotated to show how signal frequency channels, requested from an end user, are selected and frequency-translated to create a combined signal for output over a single cable. (Ex.1002-Schonfeld, ¶87.) Here, lines “d”, “e”, and “f” represent signals received from three different satellites. (*Id.*) Lines “g”, “h”, “i”, “j”, and “k” represent the respective signals shifted into the IF range. (*Id.*) The channels selected by the channel-specific converter are shown isolated and frequency-shifted in lines

“l” and “m”, and are then shown together in line “n”. (*Id.*) Finally, those channels are combined with the entirety of the signal on line “k”, where the selected and translated channels replace channels of the same frequency from line “k”. (*Id.*) The entire signal is distributed to the multiple-dwelling unit (MDU) as a combined, composite signal transmitted over a single cable. (Ex.1004-Carnero, 9:28-46; Ex.1002-Schonfeld, ¶87.)

**B. Fisk**

Like the '715 patent, Fisk also describes a centralized server for distributing television and video signals throughout a multi-unit dwelling such as a hotel. (Ex.1003-Fisk, Cover, 2:13-23.) The centralized server manages distribution of the digital video signals based on requests for content from receivers located in various rooms. (Ex.1003-Fisk, Abstract.)



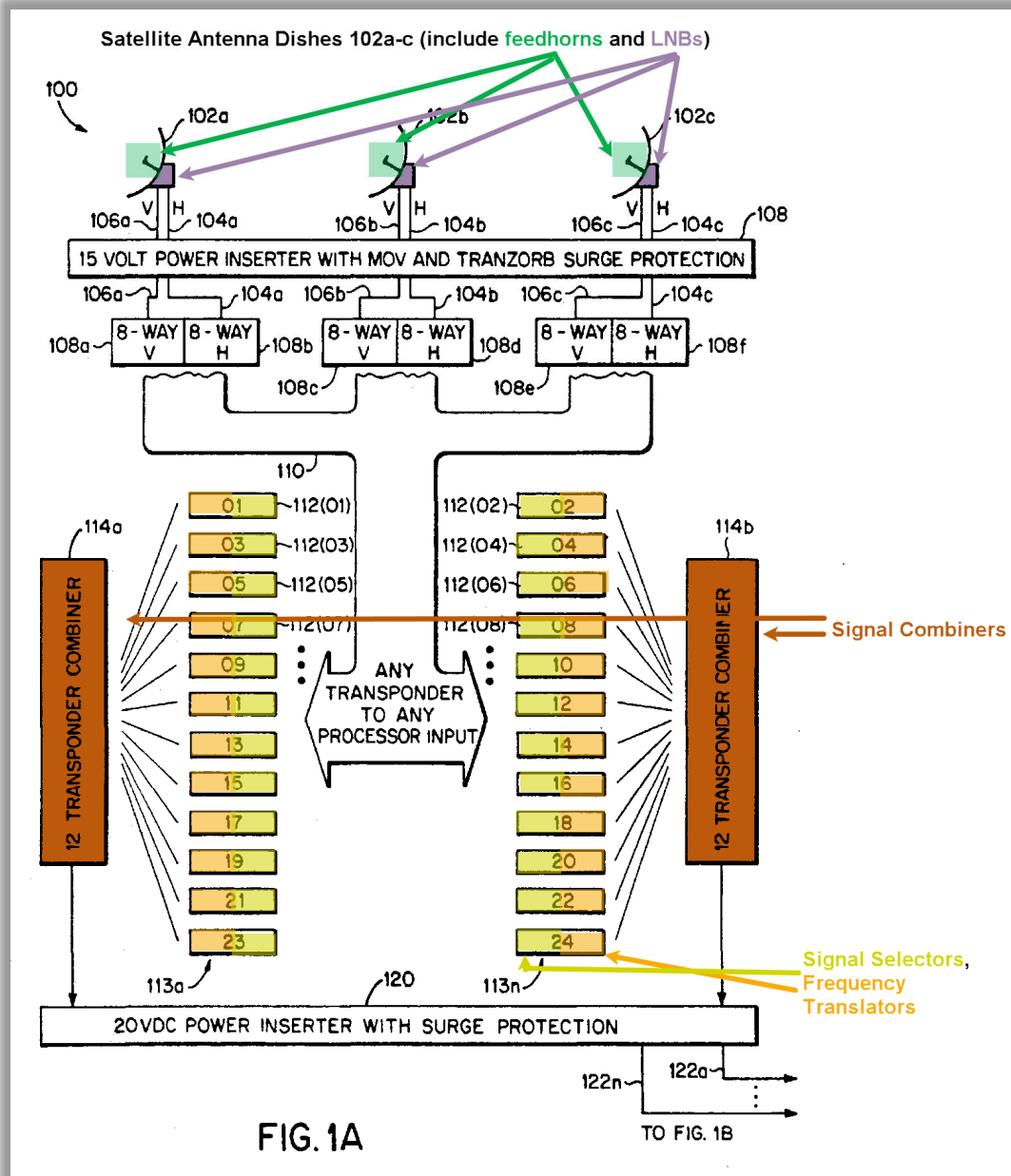
**Figure 5 — Fisk's Video Distribution System with a Centralized Server.**

Figure 5 depicts Fisk's hotel video distribution system implemented where each guestroom 12 includes a TV and local control unit (LCU) 66 (*IRD/STB*). (Ex.1002-Schonfeld, ¶89.) Central server 56 accesses video originating from various sources, including via satellite 22. (Ex.1003-Fisk, 12:1-9.) Decoders 58 process the received satellite signals and provide digital MPEG video streams to the server.

(Ex.1003-Fisk, 22:9-22.) When server 56 receives a television channel request from an LCU 66 in a guest room, the server transmits the digital television signal over the network. (Ex.1003-Fisk, 6:7-21.) All requested media is provided by the server to the network via a single output cable 74 for distribution to the LCUs. (Ex.1003-Fisk, Figure 4; Ex.1002-Schonfeld, ¶89.)

**C. Green**

Green ensures providing a plurality of STBs with signals from various satellite receivers, over a single cable, and without degrading quality. (Ex.1002-Schonfeld, ¶90.)



**Figure 1A — Community Television Distribution System.**

Green includes multiple dish receivers 102a-c, each containing a feedhorn and a dual-output LNB. (See Ex.1005-Green, 9:29-50.) These “conventional” LNBs down convert each received polarized signal 104a-c (horizontal) and 106a-c (vertical) and output a block of transponder channels shifted into the 900-1500 MHz



range. (Ex.1005-Green, 9:45-50; Ex.1002-Schonfeld, ¶¶91.) Green touts the benefit of providing each subscriber its desired channel on a “single individual ‘drop’ coaxial cable” 130 that is “prewired” in its residency. (Ex.1005-Green, 11:7-16; Ex.1002-Schonfeld, ¶¶93.)

#### D. Davis

Davis describes a local area network-based satellite signal distribution system. (Ex.1006-Davis, Abstract.) Davis teaches limiting the number of cables needed to transmit satellite television signals to multiple STBs. (Ex.1006-Davis, ¶¶4-7, 10-12.)

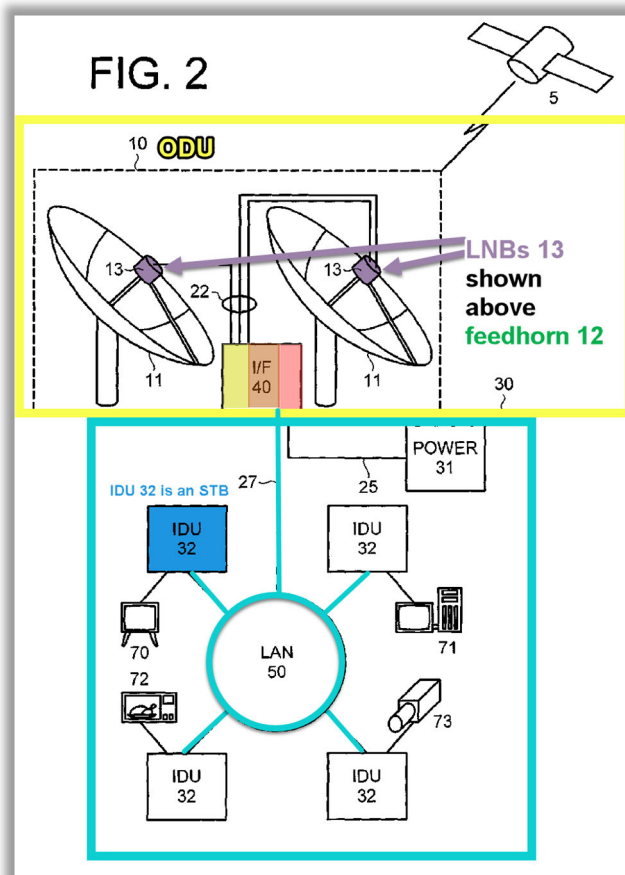


Figure 2 — Davis’s Satellite Television Distribution System.

Davis's interface device 40 converts the IF output from LNBs 13 to digital baseband information. (Ex.1006-Davis, ¶13.) By digitizing, Davis teaches leveraging known local area network (LAN) techniques for distributing selected signals to a plurality of indoor units 32 via point-to-point communications and the TCP/IP protocol. (Ex.1006-Davis, ¶¶13, 36, 53; Ex.1002-Schonfeld, ¶95.) After digitizing the received LNB outputs, interface device 40 selects the received signals desired for distribution, performs other signal processing, and multiplexes the selected signals for distribution over the LAN. (Ex.1006-Davis, ¶13.)

Davis is entitled to the benefit of the April 18, 2001 filing date of U.S. Provisional Application No. 10/123,383 (Ex.1029, "Davis Provis.") under 35 U.S.C. § 119(e)(1) and is prior art under at least 35 U.S.C. § 102(e) as of that date. *See Amgen Inc. v. Sanofi*, 872 F.3d 1367, 1380 (Fed. Cir. 2017); MPEP §2136.03(III). As explained by Dr. Schonfeld, the written description of the '383 application provides support for published claim 1 of Davis.

Davis Claim 1 Limitation	Support in Davis. Provis. (Page No.)
1[pre]	3
1[a]	3, 7
1[b]	5, 7
1[c]	3, 5, 7

Davis Claim 1 Limitation	Support in Davis. Provis. (Page No.)
1[d]	7

(Ex.1002-Schonfeld, ¶96, App’x B.) Further, the following disclosures from Davis relied upon by DISH have written description support in the corresponding citations from the ’383 provisional:

Davis Disclosure	Support in Davis. Provis. (Page No.)
Abstract	3, 5, 7
¶4	3, 7
¶5	3, 5, 7
¶¶6-7	3, 5
¶10	3, 5, 7
¶11	3, 7
¶12	3
¶13	3, 5, 7
¶35	3, 7
¶¶36-37 & Fig. 2	3, 5, 7
¶38	7
¶39	3, 5, 7

Davis Disclosure	Support in Davis. Provis. (Page No.)
¶¶41, 45	7
¶¶46, 47	3, 5, 7
¶¶51, 53	3
¶55	3, 5, 7
¶¶56, 75	7

(Ex.1002-Schonfeld, ¶96, App’x. C.)

## IX. GROUNDS FOR CHALLENGE

Independent claims 1, 9 and 13 are directed to a signal distribution system for distributing LNB output signals received from a satellite. Claims 2-8, 10-12, and 14-19 depend therefrom. Because claims 9-12 are the only challenged claims asserted by Patent Owner in the District Court litigation, Petitioners present grounds challenging those claims first.

### A. Ground 1: Claims 9-12 are Obvious over Fisk and Carnero and in Further View of the General Knowledge of a POSITA

#### 1. Motivation to Combine Fisk and Carnero

A POSITA would have been motivated to combine the teachings of Fisk and Carnero.

Both Fisk and Carnero are in the same field (*i.e.*, television distribution system

from satellite signals to individual users) and address variations of the same problem—namely, how to increase the number of desired television channels/programs that can be transmitted to individual users. Fisk and Carnero both describe receiving, selecting, combining, and distributing satellite and cable signals. Thus, a POSITA would look to these similar and related references to efficiently distribute received satellite signals, including television channels, to a multiple users. (Ex.1002-Schonfeld, ¶100.)

While Fisk describes receiving satellite signals for decoding and distributing to multiple receivers located in different rooms, Fisk provides minimal detail as to how satellite signals are received by the ODU prior to distribution over a LAN (Ex.1003-Fisk, 43, 45.) If Fisk’s server 56 receives signals directly from the satellite antenna without any intermediate signal processing, that would require server compatibility with hundreds of received programs on several cables, any number of those programs may be requested by receivers (LCUs), and thus would need to be accessible to server 56 for distribution. (Ex.1002-Schonfeld, ¶102.) A POSITA thus would have been motivated to ensure that the hundreds of available television channels in common satellite television services could be efficiently and economically made available to the LCUs in Fisk on demand. (Ex.1002-Schonfeld, ¶¶101-02.)

Carnero teaches a transponder signal selection process that would ensure

greater efficiency when implemented in the Fisk server. (Ex.1002-Schonfeld, ¶103.)

Under control of a microprocessor, Carnero's channel-specific converters each select a desired channel via tuning and filtering, frequency shift the channel to a set output frequency, and combine the output signals over a frequency spectrum sufficient for distribution over a single coaxial cable. A POSITA would have been motivated to employ the channel selection and combination system of Carnero to provide the input satellite signal for Fisk's signal distribution system via a server gateway. (*Id.*) Carnero's output simplifies how Fisk receives satellite signals for distribution. (*Id.*) Fisk's decoder needs only receive a single input (the output of Carnero), and needs only tune to a specific frequency for each desired program so that the program could be demultiplexed from a transponder signal for distribution to a requesting LCU, no matter the number of programs received by the satellite receiver prior to processing by Carnero's channel selector. (*Id.*) Thus, Carnero's solutions ensure that Fisk's decoder receives desired programs in a manageable quantity while maintaining fidelity. (*Id.*)

As Dr. Schonfeld further explains in his Declaration, Fisk's server 56 and decoder 58 and Carnero's signal processing unit 400 have similar architecture and functionality such that a skilled artisan would know to incorporate—with a reasonable expectation of success—the signal processing head 400 to improve the functionality of Fisk. (Ex.1002-Schonfeld, ¶104.) Moreover, as evidenced by the

AAPA, implementing the functionality recited in the challenged claims was conventional and the fundamental desire to efficiently distributing satellite television signals to multiple receivers in a multi-unit dwelling like a hotel or apartment and well within the general knowledge of a POSITA. (*See supra* §IV; Ex.1002-Schonfeld, ¶104.)

## **2. Independent Claim 9**

*9[pre] “A signal distribution system for distributing a plurality of low-noise amplifier and block converter (LNB) output signals from a satellite outdoor unit (ODU) comprising:”*

To the extent the preamble is limiting, it is separately taught by Fisk. Fisk “relates to distribution and networking of television, video and other signals” in a multi-dwelling unit. (Ex.1003-Fisk, 1:5-12.) Fisk’s video distribution system is shown in Figure 5.

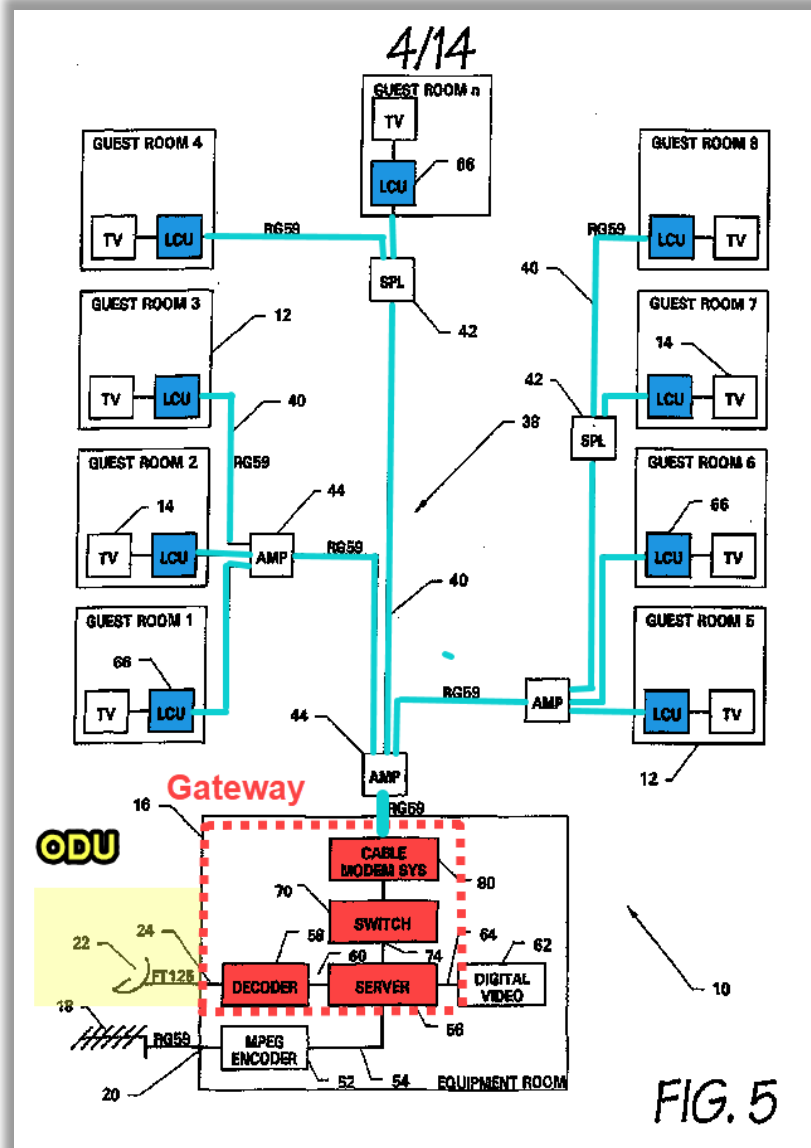


Figure 5 — Fisk’s Video Distribution System.

A “satellite receiver” 22 receives satellite television signals for processing and distribution. (Ex.1003-Fisk, at 10:23-11:3.) Fisk does not delve into the details of the satellite dish 22 and processing components (that make up the *ODU*), but it was well within the general knowledge of a POSITA at the time that analog television signals received by the satellite dish are passed through *LNBs* and then outputted at



an IF suitable for distribution over coaxial cable, such as the FT125 coaxial cable 24 described in Fisk. (Ex.1003-Fisk, 21:1-9; Ex.1002-Schonfeld, ¶106 (explaining that AAPA Petruzzelli and Williams, and the “conventional” system in ’715 patent Background, each teach these components); *see* §IX.A.1, *supra*.) Once Fisk’s server 56 receives the *LNB output signal*, it selects the video programs requested by the LCUs 66 in individual guest rooms, and outputs that program content together with other requested video content, including over-the-air cable and on-demand programming. (Ex.1003-Fisk, 21:1-29, 22:9-27.) Accordingly, Fisk meets this limitation.<sup>4</sup>

*9[a] “a gateway in communication with the ODU and at least one set top box (STB);”*

Fisk’s server 56 is included in the claimed *gateway* and acts as a mediator between the system’s antenna 22 (*ODU*) and LCUs 66 (*STBs*). (Ex.1002-Schonfeld, ¶111.) As Dr. Schonfeld explains, gateways were known in the art as network intermediaries, which is the role served by the server 56 of Fisk. (Ex.1002-Schonfeld, ¶¶72-74, 111.) The architecture of Fisk’s video distribution system using a gateway is illustrated in Figure 5 below.

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<sup>4</sup> Dr. Schonfeld additionally demonstrates how this limitation is taught by Carnero. (Schonfeld, ¶¶103-05.)

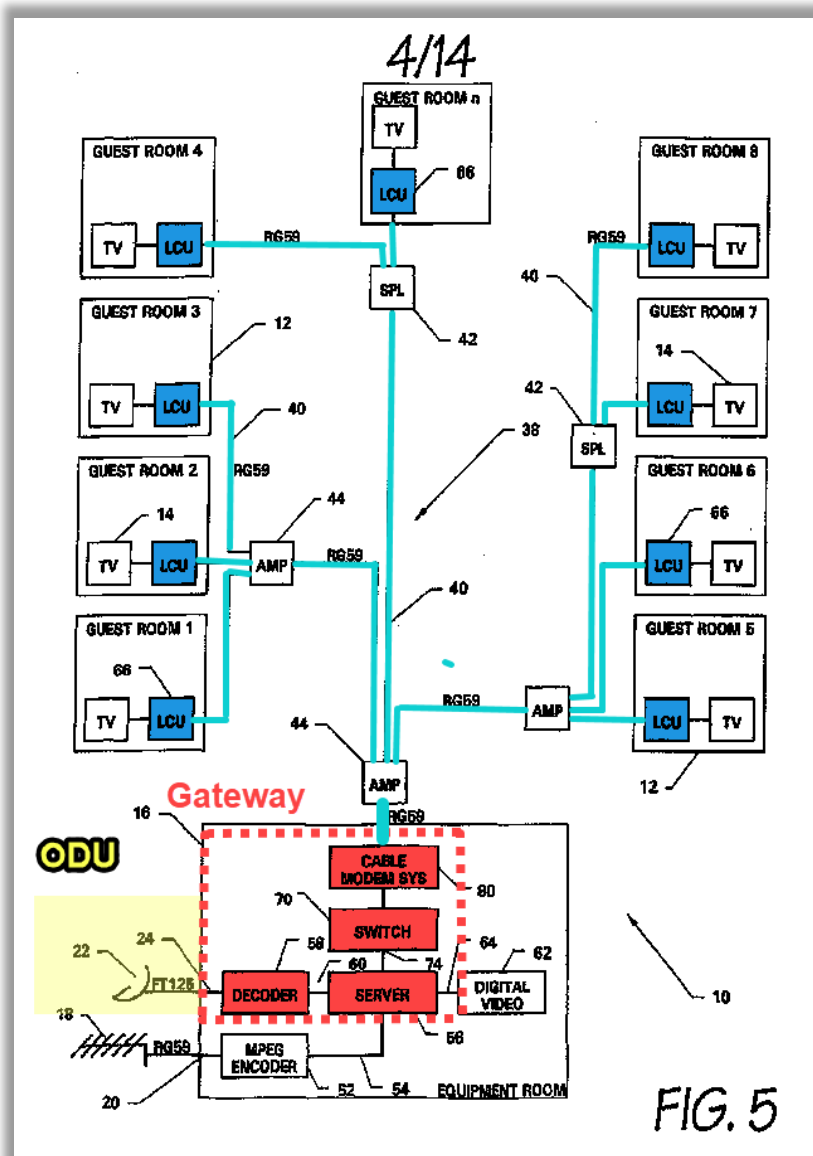


Figure 5 — Fisk's Video Distribution System.

Fisk's server 56 (part of the *gateway*) is in *communication with the ODU*. ODUs are essential components of any satellite or cable video broadcast system. (Ex.1002-Schonfeld, ¶112.) Indeed, the '715 patent admits that ODUs were well known and describes the ODU as typically including a dish antenna, down converters (LNBS), and a switch. (Ex.1001-'715 patent, 1:20-44; *see also* Ex.1002-

Schonfeld, ¶112 (discussing ODUs in AAPA).) A POSITA would have understood that Fisk’s ODU is antenna 22 and its associated components including LNBs that process signals via server 56 (part of the gateway) for distribution to the to the receivers (LCUs) via the server 54, and thus are in *communication with the gateway*. (Ex.1002-Schonfeld, ¶112.)

To the extent Patent Owner argues that “communication” requires bi-directional communication between the *ODU* and the *gateway*, a POSITA would have understood that Fisk’s server 56 would have communicated to the *ODU* to ensure, for example, that the *ODU* was only operational when the server 56 needed to distribute received satellite signals; otherwise, the *ODU* would have wasted energy amplifying and down-converting signals that were not needed. (Ex.1002-Schonfeld, ¶113.) Further, it would have been obvious to a POSITA in view of Carnero that server 56 could communicate with the *ODU* to provide information to the *ODU* to facilitate channel selection by the channel-specific converters of Carnero’s *ODU*. (*See supra* §IX.A.1, limitation 9[b].)

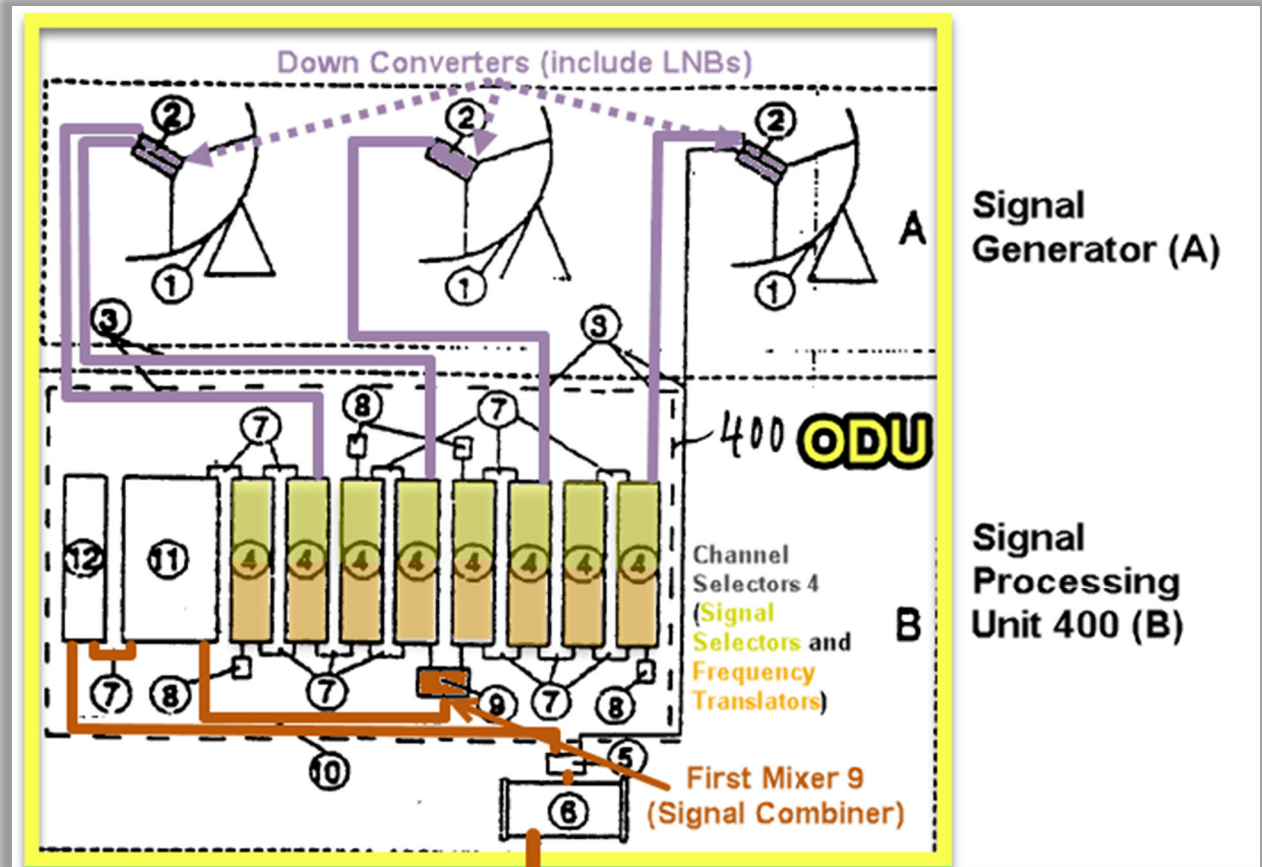
Fisk’s server 56 (part of the *gateway*) is also in *communication with at least one STB*. Fisk teaches that server 56 receives channel request information from its LCUs and distributes selected programs to the LCUs. (Ex.1003-Fisk, 4:1-11, 22:22-27.) Like the STBs described in the Background of the ’715 patent, Fisk’s LCUs “receive[] the video stream addressed to room 12, decode[] it, and suppl[y] the

resulting analogue video and audio signals to television 14”—and are therefore the claimed *STBs*. (Ex.1003-Fisk, 22:23-25, 33:15-24; *compared with* Ex.1001-’715 patent, 1:32-44.) To the extent the LCU of Fisk is not deemed to be an STB within the meaning of the claim term, it would have been obvious to modify Fisk’s system to include known STBs which were readily available (as opposed to the LCUs, which did not exist separate from the disclosure of Fisk) and compatible with the remaining signal distribution system of Fisk. (Schonfeld ¶114.)

Thus, Fisk discloses this limitation, or it otherwise would have been obvious in view of Fisk and Carnero and the general knowledge of a POSITA.

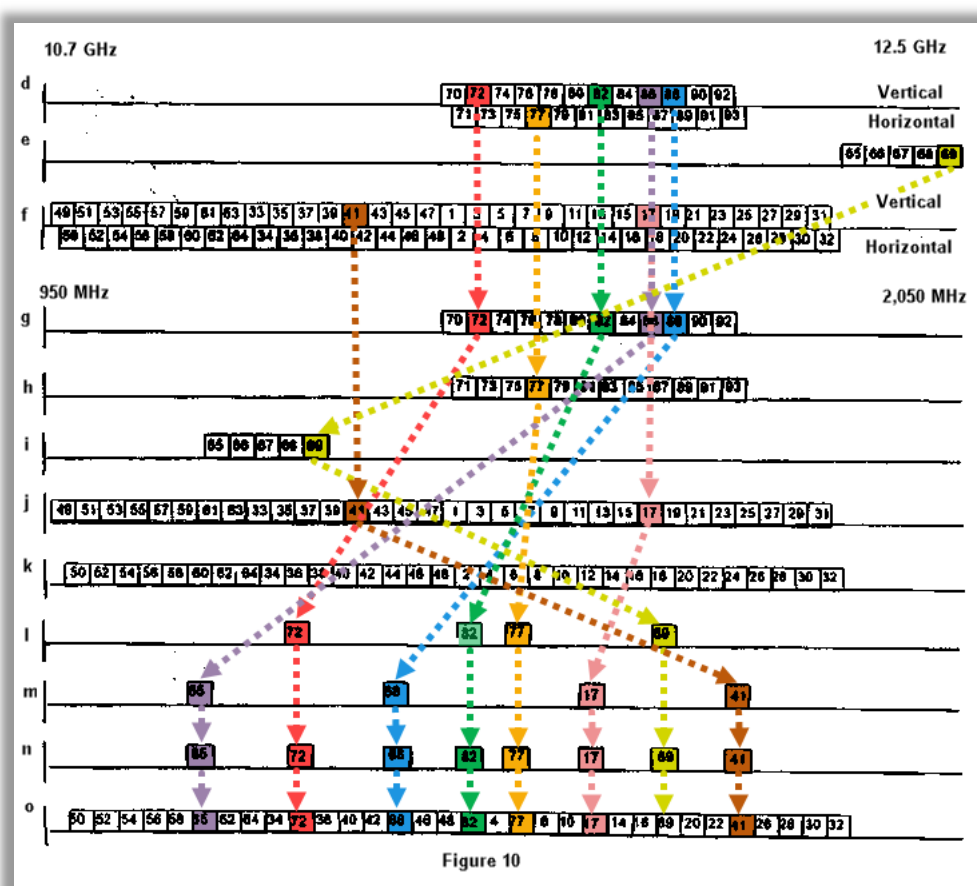
*9[b] “a signal selector that receives a plurality of broadband LNB signals comprising a plurality of transponder signals, the signal selector is responsive to transponder select information transmitted by the gateway and selects a plurality of transponder signals from at least one broadband LNB signal based on the transponder select information;”*

Together, the combination of Fisk and Carnero renders this limitation obvious. To begin, Carnero’s signal processing unit 400 is a *signal selector* that *receives a plurality of broadband LNB signals comprising a plurality of transponder signals*. As depicted by Carnero’s Figure 3, signal processing unit 400 receives a *plurality* of broadband LNB signals from three LNBs 2 via cables 3.



**Figure 3 — LNB Outputs into Signal Processing Unit 400.**

Channel-specific converters 4 of the signal processing unit 400 are “connected at [their] input[s], via a cable 3, to a down converter (LNA/LNB) 2” and receive the output signal (*e.g.*, those on lines “g” - “k” of Figure 10). (Ex.1004-Carnero, 4; Ex.1002-Schonfeld, ¶117.) Finally, these broadband LNB outputs contain a plurality of transponder signals in the channels of Carnero (Ex.1002-Schonfeld, ¶117.) Line “d” of Figure 10, for example, shows 12 channels (transponder signals) on one broadband LNB output. (*See id.*)



**Figure 10 — Process to Create a Combined Signal from Selected Channels.**

Limitation 9[b] further requires that the *signal selector is responsive to transponder select information transmitted by the gateway*. The combined system of Carnero and Fisk meets this portion of limitation 9[b].

Carnero’s channel-specific converters 4 have an associated microprocessor that receives information from a “converter-external input device” to allow it to select a channel from the input LNB broadband signal. The input device may be “a remote-controlled transmitter” to permit transmitting transponder selection information. (Ex.1004-Carnero, 3:48-53, 8:23-25; Ex.1002-Schonfeld, ¶119.)

Carnero uses this input information to identify the transponder channel containing the requested television program and thus is the claimed *transponder select information*. (Ex.1002-Schonfeld, ¶119.) However, Carnero does not specify the source of its input. In the combined system of Fisk and Carnero, the source (“transponder select information”) to Carnero signal processing unit 400 is provided by Fisk’s server 56 (gateway) based on requests for programs it receives from the LCUs, as discussed above in limitation 9[a] and below regarding the remainder of this limitation. (*Id.*)

Lastly, limitation 9[b] requires that the signal selector *selects a plurality of transponder signals from at least one broadband LNB signal based on the transponder select information*. Fisk’s server 56 receives requests from the LCUs for specific satellite television programs. In the combined system of Fisk and Carnero, the server of Fisk directs the microprocessor of Carnero to select from the received broadband LNB signals each transponder signal containing the requested television programs. (Ex.1002-Schonfeld, ¶¶120-121.) This instruction allows Carnero’s signal selector unit 400 to select a plurality of transponder signals having the requested television programs from at least one broadband LNB signal, thus the selection is based on the *transponder select information* provided by the server. (*Id.*) As discussed above in §IX.A.1 and in Dr. Schonfeld’s Declaration, a POSITA would have been motivated to combine Fisk and Carnero in this way and would have had

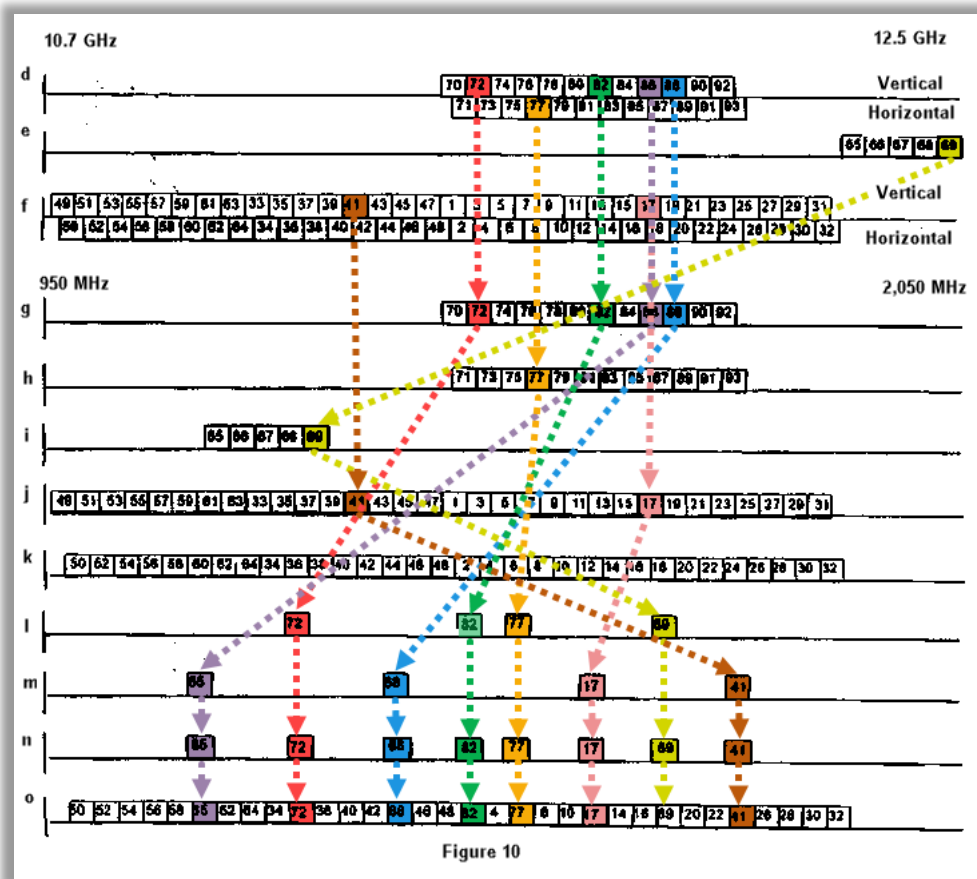
a reasonable expectation of success in so doing. (*Id.*) Accordingly, the combination of Fisk and Carnero renders limitation 9[b] obvious.

*9[c] “a frequency translator coupled to the signal selector that is capable of shifting the selected transponder signals to new carrier frequencies to produce RF signals; and”*

Carnero’s signal processing unit 400 includes a *frequency translator* as recited in limitation 9[c]. After Carnero’s channel-specific converters 4 complete channel selection via the tuned bandpass filter, the signal is further processed culminating in application of mixer 52, local oscillator 53, and filter 55. (Ex.1004-Carnero, 7:35-59.) The selected channel signal is mixed “with a signal formed by a local oscillator (OL) 53,” the local oscillator signal is controlled by the microprocessor, and then filtered so that the resulting signal “carries the signal of the frequency-converted channel.” (Ex.1004-Carnero, 7:55-59, 9:36-47; Ex.1002-Schonfeld, ¶123.)

As Dr. Schonfeld explains, a POSITA would have understood how to use a mixer, local oscillator and filter to “shift” or “translate” a transponder channel to a specific predetermined frequency as taught by Carnero and shown in Figure 10. These were routine signal processing components used for the routine task of frequency-shifting signals. (Ex.1004-Carnero, 3:3-5, 3:19-21, 7:27-30; Ex.1002-Schonfeld, ¶124 (*citing* AAPA Petruzzelli); §IX.A.1, *supra.*)





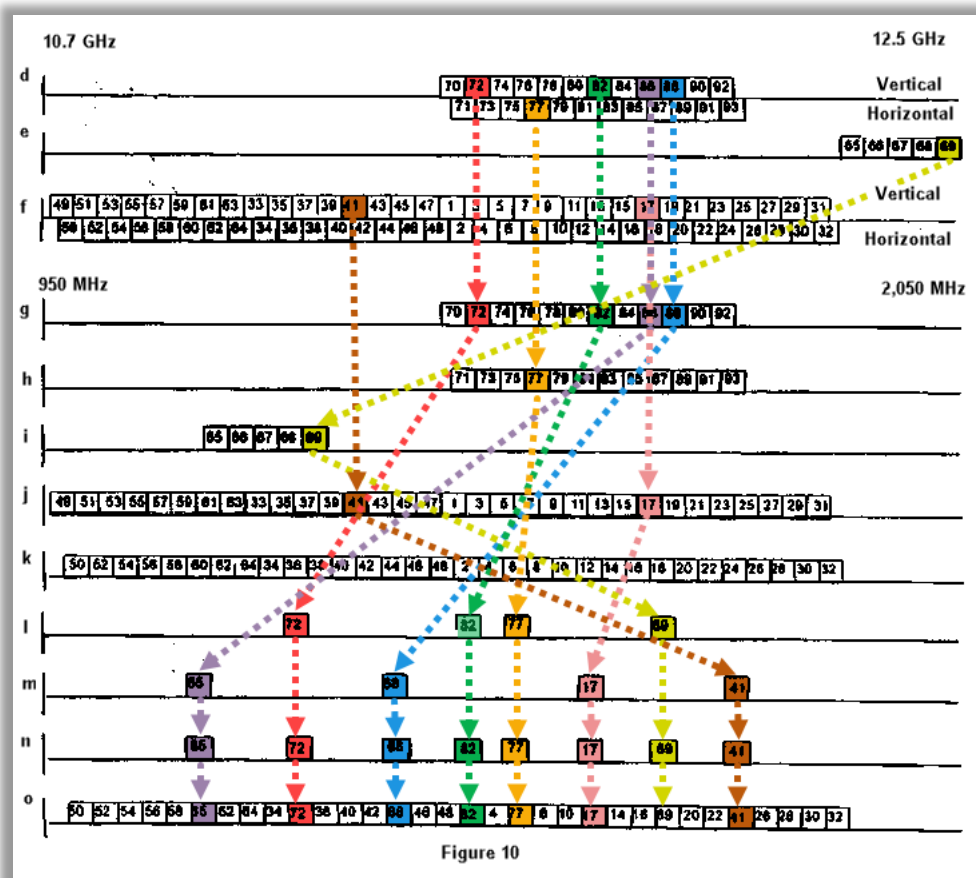
**Figure 10 - Process to Create a Combined Signal from Selected, Frequency-Translated Channels.**

In sum, Carnero discloses this limitation. (*See also* Ex.1002-Schonfeld, ¶¶126-28.)

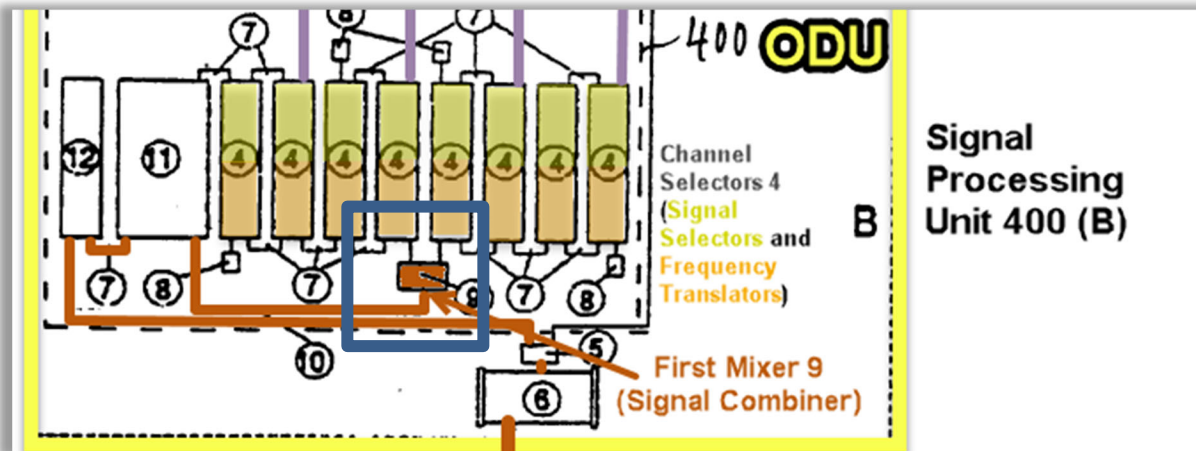
9[d] “a signal combiner coupled to at least one frequency translator capable of combining at least two RF signals to produce a composite signal;”

Carnero discloses a *signal combiner* as recited in limitation 9[d]. Carnero teaches a variety of signal combiners, resulting in a signal sent on “a single distribution cable 13, on which all channels, that are FM modulated, are transmitted.” (Ex.1004-Carnero, 7:20-22, Fig. 9.)

Carnero teaches that the outputs of a plurality of channel-specific converters 4 are combined into a composite signal. Referring to Figure 10, lines “g”-“j” represent the input signals of four distinct converter modules, comprising a plurality of the channel-specific selectors 4. (Ex.1004-Carnero, 9:42-45; Schonfeld ¶¶129-30.)



**Figure 10 — Process to Create a Combined Signal from Selected, Frequency-Translated Channels.**



**Figure 3 — Channel Selectors 4 Coupled to First Mixer 9.**

Dr. Schonfeld explains why a POSITA would have understood Figures 9 and 10 as disclosing a signal combiner (mixer) that combines at least two RF signals, one or more from each converter module. (Ex.1004-Carnero, 3:39-42, 8:42-44, 9:42-45; Ex.1002-Schonfeld, ¶¶131-32.) Therefore, Carnero teaches this limitation.

*9[e] “wherein the modulation of the composite signal is the same as the modulation of the broadband LNB signals and”*

Carnero teaches that the signals distributed through the single cable 13 is—at least in part—“FM modulated” channels. (Ex.1004-Carnero, 7:20-22.) A POSITA would have understood Carnero’s reference to signals being “FM modulated” to mean that the *composite signal* is the same modulation as the *broadband LNB signals* prior to their input into the converter modules. (Ex.1002-Schonfeld, ¶133.).

Further, a POSITA would have understood that none of the signal processing taught by Carnero would involve changing the modulation of the composite signal

or any component of that composite. (Ex.1002-Schonfeld, ¶134.) There is no express teaching of remodulation in Carnero, and Carnero’s “input side” (*broadband LNB signals*) and “output side” (*composite signal*) transponder signal frequency range and bandwidth appearing to be the same is consistent with the modulation being the same. (*Id.*) Accordingly, a POSITA would understand the *modulation of the composite signal is the same as the modulation of the broadband LNB signal* prior to channel selection. (*Id.*) Carnero teaches limitation 9[e].

9[f] “*wherein the composite signal is transmitted to the gateway*”

Here, the combination of Carnero and Fisk renders limitation 9[f] obvious. In the combined system, Carnero transmits, and the server of Fisk receives, all requested satellite television signals via coaxial cable FT125. *See supra* §IX.A.1. The signal—as discussed above regarding limitations 9[d] and 9[e]—is the claimed composite signal. (Ex.1004-Carnero, 8:26-31; Ex.1003-Fisk, 41:6-42:6; Ex.1002-Schonfeld, ¶¶135.)

9[g] “*and the gateway receives the composite signal, decodes specific programs, and distributes the programs over a digital local area network (LAN) to STBs.*”

Fisk discloses this limitation. As discussed above, at least in limitation 9[f] and §IX.A.1, Fisk’s server and decoder (part of the *gateway*) *receives* selected satellite television programs in a *composite signal* output from Carnero’s signal processing device. Decoder/descrambler 58 receives an input from the ODU—here,

the *composite signal*. (Ex.1003-Fisk, 41:7-11, 24:16-18.) The decoder/descrambler 58 and server 56 are part of the *gateway* and may be integrated in a single hardware. (Ex.1003-Fisk, 41:7-11.)

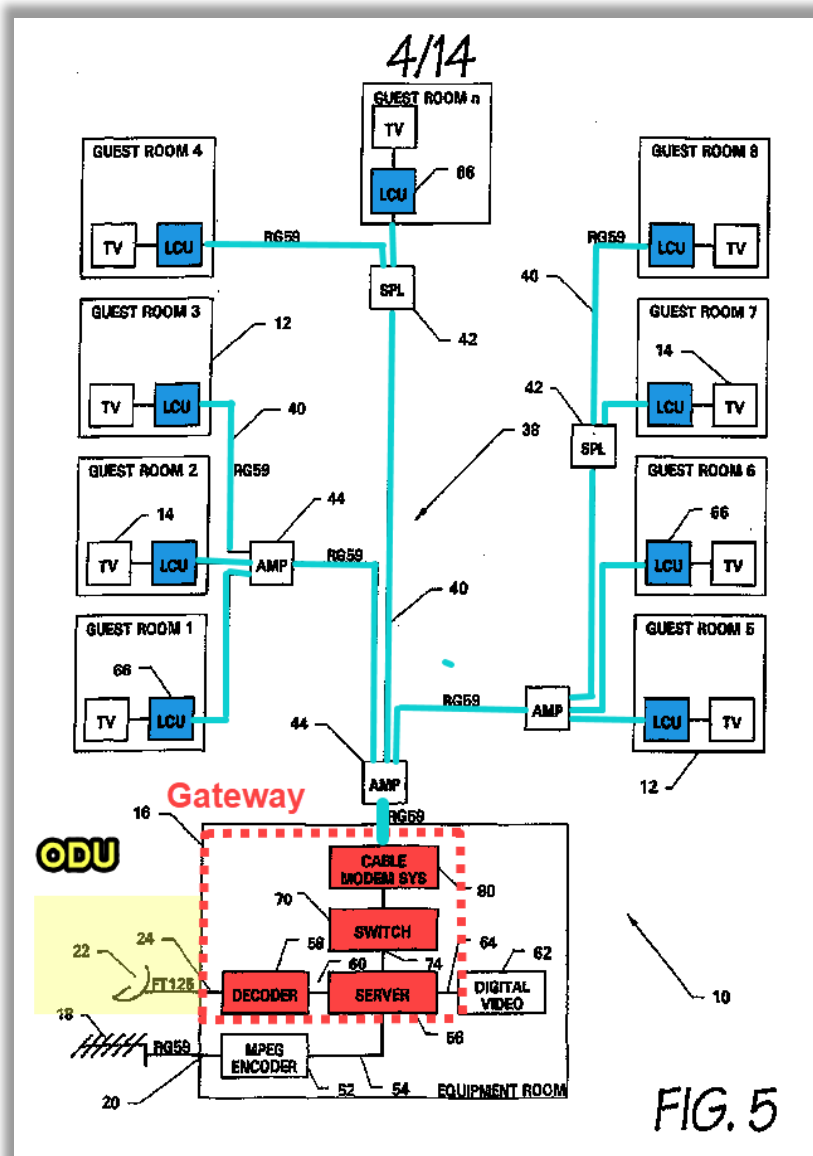
Fisk’s decoder *decodes specific* received satellite television *programs* prior to distribution. “Decode” is a broad term that refers to various data operations. (Ex.1002-Schonfeld, ¶137.) For example, an IRD—or integrated receiver *decoder*—can descramble a received signal, demodulate it, and demultiplex a transponder signal to obtain a specific video stream, for example, an MPEG video of a television program—each of these is a well-known form of decoding in the satellite signal distribution and processing context. (*Id.* (discussing AAPA Williams).) The ’715 patent does not specify what kind of decoding is performed by its gateway, declaring only that it “decodes specific programs” before “distribut[ing] the program information in packetized MPEG over a digital local area network (LAN) 1170 to STBs.” (Ex.1001-’715 patent, 9:44-48; Ex.1002-Schonfeld, ¶138.)

Fisk teaches that tuning, descrambling, and demultiplexing is performed by the decoder, which utilizes either IRDs or “satellite receiver cards” having similar functionality to IRDs, and would be understood by a POSITA as being a form of “decoding.” (Fisk 11:3-5, 21:5-9, 44:10-45:1; Ex.1002-Schonfeld, ¶139.)

Fisk teaches descrambling by the decoder as part of processing received satellite television signals. (Ex.1003-Fisk, 42:6-45:1; Ex.1002-Schonfeld, ¶140.)

Fisk describes demodulating received satellite signals. (*Id.* at 57 (“the receiving means includes a satellite receiver ... and means for demodulating the RF signal.”).) And, as the ’715 patent describes, Fisk demultiplexes to “extract[] a specific video program.” (Ex.1001-’715 patent, 9:15-18; Ex.1003-Fisk, 57 (“means for descrambling and demultiplexing the signal for at least one of the programmes ...”), 22:16-18 (“decoder/descrambler 58 [] provides digital MPEG video streams 60 for the received satellite television programmes ...”).)

The *digital local area network* is shown below in Figure 5 of Fisk.



**Figure 5 — Fisk’s Video Distribution System (Digital LAN is Light Blue).**

The server of Fisk then distributes the specific programs over a digital local area network, for example, as shown in Figure 5. (Ex.1003-Fisk, 22:9-22, 40:4-9; Ex.1002-Schonfeld, ¶142.) Accordingly, the combination of Carnero and Fisk renders claim 9 obvious.

### 3. Dependent Claim 10

*The signal distribution system of claim 9 wherein a translation table maps original channel locations on the selector input to new channel locations on the selector output.*

Carnero teaches that its channel-specific converters 4 are assigned a “predeterminable input channel frequency” corresponding to the frequency of a transponder channel of a transponder signal to be selected from the broadband LNB signal, and a “predeterminable output channel frequency” corresponding to the frequency at which Carnero’s channel-specific converters will output the selected channel. (Ex.1004-Carnero, 3:48-53.) Carnero’s channel-specific converters 4 operate under control of microprocessors 49, and information regarding the input and output frequencies is provided to the microprocessor 49 by an input unit. (Ex.1004-Carnero, 8:10-25, Claims 6-7; Ex.1002-Schonfeld, ¶143.)

In the combined system of Carnero and Fisk, the input unit is associated with Fisk’s server which determines, based on requests by LCUs, which channels are requested and transmits information about those channels to Carnero’s channel-specific converters. Fisk’s servers would store this information in a management database that “holds information specific to the server 56” including “the channels that have been assigned.” (Ex.1003-Fisk, 4:10-19.)

In view of these teachings, Dr. Schonfeld explains that it would have been obvious to a POSITA to store a *translation table mapping original channel locations*



*on the selector input to new channel locations on the selector output.* In order for the server of Fisk to be able to assign channels received by Carnero's ODU, it would have been obvious to a POSITA to store information regarding the frequencies on which specific channels are being input to Carnero's channel-specific converters on the down-converted LNB broadband signals (to ensure the converters select the correct channels), and also the corresponding frequencies on which those channels will be output to the server (so that the server can differentiate and correctly distribute programs from those channels to the correct LCUs). (Ex.1002-Schonfeld, ¶145.) Thus, the combination of Fisk and Carnero renders claim 10 obvious.

#### **4. Dependent Claim 11**

*The signal distribution system of claim 10 wherein the translation table is maintained by a controller located in the gateway and the translation table is communicated to devices in the network.*

This claim is obvious in view of the combined system of Carnero and Fisk. As discussed in claim 10, it would have been obvious for Fisk's server to maintain the translation table on its configuration management database; without a table mapping input and output frequencies, the server would be unable to ensure that it correctly distributes the requested programs to the LCUs. And implementing the claimed translation table would have involved applying known techniques in a known way to achieve a predictable result. *See supra* claim 10.

Further, as discussed above in claim 10, it would have been necessary for the table to be communicated by the server of Fisk both to the ODU of Carnero (to facilitate transponder selection) and the LCUs (to permit extraction of the requested program from the selected transponder signal). (See Ex.1002-Schonfeld, ¶¶145, 147-48.) Thus, the combination of Fisk and Carnero renders claim 11 obvious.

### **5. Dependent Claim 12**

*The signal distribution system of claim 10 wherein the translation table is maintained by a controller located in the ODU and the translation table is communicated to devices in the network.*

The combination of Carnero and Fisk renders claim 12 obvious. As discussed above in claim 10, maintaining a translation table would have been necessary to effectuate the signal distribution taught in Fisk. While maintaining it at the server and communicating the table to the ODU and LCUs would have been obvious and leveraged existing server storage and processing (see claims 10-11), a POSITA would have known that an obvious alternative design would have been for the table to be managed by a controller located in the ODU of Carnero and communicated to the server and LCUs. As explained by Dr. Schonfeld, Fisk's server is indifferent to the frequency at which it receives a particular channel, so long as it knows on which the channels corresponding to requested programs will be output to the server (so that the server can differentiate and correctly distribute programs from those

channels to the correct LCUs). (Ex.1002-Schonfeld, ¶¶149-50.) Thus, the combination of Fisk and Carnero renders claim 12 obvious.

**B. Ground 2: Claims 9-12 are Obvious over Green and Davis and in further view of the General Knowledge of a POSITA**

**1. Motivation to Combine Green and Davis**

A POSITA would have been motivated to combine the teachings of Green and Davis. Both references are in the same field of distributing satellite television channels to a plurality of receivers. (Ex.1005-Green, Abstract; Ex.1006-Davis, Abstract.) Further, both references discuss aspects of receiving, selecting, combining, and distributing satellite signals and sought to solve the same problem of efficiently distributing satellite signals bearing in mind that existing houses and MDUs were typically wired to receive, at most, one cable in each room. (Ex.1005-Green, 11:7-16; Ex.1006-Davis, ¶12.) Thus, a POSITA would look to both references to distribute satellite signals more efficiently to a plurality of users.

A POSITA would have recognized that Green poses scalability issues where there is a desire to increase the number of transponder signals distributed or the number of dwellings provisioned to receive the satellite signals, and Davis expressly recognizes that adding cables to a building “can be quite complex, expensive and time consuming.” (Ex.1005-Green, 10:44-64, 11:7-16, 11:28-53; Ex.1006-Davis, ¶10.) As Dr. Schonfeld explains, a skilled artisan would have looked to Davis’s

interface device (*gateway*) to solve these problems. (Ex.1002-Schonfeld, ¶¶152-56.) For example, Davis teaches that “multiple satellite services can be implemented in a particular site 30 without requiring multiple cables running throughout the site 30,” a known and useful purpose for gateways in network contexts. (Ex.1006-Davis, ¶51; Schonfeld ¶¶72-74, 155.) In addition, the gateway enables “point-to-point communications” over a LAN, whereby the gateway “transmit[s] packets of the baseband signal directly to the IDU 32 for which the signal is intended,” obviating the need for “a processor for examining the received packet and determining whether the data in the packet is intended for that IDU 32, or for another” or the tuning functionality traditionally required in STBs (Ex.1006-Davis, ¶47, Schonfeld ¶155.)

Accordingly, a skilled artisan would have been motivated to modify Green’s system to incorporate Davis’s interface device and LAN. Davis’s interface device would receive the multiplexed signals from Green’s transponder combiner 114, “convert[] [them] into a digital baseband signal,” “assemble[] the data into message packets, determine[] the destination address of each packet,” and then “transmit[] them to the LAN.” (Ex.1006-Davis, ¶¶46-47; Schonfeld ¶156.) Finally, as evidenced by the AAPA, implementing the functionality recited in the challenged claims was and well within the general knowledge of a POSITA desiring to efficiently distribute satellite television signals to receivers in a multi-unit dwelling. (*See supra* §IV.)

## 2. Independent Claim 9

9[pre] “A signal distribution system . . . :”

To the extent the preamble is limiting, it is taught by Green. Green includes one or more antennas 102 comprising an *outdoor unit* and including “a conventional low-noise amplifier (LNA) and block converter (LNB).” (Ex.1005-Green, 9:45-50; Ex.1002-Schonfeld, ¶157.)

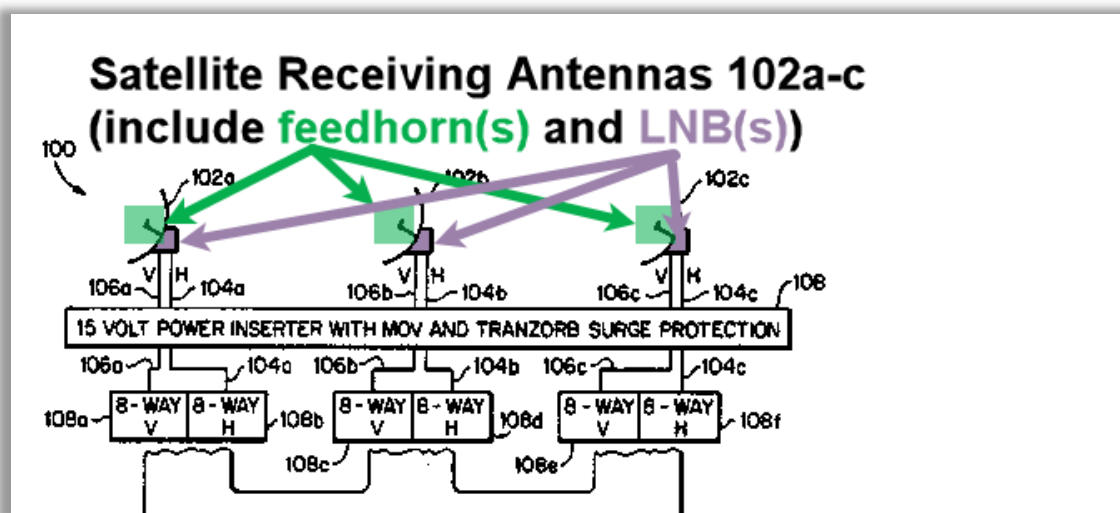


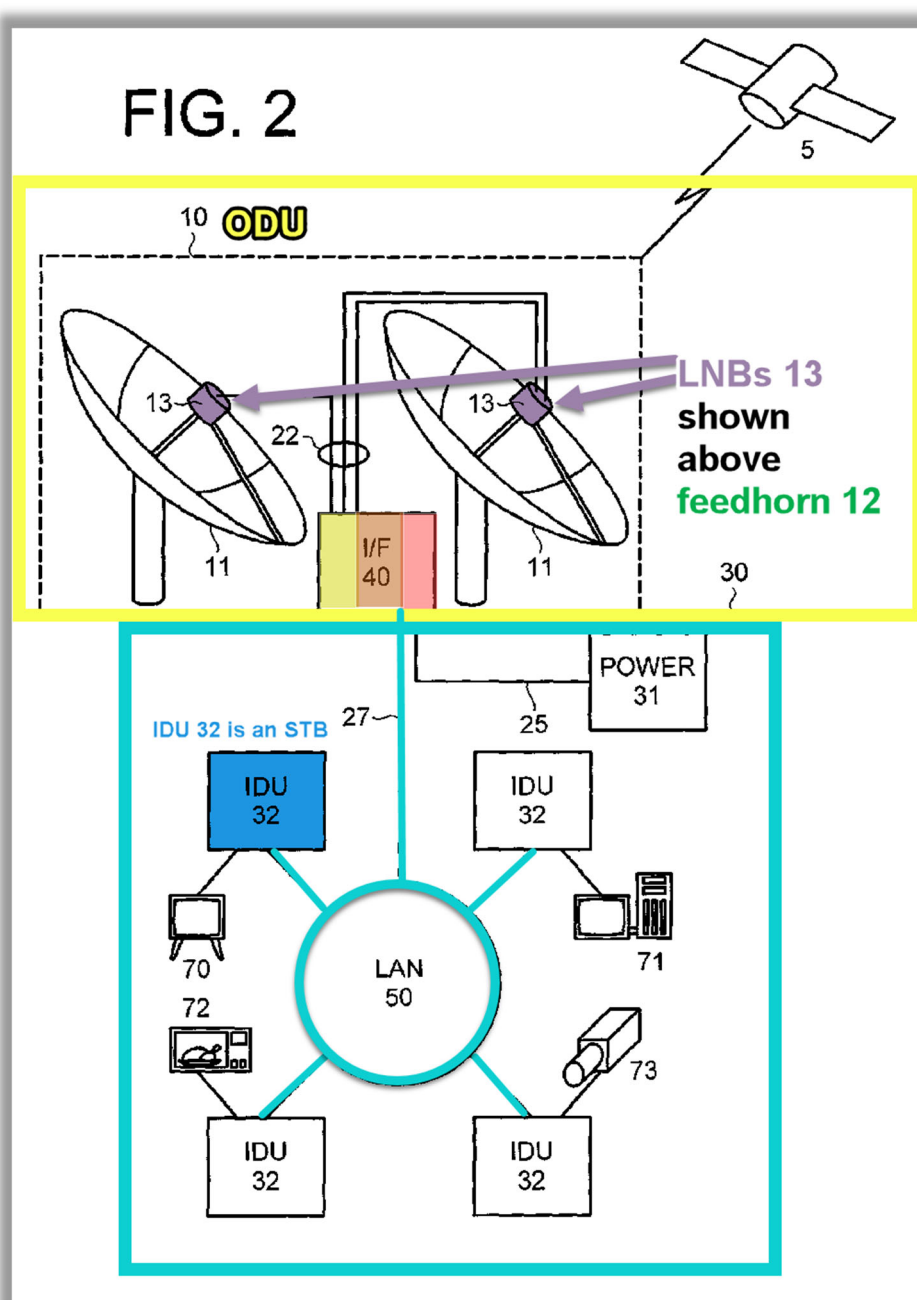
Figure 1A — Green’s Satellite Receivers 102a-c Contain LNBs.

Green’s system distributes select *output signals* from the *LNB* throughout a multi-dwelling unit. (Ex.1005-Green, 1:7-20, 9:51-10:63; Ex.1002-Schonfeld, ¶157.) Thus, Green discloses the preamble.

9[a] “a gateway . . . ;”

Davis teaches interface device 40 (*gateway*) distributing “satellite signals received from an outdoor unit (ODU) to a plurality of indoor units (IDUs) connected

to a local area network,” a common role for a gateway. (Ex.1006-Davis, Abstract; Schonfeld ¶161.) Davis’s IDUs 32 are “receiver[s] or [] transceiver[s] allowing a user to receive and/or transmit data over the satellite network,” such as integrated receiver decoders (*STBs*). (Ex.1006-Davis, ¶¶5, 36) Interface device 40 transmits received satellite signals to the IDUs via the LAN (Ex.1006-Davis, ¶47), receives request information from the IDUs for content (Ex.1006-Davis, ¶¶55-56), and is therefore *in communication with IDUs/STBs*. (Ex.1006-Davis, ¶39; Ex.1002-Schonfeld, ¶161.) Interface device 40 receives satellite signals from the ODU 10 for communication to the IDUs (Ex.1006-Davis, ¶45) and communicates requests to the antenna 11 (Ex.1006-Davis, ¶¶55-56), and thus is in *communication with the ODU*. (Ex.1002-Schonfeld, ¶161.) Figure 2 of Davis depicts the topology Davis’s system and depicts communication between the ODU 10, interface device 40, and plurality of IDUs 32.



**Figure 2 - Davis's Interface Device in Communication with Receivers / IDUs.**

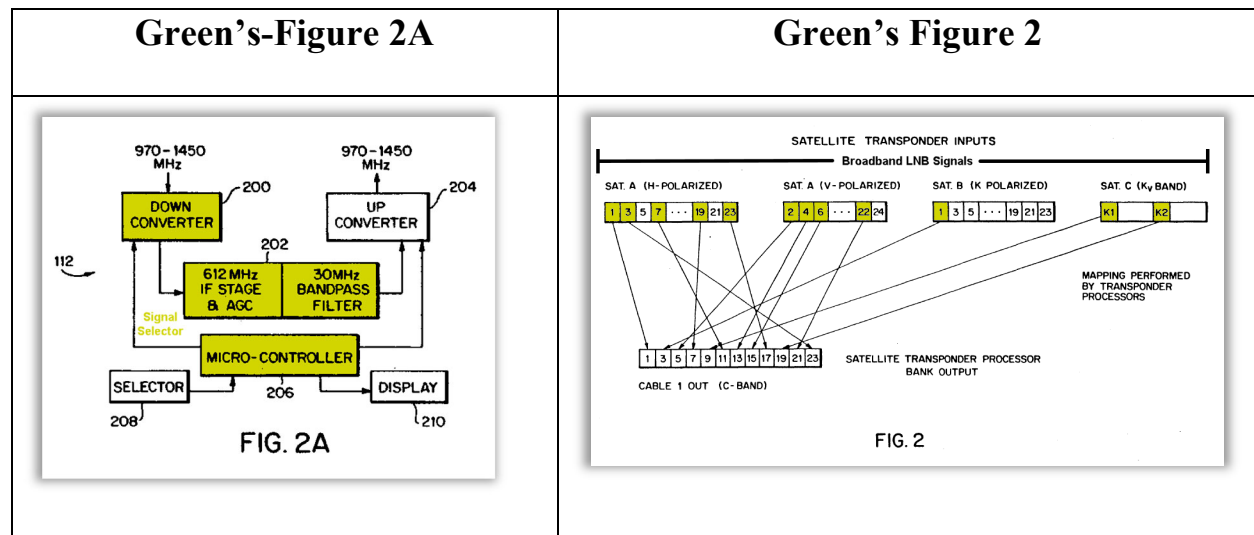
Although Figure 2 includes interface device 40 within the box delineating the ODU 10, Davis makes clear the IDU may be “located inside” a dwelling “relatively

close to the ODU.” (Ex.1006-Davis, ¶75; Ex.1002-Schonfeld, ¶162.) Davis discloses this limitation.

9[b] “a signal selector . . .;”

The combined system of Green and Davis renders this limitation obvious.

Green discloses a signal selector that receives a plurality of *broadband LNB signals comprising a plurality of transponder signals*. Each LNB of Green receives a polarized signal containing a plurality of transponder signals from a satellite in the C- or Ku-bands, and down-converts the signal into the range of 900-1500 MHz. (Ex.1005-Green, 9:47-10:7.) Each polarization is output separately as a broadband signal 104 and 106 and covers a broad range of frequencies. These *broadband LNB signals* are fed into each bank 113 of transponder processors 112 which performs *signal selection*. (Ex.1005-Green, 9:47-10:7, 12:11-27; Ex.1002-Schonfeld, ¶164.)





Green also discloses *selecting a plurality of transponder signals from at least one broadband LNB signal*. Each transponder processor 112 takes its received block of transponder signals in the broadband LNB signal and “produces as an output a single satellite transponder FM television signal.” (Ex.1005-Green, 12:11-27.) As Dr. Schonfeld explains, Green’s transponder signal selection process is shown in Figures 2A and 2. (Ex.1005-Green, 8:53-54, 12:11-13:2; Ex.1002-Schonfeld, ¶¶165-66.)

Limitation 9[b] further requires that the signal selection is made in *response to transponder select information* from the gateway. While Green discloses signal selection (as discussed in the preceding paragraphs), it does not do so in response to *transponder select information*. Green’s STBs select entire blocks of transponder signals (delivered on separate cables) rather than individual transponder signals. (Ex.1002-Schonfeld, ¶167.) But in the combined system of Green and Davis, it would have been obvious to a POSITA that Green’s transponder processors would select *transponder signals based on the transponder select information* from IDUs (STBs) by way of interface device 40. The benefit of Green’s transponder processors is that they provide a subset of all received transponder signals for distribution to the STBs. As Dr. Schonfeld details, a POSITA would understand that Green’s system would be even more efficient if it selected only those transponder signals bearing the viewer’s desired programs. This would significantly reduce the number of

transponder signals processed and transmitted. (Schonfeld ¶168.)

Davis explicitly teaches that IDUs (*e.g.*, STBs) transmit requests to the ODU “over the same cable connection” as the IDU receives transponder signals. (Ex.1006-Davis, ¶55.) Further, as Dr. Schonfeld explains, STBs transmitting information used to select transponder signals was known in the art and used to make sure that STBs receive transponder channels bearing desired programs (including in Fisk, Williams ’873, and the ’576 Reexamination Art). (Ex.1002-Schonfeld, ¶224; *supra* §IV.) In view of Davis’s teaching, the prior art, and a desire to improve the efficiency of Green as discussed above, a POSITA would have been motivated to modify Green’s transponder processors to utilize *transponder select information* to determine which transponder signals to select, and to modify Green’s STBs to transmit *transponder select information* for selecting content desired by the STB, as taught regarding Davis’s IDUs, instead of transmitting information for selecting entire blocks of *broadband LNB signals*. (Schonfeld ¶¶168-70.)

9[c] “a *frequency translator* . . . ; and”

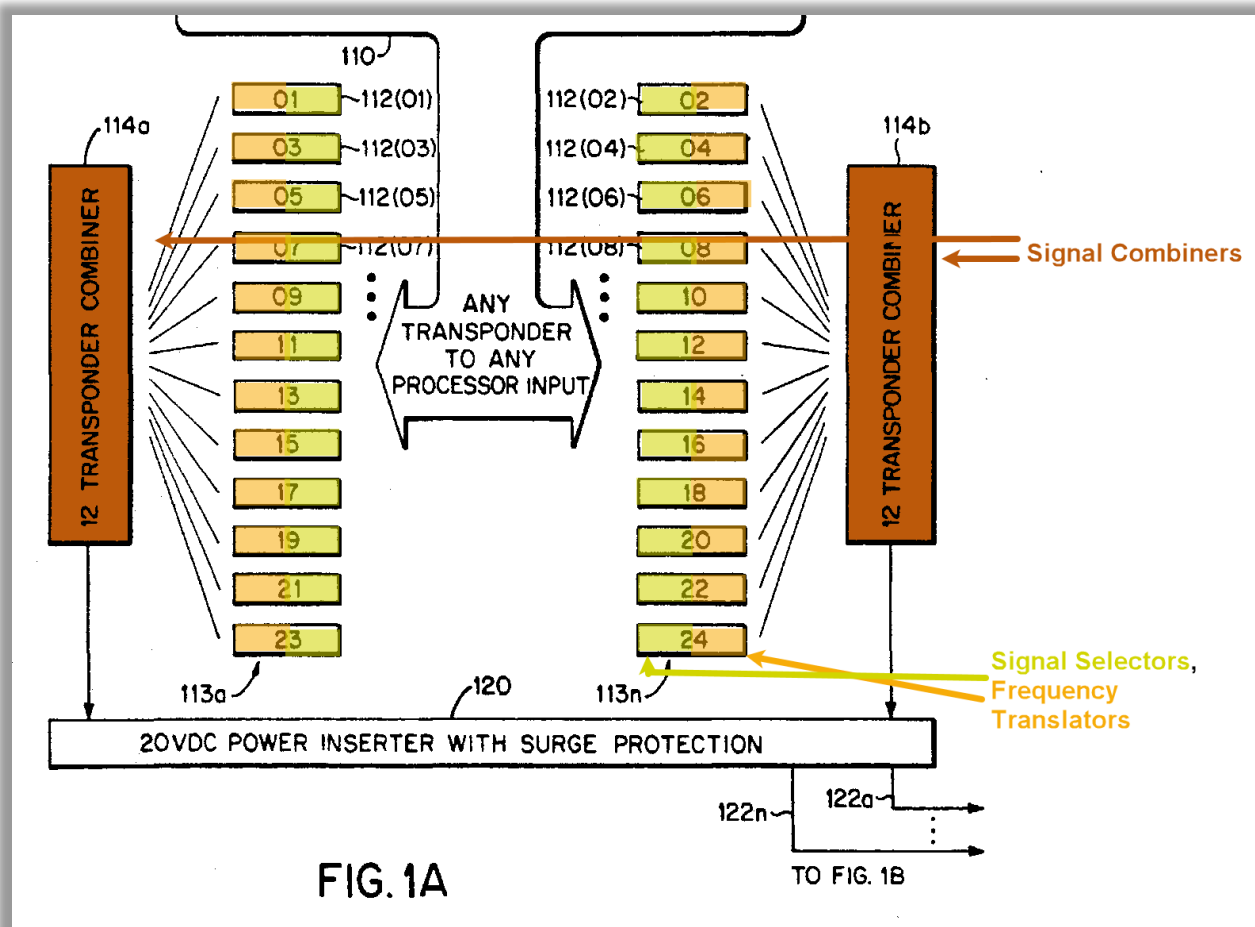
Green discloses a *frequency translator* as recited in limitation 9[c].

As Dr. Schonfeld explains, transponder processor 112 of Green “performs a selected frequency ‘mapping’ or conversion process” on a selected transponder signal “and produces a resulting frequency converted signal at its output.” (Ex.1005-Green, 10:4-12; Ex.1002-Schonfeld, ¶171.) The output signal is “within the range of

900-1500 MHz” (an *RF signal*) and at a frequency “different” from the transponder signal’s input frequency. (Ex.1005-Green, 12:50-64, Claim 5; Ex.1002-Schonfeld, ¶¶171-72.)

9[d] “a signal combiner . . . ;”

Green discloses the claimed *signal combiner*. Green teaches that the output of each transponder selector 112 is fed into a 12-transponder combiner 114. (Ex.1005-Green, 10:12-15; Ex.1002-Schonfeld, ¶173.)



**Figure 1A - Green’s Transponder Processors are Coupled to a Transponder Combiner.**

Specifically, the signals provided by each transponder selector 112 are *RF signals* with different center frequencies in the 900-1500 MHz range thus when combined by the 12 transponder combiner, they “look[]” (in terms of frequency range, format, mode and other parameters) as if [they] might have been outputted directly by a single one of satellite antennas 102.” (Ex.1005-Green, 10:20-34.) In other words, the signals are combined into a single *composite signal*, as shown by the lines emanating from the combiners 114a and 114b in Figure 1A. (Ex.1002-Schonfeld, ¶173.)

9[e] “*wherein the modulation . . . is the same . . . and*”

Green teaches that in the process of altering the frequency of the selected transponder signals (*i.e.*, down-shifting and then up-shifting), it does so “without demodulating said selected signals.” (Ex.1005-Green, Claims 1-2.) Green explains that the composite signal output from the 12-transponder combiner 114 appears as if it were an LNB output in terms of “frequency range, format, mode and other parameters.” (Ex.1005-Green, 10:22-28; Ex.1002-Schonfeld, ¶175.) Accordingly, Green discloses this limitation.

9[f] “*wherein the composite signal is transmitted to the gateway*”

The combined system of Green and Davis renders this limitation obvious. In Davis, interface device 40 receives radio frequency (RF) signals from the outputs of

the relevant LNBs. (Ex.1006-Davis, ¶13.) In the combined system, interface device 40 is performing signal processing and facilitating distribution of selected satellite signals to various STBs via a local area network as described in Davis. (Ex.1006-Davis, ¶13; Schonfeld ¶171.) To perform signal processing and distribute the selected signals, interface device 40 receives the *composite signal* from the 12-transponder combiner 114, and thus it would need to be *transmitted* to the interface device 40 (*gateway*). (*Id.*)

9[g] “*and the gateway receives . . .*”

The combined system of Green and Davis renders limitation 9[g] obvious.

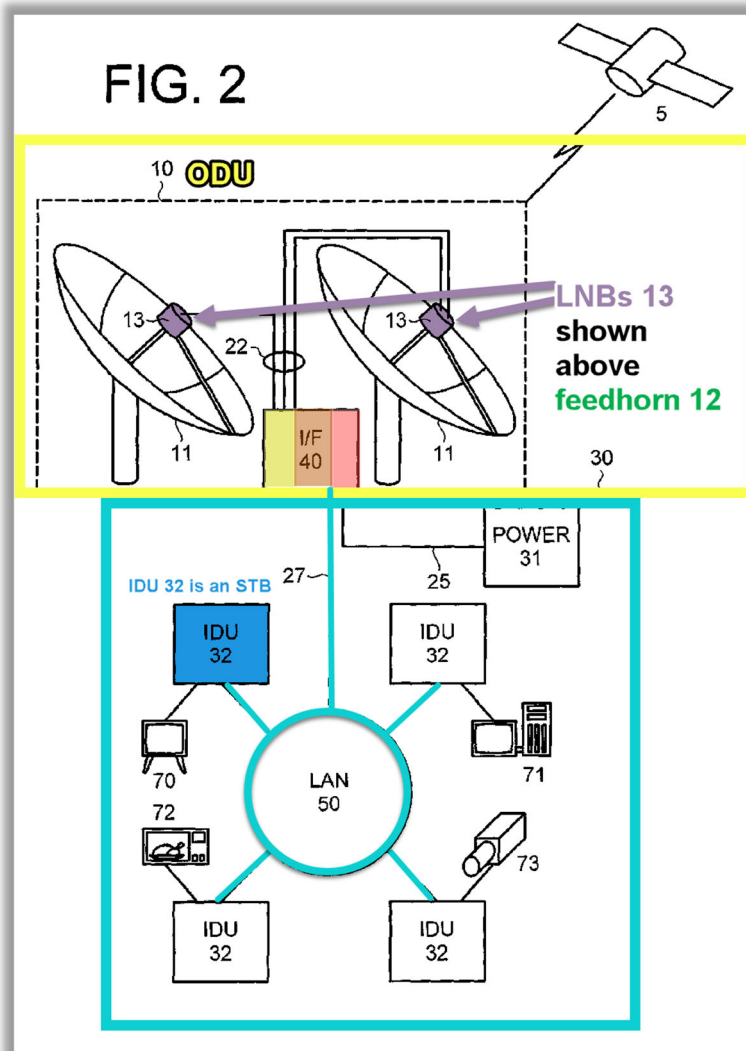
As discussed in limitation 9[f], the ODU of Green transmits, and the interface device of Davis (*gateway*) *receives*, the *composite signal*.

Davis’s interface device 40 performs signal processing, including *decoding specific programs*. As described above, the term “decodes” broadly refers to data processing operations, including tuning, demodulating, and demultiplexing. (*See supra*, §IX.B.2, claim limitation 9[g].) LNB interface 41 of the interface device 40 (*gateway*) includes “conventional [signal processing] elements, such as a tuner/demodulator pair.” (Ex.1006-Davis, ¶¶41, 45.) The tuner/demodulator pair “processes an RF input from,” in the combined system, *a composite signal* from the ODU and “produces a corresponding digital output.” (Ex.1006-Davis, ¶¶41, 45.) Here, where the received satellite signals contain digital video and audio data (*e.g.*,

MPEG programs) that are carried on the analog RF signal (as was typical when Davis was filed), a POSITA would have understood that the “conventional [signal processing] elements” would have included a demultiplexer to demultiplex an MPEG stream such as a selected transponder signal to select a single MPEG program for distribution. (Ex.1002-Schonfeld, ¶179.) Otherwise, the interface device would unnecessarily waste bandwidth and require additional processing downstream, which a POSITA would have been motivated to avoid. (*Id.*) Thus, even if Davis does not inherently teach the use of a demultiplexer in the interface device 40, it would have been obvious to modify Davis to include demultiplexer(s) in the interface device to provide only the programs requested by an STB, which would reduce bandwidth in the LAN relative to providing all MPEG programs in a transponder signal containing the requested program. (*Id.*)

Interface device 40 *distributes the decode[d] ... programs over a digital local area network (LAN) to STBs*. The decoded programs are packetized, and the network protocols and services processing unit 45 of the interface device 40 “determines the destination address of each packet[] and controls the transmission of such packets according to a set of network protocols. ... [t]he message packets are then transmitted to the LAN 50 through LAN interface 46 and LAN cable 27.” (Ex.1006-Davis, ¶¶45-46.) Transmission media for the LAN include Ethernet cables. (Ex.1006-Davis, ¶¶45-46.) The packets are distributed to IDUs 32, including STBs

which decrypt and/or descramble received signals for presentation on a television.  
(Ex.1006-Davis, ¶¶36, 39; Ex.1002-Schonfeld, ¶180.) An exemplary distribution  
digital LAN is shown below in Figure 2, with one STB shown in blue.



**Figure 2 — Davis's Interface Device Distributes Programs Digitally via a LAN.**

Accordingly, the combination of Green and Davis renders claim 9 obvious.

### 3. Dependent Claim 10

As discussed above in 9[c], the transponder processors 112 of Green “perform[] a selected frequency ‘mapping’ or conversion process.” (Ex.1005-Green, 10:4-12.) The processors use input by “installation [or] maintenance personal” to selector 208 “to select the transponder signal to be down converted by down converter 200 and the transponder frequency to which a resulting selected signal is up converted by the up-converter.” (Ex.1005-Green, 12:57-16:2.) A “display 210 indicates the conversion frequencies that have been selected.” (Ex.1005-Green, 12:57-16:2.) Thus, selector 208 contains a mapping of original channel locations at the input to the transponder processor 112 and the new channel locations on the transponder processor 112 output. (Ex.1002-Schonfeld, ¶182.) To the extent that Patent Owner argues that maintenance of the mapping by each transponder processor 112 does not constitute a single “translation table,” then as Dr. Schonfeld explains, maintaining such a table would have been obvious. (Ex.1002-Schonfeld, ¶183.)

Further, the claimed translation table would be well within the general knowledge of a POSITA especially in view of the combined system of Green and Davis. In the combined system, Davis’s interface device 40 (*gateway*) is responsible for receiving transponder select information from a plurality of STBs and providing the information to the ODU of Green so that the desired transponder channels with transponder signals bearing desired programs may be provided to the interface



device for distribution to STBs. It would have been obvious to a POSITA to maintain a translation table so that the ODU of Green knows which transponder channels to provide and at what frequencies, the interface device knows which transponder channels it has received for distribution, and the STBs know how to request and extract a particular transponder channel bearing desirable programming. (Ex.1002-Schonfeld, ¶184.) Accordingly, claim 10 is disclosed Green, or it is otherwise obvious in view of Green and Davis.

#### **4. Dependent Claim 11**

This claim is obvious in view of the combined system of Green and Davis. As discussed above in 9[b]-9[d], the interface device 40 of Davis is used to receive transponder select information from STBs and provides it to the ODU of Green for selection. It would have been obvious to a POSITA for the interface device (*gateway*) to *maintain a translation table, i.e.*, information about the frequency of each desired transponder signals received by the transponder processors 112 of Green, and the frequency to which the signal is translated by transponder processor 112 and included as part of the composite signal. (Ex.1002-Schonfeld, ¶¶186-87.) Maintaining such information is necessary to ensure that the correct transponder signals are selected by transponder processors 112, and that the interface device knows at what frequency to locate each signal for distribution to the requesting STB. (*Id.*) Because the interface device 40 would also need to provide the transponder

select information to the transponder processors 112 of the ODU, to make an appropriate selection, the table would therefore need to be communicated to the ODU. (Ex.1002-Schonfeld, ¶187.) The table would also need to be transmitted to the IDUs that requested particular programs so that the IDUs can extract the requested programs from the selected transponder signals received. (*Id.*)

### **5. Dependent Claim 12**

This claim is obvious in view of the combination of Green and Davis for similar reasons to those discussed above in Ground 1. (*See supra* §IX.A.2, claim 12) As discussed above in claim 10, maintaining a translation table would have been obvious, if not necessary, to effectuate the LAN distribution taught in Davis. While maintaining the transponder select information at the interface device 40 would have been obvious (see claims 10-11), a POSITA would have known that an obvious alternative was for the table to be maintained by a controller located in the ODU of Green.

The interface device 40 of Davis is indifferent as to the frequency at which it receives a requested television program; so long as it knows the channel frequencies on which the transponder signals corresponding to requested programs will be output to the interface device (so that it can differentiate and correctly distribute programs from those transponder signals to the correct IRDs). (Ex.1002-Schonfeld, ¶185.) Thus, the translation table could alternatively have been maintained at the ODU and

communicated to the interface device to facilitate program distribution. The decision to maintain the translation table at the ODU, as opposed to the gateway, is an implementation decision with limited additional cost or complexity, and additional benefits where, for example, one ODU services multiple gateways. (Ex.1002-Schonfeld, ¶¶190-91.)

Moreover, it was also necessary for the table to be communicated by the ODU (preferably via the interface device of Davis) to the STBs that requested particular programs so that the STB can retrieve the transponder signals bearing the programs desired by the STB and extract the desired program from the transponder signal. (Ex.1002-Schonfeld, ¶190.)

**C. Ground 3: Claims 1-8 are Obvious over Fisk in view of the General Knowledge of a POSITA**

Unlike independent claim 9, independent claim 1 does not require frequency translation of selected transponder signals or combining selected transponder signals into a composite signal. Instead claim 1 merely requires the signal selection step of 9[b] and subsequent signal processing to distribute the requested video programs via a digital network. Moreover, as demonstrated in §IV and Dr. Schonfeld's Declaration, and as admitted by the '715 applicant, the functionality and implementations recited in claims 1-8 were conventional in 2001 and well within the general knowledge of a POSITA desiring to efficiently distribute satellite television

signals to receivers in a multi-unit dwelling. (*See supra* §IV.) As such, claim 1 and the claims that depend therefrom are obvious in view of Fisk and a POSITA's general knowledge.

**1. Independent Claim 1**

*1[pre] “A signal distribution system for distributing a plurality of video programs from a satellite outdoor unit (ODU) over a digital network comprising”*

To the extent the preamble is limiting, Fisk discloses it. Fisk's server 56 distributes *a plurality of video programs*, including those received via satellite dish (ODU). (Ex.1003-Fisk, 2:13-24, 10:23-11:5, 22:9-27, 40:1-3.) Fisk's server selects the video programs requested by the LCUs 66 and outputs the programs over *digital network* 50. (Ex.1003-Fisk, Figure 5, 21:1-29, 22:9-27.)

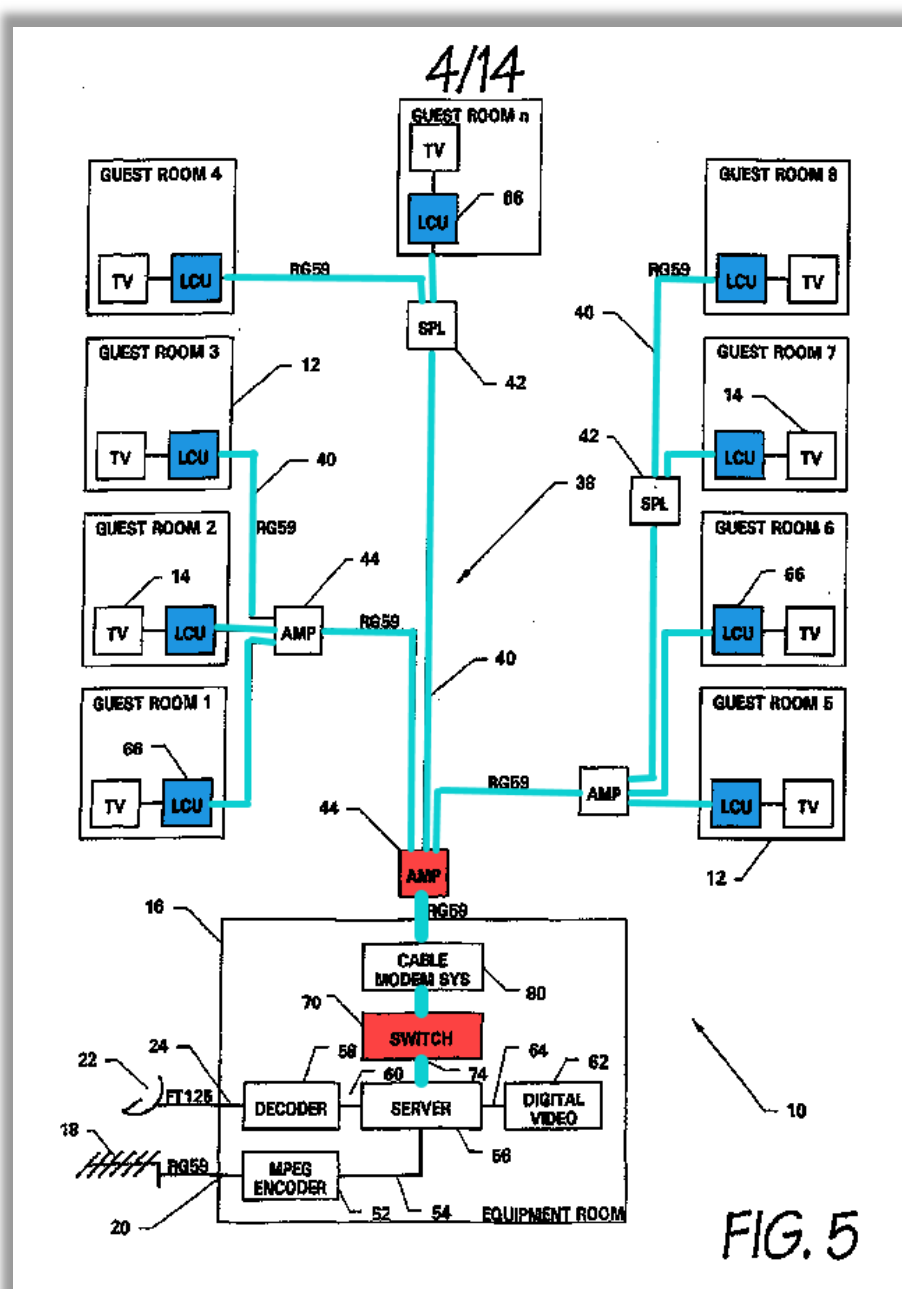


Figure 5 — Fisk’s Video Distribution System.

Fisk’s *ODU* is antenna 22 and associated components. (Schonfeld ¶190.) An *ODU* was within the general knowledge of a POSITA in 2001, and the ’715 patent admits an *ODU* is part of a “conventional” satellite distribution system Therefore to

the extent Fisk does not expressly use the term ODU, it would have been obvious and well within the general knowledge of a POSITA. (Schonfeld ¶195; Ex.1001-'715 patent, 1:21-62.)

*1[a] “a signal selector that receives LNB signals comprising a plurality of transponder channels, ...”*

Fisk’s plurality of decoders/descramblers 58 receive satellite signals from satellite dish 22 via download 24. (Ex.1003-Fisk, 10:23-26, 21:1-5, 22:9-27.) As admitted by the '715 patent, a POSITA would have known that received satellite signals are down-converted by an LNB and outputted, and are thus the claimed *broadband LNB signals*. (Ex.1001-'715 patent, 1:21-44.) A POSITA would have also understood that the LNB signals comprise a *plurality of transponder channels*, as this is the basic structure of a satellite signal. (Ex.1002-Schonfeld, ¶196.)

As discussed above in §VIII.A.2, limitation 9[g], Fisk teaches two types of hardware—“conventional” IRDs and satellite receiver cards—that are part of the decoder 58 and that a POSITA would understand performs the decoding operations of tuning, descrambling, and demultiplexing. (Ex.1002-Schonfeld, ¶192.) In each case, “tuning” refers to the selection of a transponder channel from the broadband LNB signal that can then be descrambled and demultiplexed into MPEG programs. (*Id.*) It would have been obvious to a POSITA that the conventional STB or satellite receiver cards of the decoder 58 would select transponder channels based on the

transponder request information received by Fisk's server from the LCUs. (Ex.1002-Schonfeld, ¶193.) The purpose of the decoder is to provide programs to the server for distribution to the LCUs that request the programs (Ex.1003-Fisk, 22:9-27), so it need only select those transponder channels bearing the desired programs. Limitation 1[a] is obvious in view of Fisk and the knowledge of a POSITA. (Schonfeld ¶193.)

*1[b] “at least one transport stream demultiplexer coupled to the signal selector to extract a specific video program from the transponder channel”*

The decoder 58 in Fisk includes a *transport stream demultiplexer*, which demultiplexes a *selected transponder channel* signal to *extract a specific video program*. (Ex.1002-Schonfeld, ¶194.) After the decoder 58 tunes to a specific transponder channel (see limitation 1[a]), the tuned transponder channel is demultiplexed by demultiplexer 232 to extract a “selected channel,” which is a specific video program in digital MPEG2 format. (*Id.*; Ex.1003-Fisk, 44:10-45:1, 41:7-11, 22:16-18 (“decoder/descrambler 58 [] provides digital MPEG video streams 60 for the received satellite television programmes to the server 56.”).)

The *demultiplexer 232* is *coupled to the signal selector*, as both are part of the decoder 58. Although the tuning operation is not expressly described in Fisk, a POSITA would have understood that in conventional satellite signal processing and

communication systems, tuning would necessarily occur prior to demultiplexing by demultiplexer 232 shown in the table above. (Schonfeld ¶200.) Thus, a POSITA would have understood the *signal selector* to be *coupled to the transport stream demultiplexer* of Fisk's decoder. *Id.*

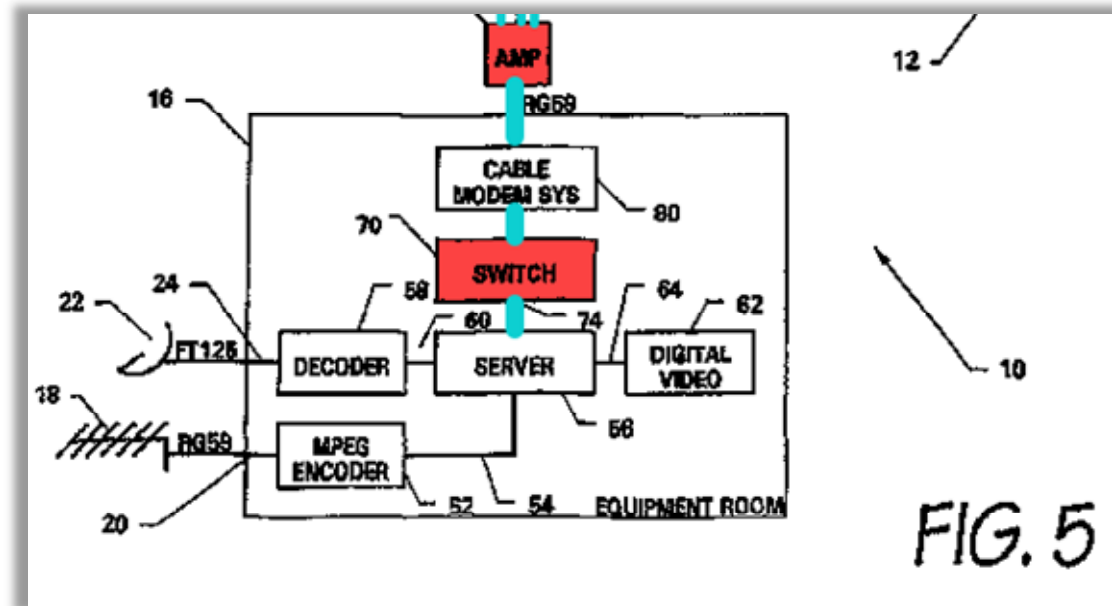
*1[c] “a data combiner coupled to the transport stream demultiplexers to combine video programs and produce a multiplexed signal”*

Fisk teaches that after the decoder 58 demultiplexes one or more programs, the server 56 (*data combiner*) “selects which of the video streams [*programs*] is to be transmitted to which room 12.” (Ex.1003-Fisk, 22:20-22.) In one embodiment, the server 56 transmits the “digital television/video signals” over a network, “the signals being multiplexed ... each on a preset channel allocated according to the device so that the device has a respective preset one of the channels,” and preferably, “the signals are” either “frequency-multiplexed and/or phase multiplexed.” (Ex.1003-Fisk, 6:25-31;23:28-24:8, 27:4-7, 33:4-6; Ex.1002-Schonfeld, ¶201.)

Server 56 (*data combiner*) is coupled to decoder 58 containing *transport stream demultiplexers*. The output of the decoder (demultiplexed video signals for selected programs) is fed to the server for multiplexing, and in some embodiments where the decoders are cards, the decoders are part of the server. (Ex.1003-Fisk, 41:6-19.) In each instance, the decoder is coupled to the data combiner of Fisk's



server. (Ex.1002-Schonfeld, ¶202.)



**Figure 5 — Fisk’s Decoder Output is Inputted to a Server for Multiplexing.**

Fisk accordingly discloses this limitation.

*1[d] “wherein the multiplexed signal is formatted for transmission on the digital network and the digital network connects to the ODU.”*

*See §§IX.A.2-4, limitations 9[a], 9[g], and claims 10-12, supra.*

The *multiplexed signal is formatted for transmission over a digital network* at least partially provided by a conductor, such as coaxial or Ethernet cable. (Ex.1003-Fisk, 6:25-31; Ex.1002-Schonfeld, ¶200.) “The signals may be digital signals,” (*id.*) as in the primary embodiments, where the signals are “digital MPEG video streams” transmitted over a “digital network” to LCUs. (Ex.1003-Fisk, 22:9-27.) (*See* claim limitation 9[a], *supra*, *see also* Ex.1002-Schonfeld, ¶200.) The ODU (including

antenna 22) communicates with the server 52 and/or decoder 58, and therefore the digital network connects to the ODU, and Fisk discloses this limitation. (Ex.1002-Schonfeld, ¶205.)

To the extent Patent Owner argues that the indirect connection between the ODU to the digital network does not meet the claim limitation, it would have been obvious to a POSITA to modify the disclosure of Fisk such that Fisk's digital network directly connects to the ODU by also allowing a direct link between the LCUs and ODU. (Ex.1002-Schonfeld, ¶206.) A POSITA would understand that direct connection would have provided additional benefits such as permitting an uplink (*i.e.*, for sending communication messages using the satellite dish, a feature necessary for satellite Internet). It would have been within the skill and knowledge of a POSITA to incorporate a direct link between the LCUs and the ODU. (*Id.*)

Accordingly, this claim is obvious in view of Fisk and the general knowledge of a POSITA.

## **2. Dependent Claim 2**

*See* §IX.A.2, limitation 9[a], *supra*.

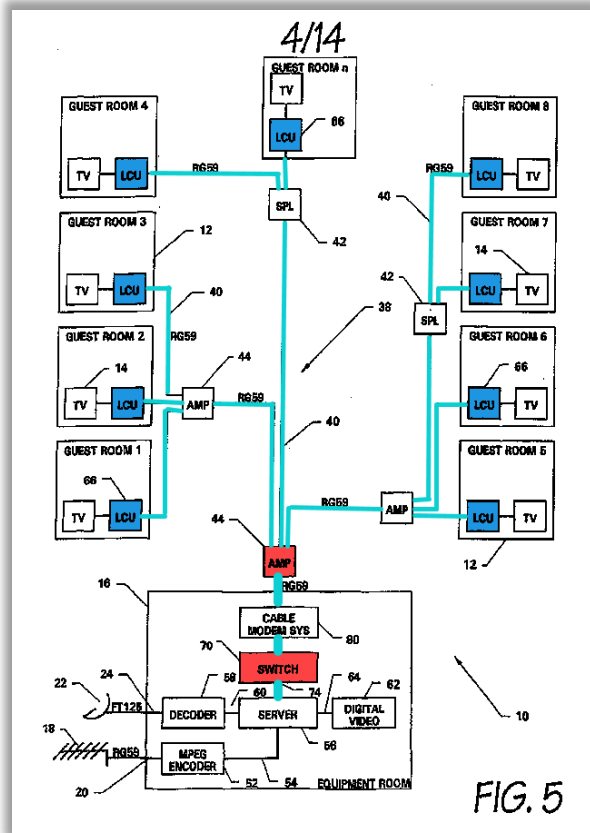
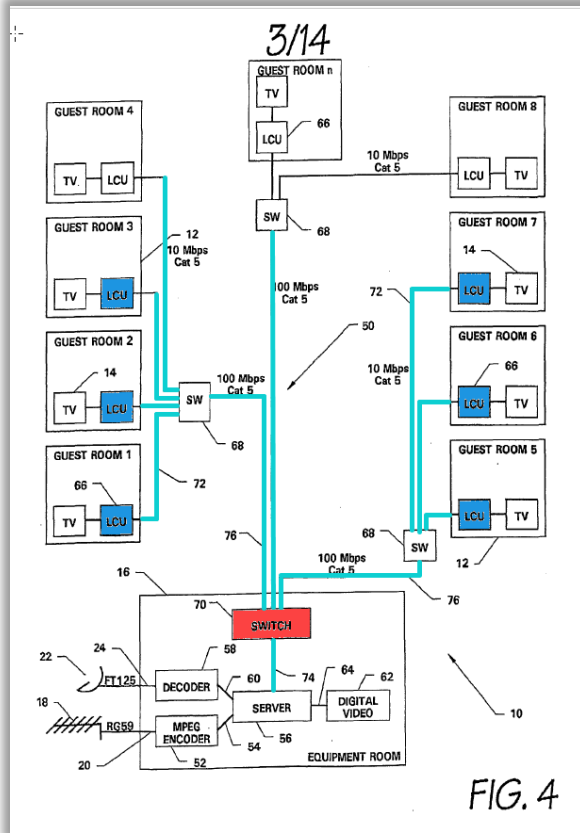
Fisk teaches a plurality of LCUs (receivers) 66 in a digital network with at least the server 56. (*E.g.*, Ex.1003-Fisk, 6:25-30, 22:9-27, Figs. 4-5.) LCUs are the claimed *STBs*, or as Dr. Schonfeld explains, it would have been obvious to replace Fisk's LCUs with conventional *STBs*. (Ex.1002-Schonfeld, ¶¶114, 209).

Each LCU *receiver extracts channels from the multiplexed signal* of video television programs from Fisk's server. Fisk teaches that its server distributes programs in a multiplexed signal via the *digital network* (see limitation 1[d], *supra*) with "a preset channel allocated according to the [LCU] so that each [LCU] has a respective preset one of the channels." (Ex.1003-Fisk, 6:24-30; *see also id.*, 6:7-21.) A POSITA would have understood this to mean that each LCU is extracting the one channel associated with the LCU from the multiplexed signal to obtain a requested video program. (Schonfeld ¶210.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

### **3. Dependent Claim 3**

*See* §IX.A.2, limitation 9[g], *supra*.

Fisk's digital network is a LAN as shown in Figures 4 and 5.



**Figures 4 and 5 — Fisk’s Local Area Network Connecting a Server and LCUs (Light Blue).**

These figures respectively represent embodiments wherein the digital network is comprised of a CAT 5 (*e.g.*, Ethernet) or coaxial cable wired connection between LCUs and the server 56. (Ex.1003-Fisk, 6:6-30, 22:9-22, 23:2-24:15.) A POSITA would have understood that this architecture reflects a *digital local area network*. (Ex.1002-Schonfeld, ¶208.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

#### 4. Dependent Claim 4

*See* claim 3, *supra*. Fisk discloses that its local area network may use Category

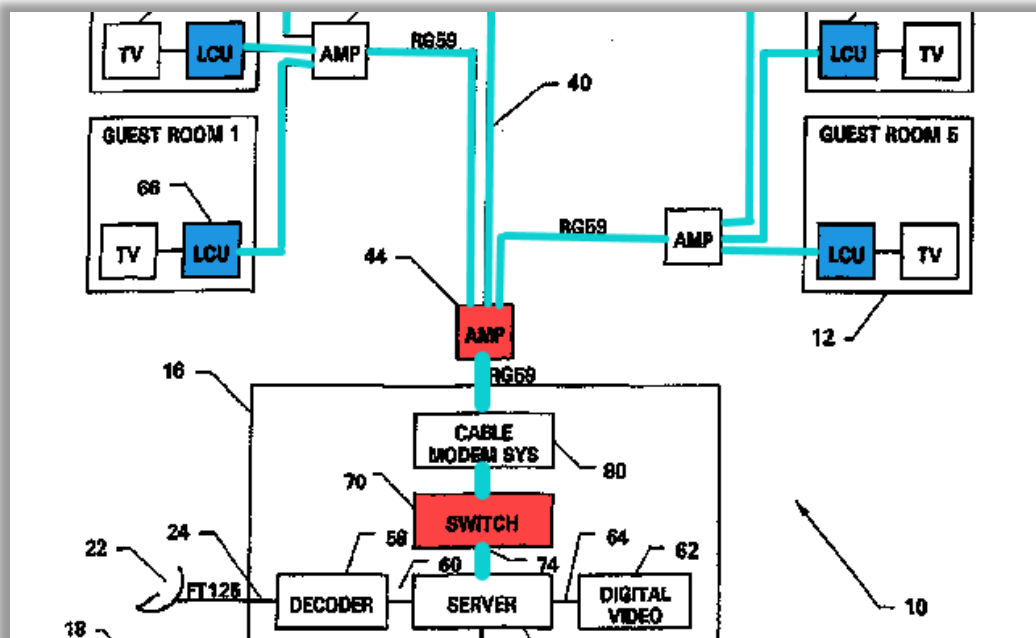
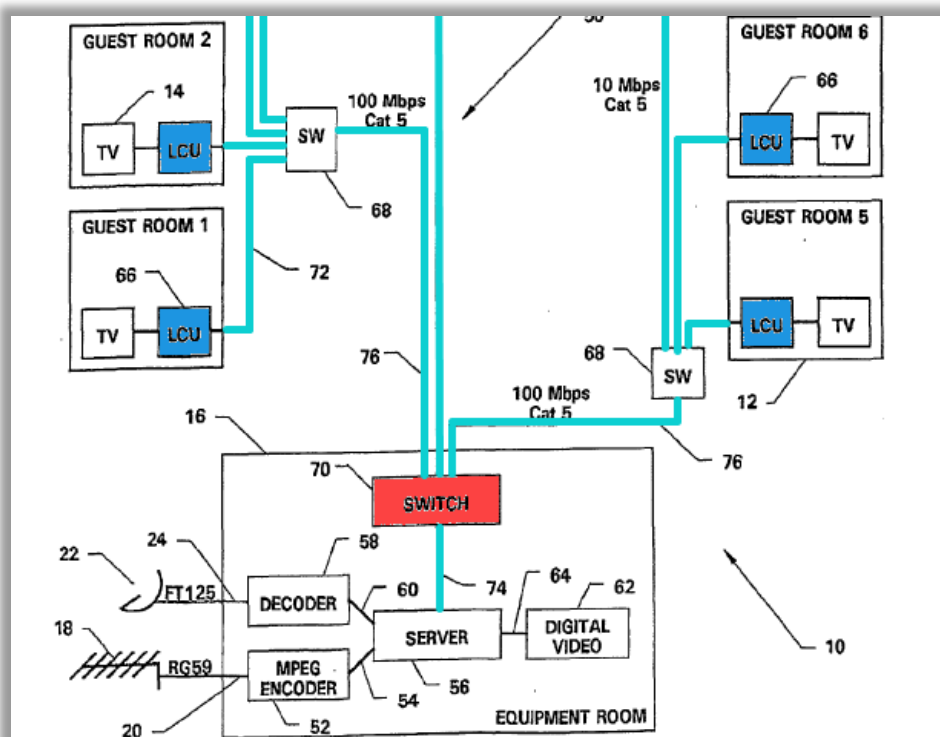
5 cables, which a POSITA would have understood to include Ethernet. (Ex.1003-Fisk, 2:27-3:3, 33:10-14; Ex.1002-Schonfeld, ¶214.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

#### **5. Dependent Claim 5**

*See* claims 3 and 4, *supra*. Fisk discloses that as part of its signal processing, its server 56 “split[s]” live feeds, such as video programs, “into packets.” (Ex.1003-Fisk, 40:20-25.) A POSITA would understand that distributing MPEG-2 video over a digital network, such as the TCP/IP network disclosed in Fisk, would require packetizing the video. (Ex.1003-Fisk, 22:9-27, Schonfeld ¶215.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

#### **6. Dependent Claim 6**

*See* limitation 1[a], *supra*. Fisk’s LCUs transmit their requests for video programs (*transponder select information*) to the server over the digital network. (Ex.1003-Fisk, 22:25-27.) As shown in Figures 4 and 5 below, switch 70 (*gateway*) is located between Fisk’s server 56 and the LCUs 66 and one or more an active distribution amplifiers 44. (Ex.1003-Fisk, 21:19-25, 24:2-10.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.



Figures 4 and 5 — Communications Between the LCUs and a Server are Transmitted by Switch 70, Amplifier 44 (*Gateways*).

Unlike the gateway of claim 9, the claimed gateway here need only *transmit the received transponder select information to the server*. (Ex.1002-Schonfeld, ¶212.) This is consistent with the '715 patent specification, which teaches that a gateway “can be a simple power splitter/summer allowing the IRDs to connect directly to the” source of the multiplexed signal; here, the server. (*See id.*; Ex.1001-'715 patent, 4:40-41.) A POSITA would have understood this is what active distribution amplifiers 44 do in the digital network, and the switch 70 otherwise “allow[s] the IRDs to connect directly to” the server to convey, *e.g.*, *transponder select information*. (Ex.1002-Schonfeld, ¶219.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

## **7. Dependent Claim 7**

While Fisk teaches that *transponder select information* is transmitted over the existing wired coaxial or Category 5 digital network, Fisk recognizes that alternative communication channels may also be used. (Ex.1003-Fisk, 33:2-4; Ex.1002-Schonfeld, ¶213.) Fisk suggests using alternative channels when bandwidth use on the downlink is significant (*i.e.*, due to distributing many video programs). (Ex.1003-Fisk, 33:1-2.) An obvious alternative is the use of a *wireless link*, such as wireless RF communication or WiFi, which were well known to POSITAs in 2001, and could be implemented at limited cost and complexity. (Ex.1002-Schonfeld, ¶218.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

## **8. Dependent Claim 8**

*See* claims 2, 6, *supra*. Fisk’s switch 70 and active distribution amplifiers 44 are gateways connected to the digital network between the server 56, which formats the multiplexed signal carrying the selected video program, and the LCUs, which receive the multiplexed signal via the LAN. *See* limitations 1[c]-1[d], *supra*. These components receive the *video programs in the multiplexed signal* (from the server) and *distribute the signal* over the digital local area network to LCUs (which are STBs or could have been replaced by STBs, see claim 2). (Ex.1003-Fisk, 21:1-29, 28:20-29, 40:1-9; Ex.1002-Schonfeld, ¶219.) This claim is therefore obvious in view of Fisk and the general knowledge of a POSITA.

### **D. Ground 4: Claims 13-19 are Obvious over Carnero in View of the General Knowledge of a POSITA**

Claims 13-19 include signal selection and combination that is nearly identical to the selection and combination of claim 9. But unlike claim 9, these claims include conventional multiport switching to permit backwards-compatibility with legacy STBs in the manner depicted in (AAPA) Figure 1 of the ’715 patent. (Schonfeld, ¶222, 227; *supra* §IV.) Carnero and the general knowledge of a POSITA, which includes the APPA, establish that the legacy approach of providing access to entire broadband LNB outputs (which was the format that some “legacy” STBs expected to receive satellite signals, see Schonfeld, ¶222) was both conventional and well-

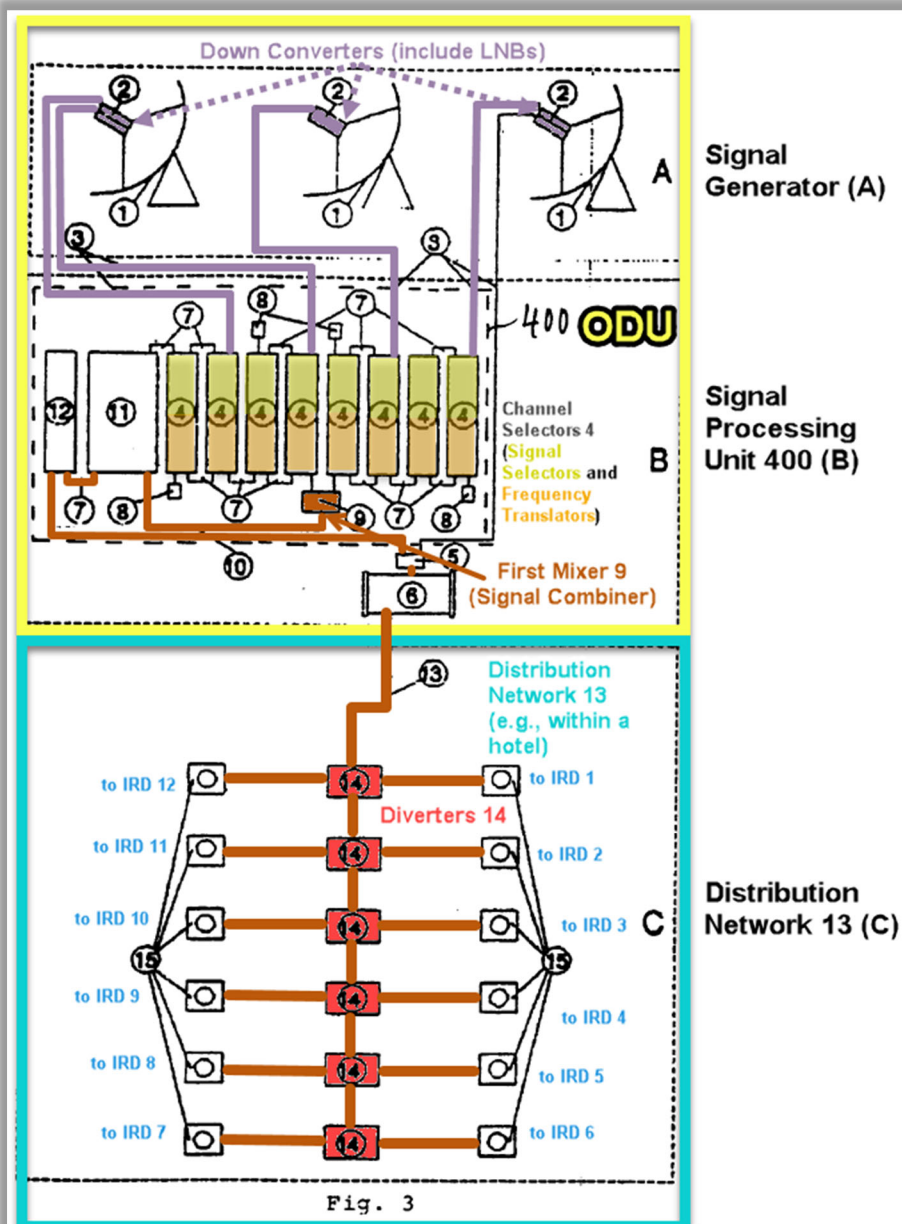


known thus rendering these claims obvious.

**1. Independent Claim 13**

*13[pre] - “A signal distribution system for distributing a plurality of transponder channels to new and legacy set top boxes (STBs) comprising:”*

To the extent the preamble is limiting, it is obvious in view of Carnero. Carnero discloses a *signal distribution system for distributing a plurality of transponder channels*. (Ex.1004-Carnero, Abstract (“a community antenna system, for distributing television signals of different channels”); Ex.1002-Schonfeld, ¶220.) Indeed, Carnero’s Figure 3 depicts its *signal distribution system*.



**Figure 3 — Carnero's Signal Distribution System.**

Carnero's signal distribution system *distributes a plurality of transponder channels* to user antenna outlets 15. A POSITA would have understood that an STB connects to the system at each outlet 15 to receive the distributed transponder channels: STBs or equivalent are necessary to process a received transponder

channel (or channels) to output a video signal to, for example, a television. (Ex.1001-'715 patent, 1:21-44; *see also* Ex.1002-Schonfeld, ¶221 (discussing admitted and prior art discussion of “conventional” STBs.) And an STB compatible to receive the signal distributed by Carnero would meet a POSITA’s understanding of a “new” STB in the ’715 patent because the STB would need to receive a signal spanning one or more transponder channels over a broad frequency spectrum, where transponder channels may be output in a different order (*i.e.*, as a composite signal) than the order of transponder channels in the LNB output. Thus, Carnero’s system teaches signal distribution to “new” STBs.

Carnero acknowledges the “legacy” approach but advocates for the use of its invention to obtain the advantages of its signal selection discussed in Ground 1. (Carnero, 2:30-43.) But where a POSITA had a desire (or a need) to distribute satellite signals in a community that included users with legacy equipment, it would have been obvious to a POSITA to provide legacy distribution in parallel in order to avoid obsolescence. (Ex.1002-Schonfeld, ¶222.) Accordingly, this limitation is obvious in view of Carnero.

*13[a] “a signal selector ... outputs a composite signal ...:”*

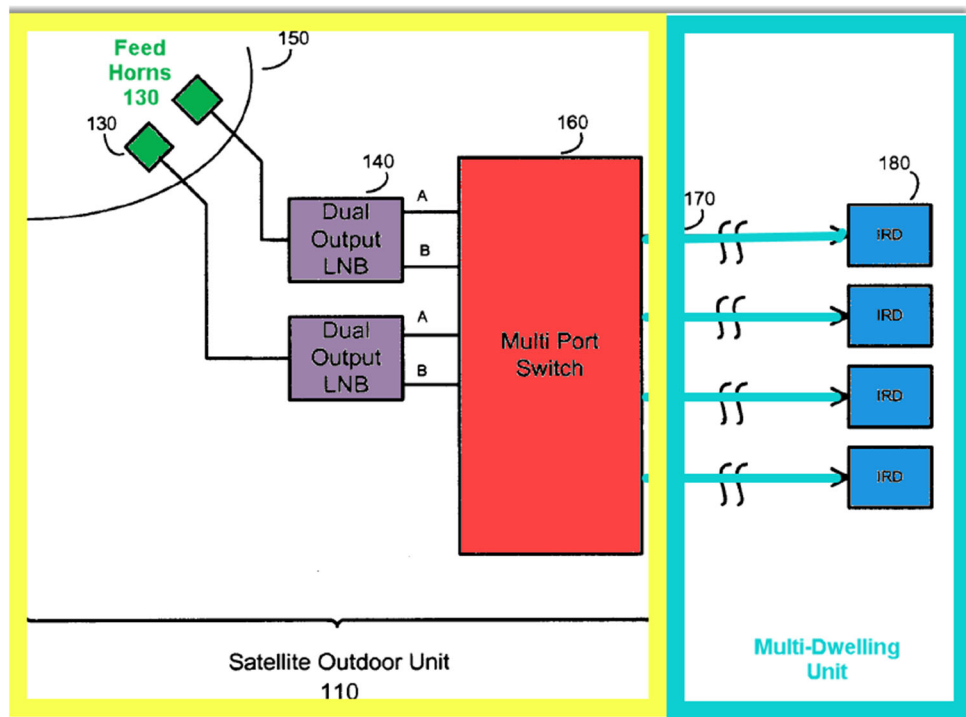
*See §IX.A.2, limitation 9[b] and 9[d], supra. Carnero has a signal selector (signal processing unit 400) that receives broadband LNB signals comprising a plurality of transponder channels and selects at least one transponder channel from*

*the broadband LNB signal (by a channel-specific converter 4), and outputs a composite signal comprising selected transponder channels. (e.g., at the first mixer 9).*

It would have been obvious to a POSITA that Carnero's signal processing unit 400 performed *channel selection responsive to transponder select information transmitted from at least one STB*. Carnero teaches that its signal selection is performed by a microcontroller that receives information to effectuate channel selection from an input device, including via remote control. (Ex.1004-Carnero, 3:48-53 8:16-26.) As Dr. Schonfeld explains, STBs transmitting information used to select transponder channels was known in the art and used to make sure that STBs receive transponder channels bearing desired programs (including in Fisk, Williams '873, and the '576 Reexamination Art). (Ex.1002-Schonfeld, ¶224; *supra* §IV.) Because Carnero's system is flexible as to the type of STB that can be used, a POSITA would have been motivated to use an STB that could remotely provide transponder select information. (*Id.*) Accordingly, it would have been obvious that the signal processing unit 400 of Carnero performed channel selection based on *transponder select information. (Id.)*

*13[b] - "a multiport switch that receives a plurality of broadband LNB signals, selects a broadband LNB signal responsive to an LNB select signal from an STB, and outputs the selected LNB signal."*

This limitation is comprised entirely of AAPA that the '715 patent describes as conventional. (Ex.1002-Schonfeld, ¶225.) As shown in Figure 1 of the '715 patent, a *multiport switch 160 receives a plurality of broadband LNB signals.*



**Figure 1 — '715 Patent's Video Signal Distribution System (AAPA).**

As described in the '715 patent summary of Figure 1 and the “conventional” system, the *multiport switch ... selects a broadband LNB signal responsive to an LNB select signal from an STB.* (Ex.1001-'715 patent, 1:21-2:2.) For the reasons set forth above in limitation 13[a], it would have been obvious to incorporate the legacy multiport switch into Carnero's system to ensure compatibility for legacy STBs or as an alternative means to incorporate programs from multiple LNB signals. (Ex.1002-Schonfeld, ¶226.) Accordingly, claim 13 is obvious in view of Carnero

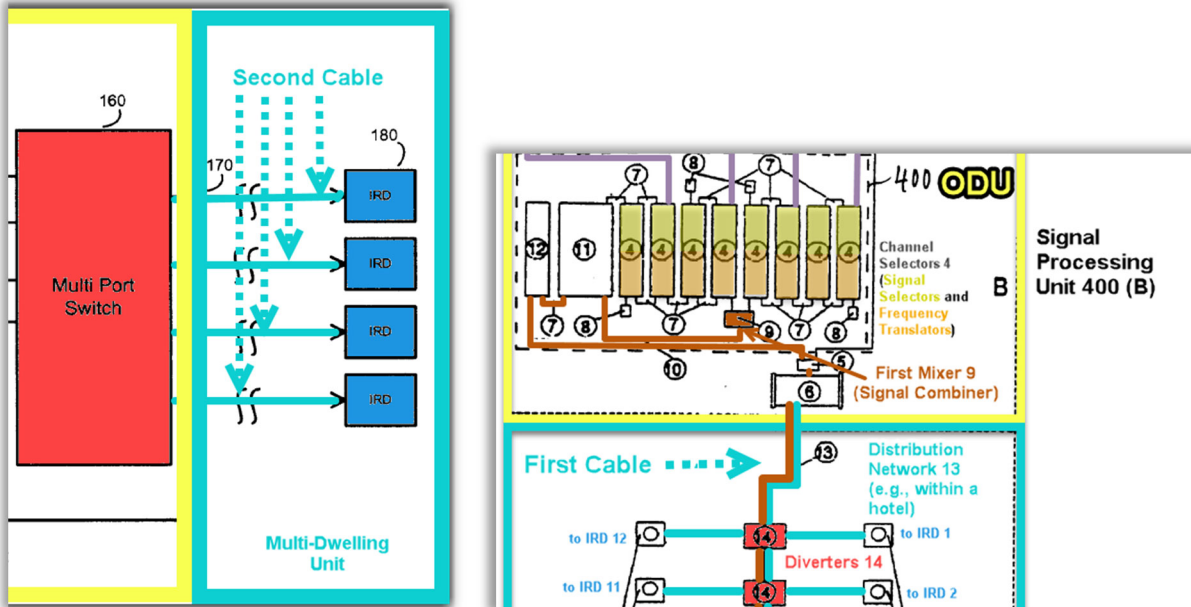
and the general knowledge of POSITA.

## **2. Dependent Claim 14**

*See* limitation 13[pre], *supra*.

The “*legacy*” STBs continue to connect via a cable to the legacy multi-port switch 180 and receive the selected LNB signal output by the switch to its respective cable. (Ex.1002-Schonfeld, ¶228.) Thus, in Figure 1, one or more of the cables 170 is a *second cable* to which a *selected LNB signal is output* and for which *legacy STBs connect ... to receive the selected LNB signal*. (*Id.*)

When operating in parallel, the STBs capable of processing Carnero’s composite signal (the “*new*” STBs) receive the output of the signal processing unit 400 via “a single distribution cable 13, on which all channels, that are FM modulated, are transmitted.” (Ex.1004-Carnero, 7:20-22, Fig. 9.) Thus, Carnero’s single distribution cable is the *first cable* to which *the composite signal is output* and for which *new STBs connect ... to receive the composite signal*. The below excerpts of Figure 1 (’715 patent) and Figure 10 (Carnero) show first and second cables in the context of the obvious parallel implementation. (Ex.1002-Schonfeld, ¶229.)



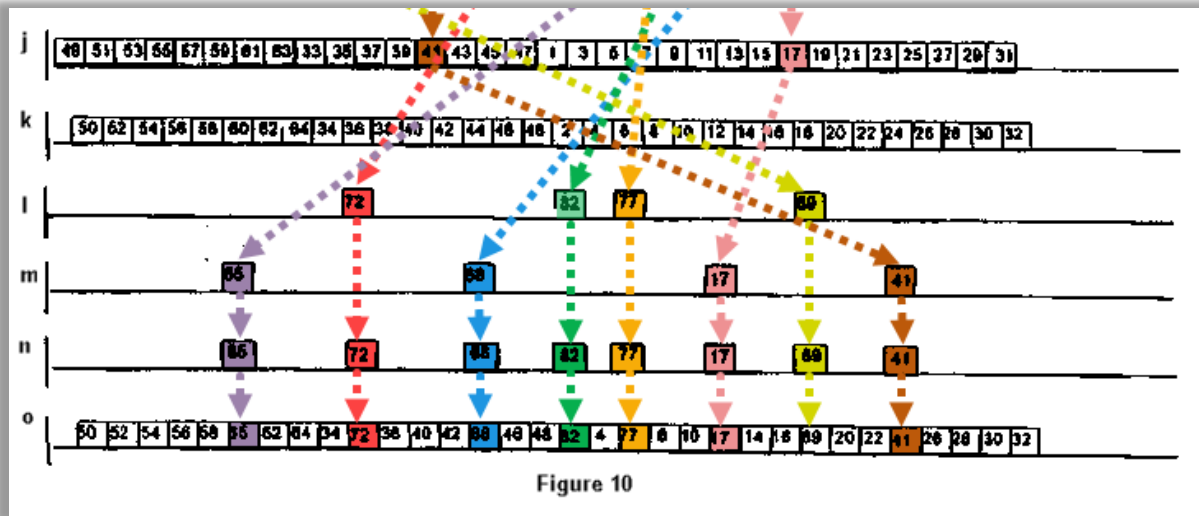
**Figures 1 ('715 Patent, left) and 3 (Carnero, right) — A Parallel Implementation of Carnero (Composite Signal Through Single Distribution Cable 13 to New LNBs) and AAPA (Conventional Broadband LNB Outputs from a Switch to on Each Second Cable to Legacy LNBs).**

Accordingly, this claim is obvious in view of Carnero and the general knowledge of a POSITA.

### **3. Dependent Claim 15**

While Carnero and a legacy signal distribution system could be implemented in parallel to collectively service “new” and “legacy” STBs, respectively, it would have been obvious to alternately implement them together to reduce the number of cables used to distribute signals. Carnero teaches the advantage of distributing television signals over a single cable (Ex.1004-Carnero, 3:19-21), and in one example depicted in Figure 10, teaches adding selected transponder channels from

various LNB outputs to the output from a different LNB. (Ex.1002-Schonfeld, ¶231.)



**Figure 10 — Process to Create a Combined Signal for Distribution on a Single Cable.**

In view of this disclosure, a POSITA would have been motivated to modify Carnero so that *the composite signal and the selected LNB signal are output to a single cable*, and would have found it obvious to do so similar to the example of Figure 10. A POSITA would have further been motivated to ensure that *the composite signal is transmitted in regions of the spectrum unoccupied by the selected LNB signals*, otherwise, transponder channels of the *selected LNB signal* may interfere with the *composite signal* and degrade the signals. (Ex.1002-Schonfeld, ¶232.) The obvious solution is to “stack” the bands akin to the “channel stacking” Dr. Schonfeld discusses (which is taught in AAPA Petruzzelli) to ensure the *selected LNB signal* and *composite signal* do not interfere with one another. (*Id.*) A



Accordingly, claim 15 is obvious in view of Carnero and the general knowledge of a POSITA.

#### **4. Dependent Claim 16**

This claim is obvious in view of Carnero and the general knowledge of a POSITA. As the '715 patent recognizes, and consistent with a POSITA's general knowledge, STBs, also called integrated receiver *decoders*, decode received satellite television signals comprising one or more transponder channels. (Ex.1001-'715 patent, 1:21-55.) As such, a POSITA would have understood that for the STBs receiving the signal including the *composite signal* and *LNB signals* (claim 15), *new STBs* would *receive and decode the composite signal* on the *single cable*, and *legacy STBs* would *receive and decode the LNB signals*. (Ex.1002-Schonfeld, ¶233.)

#### **5. Dependent Claim 17**

This claim is obvious in view of Carnero and the general knowledge of a POSITA. Carnero discloses an input unit 16, which has a control unit 162 connected to microprocessor 49 to facilitate transponder channel selection. (Ex.1004-Carnero, 3:48-53, 8:1-15.) A POSITA would have been motivated to ensure that the control unit 162 could both (1) ensure it was providing requested transponder channels to all STBs in the community antenna system; and (2) avoid providing the requested transponder channels at occupied frequencies (to the benefit of both the requesting “new” STB and the “legacy” STBs receiving the selected LNBs). (Ex.1002-

Schonfeld, ¶229.) A “polling” operation was a known technique to determine the presence of devices in a network and could have been implemented by a POSITA with limited cost and complexity. And as the result of any *polling*, it would have been obvious to account for the result in subsequent signal selection of transponder channels (including to avoid distributing selected transponder channels in occupied spectra), *i.e.*, to *accept transponder select information from the new STBs and remap the selected transponder channels to regions of the spectrum unoccupied by the selected LNBs. (Id.)*

## **6. Dependent Claim 18**

This claim is obvious in view of Carnero and the general knowledge of a POSITA. Carnero’s input unit 16, which has a control unit 162, is a *controller for maintaining a channel map specifying the assigned frequency slots for transponder channels*. The input unit 16 is connected to microprocessor 49 and provides “data of a pre-definable input and output frequency” for “input into the microprocessor 49” and used to control the signal selector. (Ex.1004-Carnero, 3:48-53, 8:1-15.) The input and output frequencies reflect *the assigned frequency slots for transponder channels* and thus constitute a *channel map*. (Ex.1002-Schonfeld, ¶230.)

It would have been obvious to a POSITA that the controller *communicates the channel map to the STBs*. Because the frequency slots for the transponder channels are “assigned” and then “transmitted in regions of the spectrum unoccupied by the

selected LNB signals” (as required by claim 15, from which this claim depends), an STB would require a mapping to know where to look for the transponder channel it requested by the transponder select information. A POSITA would have been motivated to transmit the channel map from the controller associated with Carnero’s signal selector and would have done so with limited cost and complexity, as the information could have been transmitted as part of the *composite signal* on the single cable. (Ex.1002-Schonfeld, ¶231.)

## **7. Dependent Claim 19**

This claim is identical to claim 17 except it depends from claim 13. It is therefore obvious in view of Carnero and the general knowledge of a POSITA for the same reasons set forth above in claims 13 and 17.

## **X. DISCRETIONARY DENIAL IS INAPPROPRIATE**

### **A. Discretionary Denial Under 35 U.S.C. 314(a) Is Inappropriate**

Consistent with the Director’s June 21, 2022 Guidance, Petitioners agree not to proceed in the related district court litigation against the challenged claims on the same grounds included in the Petition or any grounds that could have reasonably been raised if the Petition is instituted.

## **XI. CONCLUSION**

For the above reasons, claims 1-19 are invalid and should be canceled.

Dated: January 13, 2023

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**CERTIFICATE OF WORD COUNT UNDER 37 CFR §42.24(d)**

Under 37 C.F.R. §42.24(d), the undersigned certifies that the word count for this *Petition for Inter Partes Review* totals 13,861, excluding the parts exempted by 37 C.F.R. §42.24(a).

The word count was made using the built-in word count function in the Microsoft® Word software used to prepare this document.

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## **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that true copies of this PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 7,542,715 and supporting materials (Exhibits 1001-1037 and Power of Attorney) have been served by FedEx® delivery service on Patent Owner at the correspondence address for the attorney of record for the '715 Patent shown in USPTO records:

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