

Filed on behalf of Petitioner

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**UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

RPX CORPORATION

Petitioner

v.

CHANDBOND LLC

Patent Owner

Case No. TBD

Patent No. 7,941,822

**PETITION FOR INTER PARTES REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 et seq.**

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Petitioner RPX Corporation (“RPX”), pursuant to 35 U.S.C. §§ 311–19 and 37 C.F.R. § 42.1 *et seq.*, requests *inter partes* review of claims 1-31 of U.S. Patent No. 7,941,822 (“the ‘822 patent”) (Ex. 1001). This Petition is accompanied by the Declaration of Frank Koperda (Ex. 1002, hereinafter cited to as “Kop.”).

I. INTRODUCTION

The ‘822 patent describes a device for processing an incoming RF signal containing multiple channels. The independent claims of the patent require that “channel in use information” identify channels of an incoming modulated RF signal that contain digital data addressed to one or more devices, e.g., using an Internet Protocol (IP) address, and combining data from such channels to form a combined data stream that is output to the device(s) to which they are addressed. *See, e.g.*, Ex. 1001 12:22-40.

In the below-noted litigations, the current owner of the ‘822 patent has asserted these claims cover a process called “channel bonding” (*e.g.*, Ex. 1006, ¶¶ 10-11, 13), which is a commonly-deployed technique for achieving increased bandwidth by delivering data to devices using more than one transmission channel and combining the channels’ data at a receiver before sending the data to the intended recipient device.

This Petition demonstrates that the claimed subject matter would have been obvious to a person of ordinary skill in the art in view of the prior art. None of the

prior art relied upon in this Petition was previously considered by the Patent Office in assessing the patentability of the '822 patent's claims.

II. MANDATORY NOTICES

A. Real Party-In-Interest

RPX is the sole real party-in-interest in this proceeding. RPX has not communicated with any client about its intent to contest the validity of this patent, or the preparation or filing of this Petition. RPX has complete, unilateral control of all aspects of this proceeding and is also solely responsible for all costs and expenses associated with this proceeding.

B. Related Matters

A decision in this proceeding could affect or be affected by the following cases filed by the Patent Owner in the U.S. District Court for Delaware. The defendants and case numbers are listed below:

Defendant(s)	Case No.
Atlantic Broadband Group, LLC	1:15-cv-00842
Bright House Networks, LLC	1:15-cv-00843
Cable One Inc.	1:15-cv-00844
Cablevision Systems Corporation and CSC Holdings, LLC	1:15-cv-00845
Cequel Communications, LLC d/b/a Suddenlink Communications and Cequel Communications Holdings I, LLC	1:15-cv-00846
Charter Communications, Inc.	1:15-cv-00847
Comcast Corporation and Comcast Cable Communications, LLC	1:15-cv-00848
Cox Communications, Inc.	1:15-cv-00849
Mediacom Communications Corporation	1:15-cv-00850
RCN Telecom Services, LLC	1:15-cv-00851
Time Warner Cable, Inc. and Time Warner Cable Enterprises LLC	1:15-cv-00852

WaveDivision Holdings, LLC	1:15-cv-00853
WideOpen West Finance, LLC	1:15-cv-00854

C. Counsel and Service Information - § 42.8(b)(3)-(4)

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Powers of attorney are submitted with this Petition. Counsel for Petitioner consents to service of all documents via electronic mail.

III. NOTICE OF FEES PAID

Fees are submitted herewith. If any additional fees are due during the course of the proceeding, the undersigned authorizes the Office to charge fees to Deposit Account No. 23/2825.

IV. CERTIFICATION OF GROUNDS FOR STANDING

RPX certifies, pursuant to 37 C.F.R. § 42.104(a), that the '822 patent is available for *inter partes* review and that RPX is not barred or estopped from requesting *inter partes* review as to the '822 patent claims identified herein.

V. IDENTIFICATION OF CHALLENGE AND RELIEF REQUESTED

RPX requests cancellation of claims 1-31 of the '822 patent. The table below indicates the references, applicable claims, and basis for each Ground.

GROUND	REFERENCES	CLAIMS	BASIS
1	Rakib (Ex 1007) in view of the DOCSIS Specification (Ex. 1005)	1-31	103(a)
2	Haugli (Ex. 1009) in view of Grindahl (Ex. 1010)	1-9, 16, 19-25, 29 and 31	103(a)
3	Haugli (Ex. 1009) in view of Grindahl (Ex. 1010), and further in view of Otten (Ex. 1011)	10-11 and 26	103(a)
4	Haugli (Ex. 1009) in view of Grindahl (Ex. 1010), and further in view of Ollikainen (Ex. 1012)	12-14, 17, 18, 27 and 28	103(a)

VI. TECHNOLOGY OVERVIEW

This Petition involves two different, but related technology fields. The first such field is that of cable TV services. Long before the ‘822 patent’s claimed priority date of December 27, 2000, cable companies provided broadband data services to subscribers. A modem at a so-called “head end” operated by the cable company communicated with a local modem at a subscriber’s home or office. The local modem allowed devices on the subscriber’s local area network (LAN) to access data flowing downstream from the head end via a coaxial cable and also allowed the devices to communicate data upstream to the head end via that same cable. Digital data was typically modulated onto one or more RF carrier channels in particular frequency ranges for transmission back and forth between the modems on the two ends of the coaxial cable. (Kop. ¶¶ 18-22.)

The second technology field this Petition involves is that of satellite data

communications. Various systems for enabling bi-directional (two-way) data transfer via satellite links between end-user equipment and service providers (such as Internet service providers) were known before the '822 patent's claimed priority data. An example of one such system is described in WIPO Publication No. WO 99/49592 (Haugli) (Ex. 1009). As explained in detail below, that system employed a channel bonding technique very similar to that which the Patent Owner has asserted its patent covers. (*e.g.*, Ex. 1006, ¶¶ 10-11, 13; Kop. ¶¶ 23-29.)

A. The '822 Patent

Fig. 5 of the '822 patent best illustrates the subject matter to which the patent's independent claims are directed. On the left side of Fig. 5 are what the patent refers to as "addressable devices" 202. On the right side is the "intelligent device" 502 referred to in the claims. Independent claims 1 and 19 focus on the signal path starting at an output of the broadband uniform distribution (BUD) unit 38 and ending at an output of the digital combiner/splitter 212, and passing through the RF splitter 214, the bandpass filter 218, and the demodulator 220. This signal flow is described at 10:55-11:29. (Kop. ¶ 31.)

The patent further describes that after being split by the splitter 214, certain channels known not to contain digital IP data (the "non-IP portion" of the incoming RF signal) are allowed by the bandpass filter 216 to pass to the outlet 232 via the tone detect RF level controller 226. The "non-IP" channels that are

allowed to pass to the RF outlet are “pre-selected.” (11:2-7.) The bandpass filters 216, 218 can be controlled by the DSP 420 so as to allow the IP portion to be differentiated from the non-IP portion “according to the information frequency on the incoming carrier.” (10:59-67; Kop. ¶ 32.)

The “RF splitter 214 sends the information of the RF channels in use to the RF system channel detector 239” (10:57-60), and the RF system channel detector 239 “is preferably in communication with the DSP 420 in order to update the DSP 420 as to the RF channels in use and available.” (10:49-52; Kop. ¶ 33.)

According to the patent, for the channels the bandpass filter 218 lets through, the “IP portion is then demodulated by at least one demodulator 220 [so as to strip] the RF carrier signal from the digital baseband signal,” and the resulting digital signals “may be combined by a digital combiner 212, such as a multiplexer, in order to effectuate a parallel to serial conversion.” (11:17-23; Kop. ¶ 34.)

Although not described in connection with Fig. 5, in describing the embodiment of Fig. 2, the patent explains that the “DSP 230 preferably controls RF channel detection and the at least one demodulator 220.” (9:14-15; Kop. ¶ 35.)

B. Level of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSA”) in the timeframe of the purported December 27, 2000 priority date of the ‘822 patent would have had at least a B.S. in Electrical Engineering, Computer Science, Computer Engineering or

related degree, along with at least three years of experience in broadband signal processing and modem design. (Kop. ¶¶ 36-37.)

VII. CLAIM INTERPRETATION

Petitioner asserts that the following definitions should be applied under the broadest reasonable interpretation (“BRI”) standard.

A. “when...” – *Passim*

Independent claims 1 and 19 require a “combiner” configured to combine information demodulated by a demodulator unit “when” channel in use information identifies at least two channels as containing information addressed to at least one addressable device. The “combiner” described in the specification, i.e., combiner 212 shown in Figs. 2 and 5, performs no active role in determining the information it should combine or when that information should be combined. (9:3-7; 11:20-25.) Rather, it simply combines (e.g., multiplexes) *any* data it receives, regardless of the source of or circumstances that caused the generation of that data, so as to produce an outgoing data stream. *Id.* Accordingly, the BRI for this term should be: “at any time during or after.” (Kop. ¶ 39.)

B. **“a detector configured to detect each channel contained in the received modulated RF signal that includes information addressed to at least one addressable device, and to generate channel in use information identifying each channel that includes information addressed to the at least one addressable device” - Claim 19**

Figs. 2 and 5 of the ‘822 patent identify the detector 239 as an “RF

[SYSTEM] CHANNEL DETECTOR.” Although the patent does not disclose specific hardware components the detector 239 must include, it functionally describes that the detector receives “information of the RF channels in use” from the RF splitter 214 (10:57-60), and “is preferably in communication with the DSP 420 in order to update the DSP 420 as to the RF channels in use and available.” (10:49-52.)

To be consistent with that functional description, the BRI of this term should be: “one or more components configured to use the received modulated RF signal to provide information identifying channels that include information that is directed to one or more addressable devices.” (Kop. ¶¶ 40-41.)

C. “additive signal” - Claims 15 and 30

Claims 15 and 30 each requires both (a) that “the combiner [of claim 1 or 19]” be configured to combine incoming signals into an “additive signal” and (b) a “splitter” configured to split the additive signal and distribute the additive signal among a plurality of outlets. These limitations appear to be directed to the digital combiner 410 and the digital splitter 212 of Fig. 5, which are described at 10:42-45 and 11:25-31. The patent explains that the digital combiner 410 may be an 8:1 multiplexer that can take eight digital streams at ten megabits per second and combine them into an eighty megabit per second signal. (9:34-44.) Consistent with this disclosure, the BRI of this term should be: “an output signal formed from

multiple input signals.” (Kop. ¶ 42.)

D. “channel identification information identifying the channels contained in the modulated RF signal” - Claim 29

Similar to the way claim 6 requires the received modulated RF signal of claim 1 to contain “channel in use information,” this limitation requires the modulated RF signal of claim 19 to contain “channel identification information.” The latter term, however, is not defined or used in the specification (in fact, the specification does not even use the word “identify” or variations thereof). Claim 19 requires that a “detector” both (a) “detect each channel contained in the modulated RF signal that includes information addressed to at least one addressable device,” and (b) “generate channel in use information identifying” each such channel. Claim 29 requires that the detector perform function (a) “based on the channel identification information included in the modulated RF signal.” Accordingly, the BRI for this term should be: “information that identifies two or more channels contained in the modulated RF signal.” (Kop. ¶ 43.)

VIII. THRESHOLD REQUIREMENT FOR *INTER PARTES* REVIEW

This Petition and the supporting evidence (including Mr. Koperda’s declaration) demonstrate “a reasonable likelihood that petitioner would prevail with respect to at least one of the claims challenged in the petition.” 35 U.S.C. § 314(a). All the claims of the ‘822 patent are obvious over the prior art relied upon in this Petition, as explained herein and in detail by Mr. Koperda (Ex. 1002).

IX. CLAIM-BY-CLAIM EXPLANATION OF GROUNDS FOR UNPATENTABILITY OF CLAIMS 1-31

The '822 patent includes only two independent claims, claims 1 and 19.

There exist only a few differences between those claims. Likewise, limitations of many of the dependent claims are quite similar. Thus, to facilitate this analysis, similar limitations of the claims are treated together below, with the differences being pointed out, as appropriate.

A. Annotated Table of Claim Limitations

In the table below, identical or similar limitations are juxtaposed and a bracketed reference character, e.g., *[A]*, has been added to each limitation. Juxtaposed limitations that differ slightly have different numbers following the bracketed letter, e.g., *[A1]* and *[A2]*. The notations in this table will be referenced throughout this Petition to identify particular claim limitations.

Claims 1 and 19	
<i>[P]</i> 1. An intelligent device for receiving and processing RF signals, comprising:	<i>[P]</i> 19. An intelligent device for receiving and processing RF signals, comprising:
<i>[A]</i> an input configured to receive a modulated RF signal containing multiple channels, and	<i>[A]</i> an input configured to receive a modulated RF signal containing multiple channels;
<i>[B1]</i> to receive channel in use information which identifies each channel in the modulated RF signal that includes information addressed to at least one addressable device;	<i>[B2]</i> a detector configured to detect each channel contained in the received modulated RF signal that includes information addressed to at least one addressable device, and to generate channel in use information identifying

	each channel that includes information addressed to the at least one addressable device;
<i>[C]</i> a demodulator unit configured to demodulate at least two channels contained in the modulated RF signal when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device; and	<i>[C]</i> a demodulator unit configured to demodulate at least two channels contained in the modulated RF signal when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device; and
<i>[D]</i> a combiner configured to combine the at least two channels demodulated by the demodulator unit into a digital stream when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device, and to output the digital stream to the at least one addressable device.	<i>[D]</i> a combiner configured to combine the at least two channels demodulated by the demodulator unit into a digital stream when the channel in use information identifies the at least two channels as containing information addressed to the at least one addressable device, and to output the digital stream to the at least one addressable device.
Claims 2 and 20	
2. The intelligent device of claim 1, comprising:	20. The intelligent device of claim 19, comprising:
<i>[A1]</i> a processor configured to receive the channel in use information, wherein:	<i>[A2]</i> a processor configured to receive the channel in use information generated by the detector, wherein:
<i>[B]</i> the demodulator unit comprises a plurality of demodulators each being configured to demodulate a respective one of the channels contained in the modulated RF signal; and	<i>[B]</i> the demodulator unit comprises a plurality of demodulators each being configured to demodulate a respective one of the channels contained in the modulated RF signal; and
<i>[C]</i> the processor is configured to instruct the demodulators of the demodulator unit respectively corresponding to the at least two channels containing information addressed to the at least one addressable device to demodulate the at least two channels, respectively, based on the channels identified in the channel in use	<i>[C]</i> the processor is configured to instruct the demodulators of the demodulator unit respectively corresponding to the at least two channels containing information addressed to the at least one addressable device to demodulate the at least two channels, respectively, based on the channels identified in the channel in use

information that contain information addressed to the at least one addressable device.	information that contain information addressed to the at least one addressable device.
Claims 3 and 21	
3. The intelligent device of claim 2, wherein:	21. The intelligent device of claim 20, wherein:
[A] the processor is configured to access a respective address of each one of the at least one addressable device; and	[A] the processor is configured to access a respective address of each one of the at least one addressable device; and
[B1] the processor is configured to instruct the demodulator unit which channels contained in the modulated RF signal are to be demodulated by comparing the received channel in use information with the respective address of each one of the at least one addressable device, and to instruct the demodulators of the demodulator unit respectively corresponding to the channels containing information respectively addressed to the each one of the at least one addressable device to respectively demodulate the channels containing information addressed to the each one of the at least one addressable device.	[B2] the processor is configured to instruct the demodulator unit which channels contained in the modulated RF signal are to be demodulated by comparing the channel in use information generated by the detector with the respective address of each one of the at least one addressable device, and to instruct the demodulators of the demodulator unit respectively corresponding to the channels containing information respectively addressed to the each one of the at least one addressable device to respectively demodulate the channels containing information addressed to the each one of the at least one addressable device.
Claims 4 and 22	
4. The intelligent device of claim 1, wherein the demodulator unit comprises at least one demodulator configured to demodulate the at least two channels containing information addressed to the at least one addressable device.	22. The intelligent device of claim 19, wherein the demodulator unit comprises at least one demodulator configured to demodulate the at least two channels containing information addressed to the at least one addressable device.
Claims 5 and 23	
5. The intelligent device of claim 1, wherein:	23. The intelligent device of claim 19, wherein:
[A] when the channel in use information	[A] when the channel in use information

identifies a single channel as containing information addressed to the at least one addressable device, the demodulator unit is configured to demodulate at least the single channel; and	identifies a single channel as containing information addressed to the at least one addressable device, the demodulator unit is configured to demodulate at least the single channel; and
[B] the combiner is configured to output the single channel demodulated by the demodulator unit when the channel in use information identifies the single channel as containing information addressed to the at least one addressable device.	[B] the combiner is configured to output the single channel demodulated by the demodulator unit when the channel in use information identifies the single channel as containing information addressed to the at least one addressable device.
Claim 6	
6. The intelligent device of claim 1, wherein the input is configured to receive the channel in use information as part of the modulated RF signal.	
Claims 7 and 24	
7. The intelligent device of claim 1, comprising:	24. The intelligent device of claim 19, comprising:
[A1] a processor configured to receive the channel in use information; and	[A2] a processor configured to receive the channel in use information generated by the detector,
[D] a detector configured to detect each channel contained in the received modulated RF signal that includes information addressed to the at least one addressable device, wherein:	
[B1] the processor is configured to instruct the detector of a respective address of each one of the at least one addressable device; and	[B2] and to instruct the detector of a respective address of each one of the at least one addressable device; and
[C] the detector is configured to detect each channel contained in the received modulated RF signal that includes information addressed to the at least one addressable device in accordance with the respective address of each addressable device.	[C] the detector is configured to detect each channel contained in the received modulated RF signal that includes information addressed to the at least one addressable device in accordance with the respective address of each addressable device.
Claims 8 and 25	
8. The intelligent device of claim 1,	25. The intelligent device of claim 19,

wherein:	wherein:
[A] the intelligent device is connected to a plurality of addressable devices each having a respectively unique address; and	[A] the intelligent device is connected to a plurality of addressable devices each having a respectively unique address; and
[B] the combiner is configured to combine at least two channels demodulated by the demodulator unit and output a respective digital stream containing the combined at least two channels to at least one of the plurality of addressable devices to which information contained in the received modulated RF signal is addressed, respectively.	[B] the combiner is configured to combine the at least two channels demodulated by the demodulator unit and output a respective digital stream containing the combined at least two channels to at least one of the plurality of addressable devices to which information contained in the received modulated RF signal is addressed, respectively.
Claim 9	
9. The intelligent device of claim 1, wherein the modulated RF signal is of a frequency in the range of 5 MHz to in excess of 1 GHz.	
Claims 10, 11 and 26	
10. The intelligent device of claim 1, wherein:	26. The intelligent device of claim 19, wherein:
[A] the modulated RF signal contains at least one channel carrying an IP portion and at least one channel carrying a non-IP portion; and	[A] the modulated RF signal contains at least one channel carrying an IP portion and at least one channel carrying a non-IP portion; and
[B] the intelligent device comprises a separation unit configured to separate the at least one channel carrying the IP portion from the at least one channel carrying the non-IP portion, transmit the at least one channel carrying the IP portion to the demodulator unit, and transmit the at least one channel carrying the non-IP portion to an outlet.	[B] the intelligent device comprises a separation unit configured to separate the at least one channel carrying the IP portion from the at least one channel carrying the non-IP portion, transmit the at least one channel carrying the IP portion to the demodulator unit, and transmit the at least one channel carrying the non-IP portion to an outlet,
11. The intelligent device of claim 10, wherein the outlet is connectable to at least one of a video receiver and a device having an IP address assignable thereto”	[C] which is connectable to at least one of a video receiver and a device having an IP address assignable thereto.

Claims 12, 13 and 27	
12. The intelligent device of claim 1, comprising:	27. The intelligent device of claim 19, comprising:
[A1] a converter configured to convert at least one of the channels contained in the modulated RF signal into a wireless signal; and	[A2] a converter configured to convert at least one of the channels contained in the modulated RF signal into a first wireless signal; and
[B1] a wireless transmitter configured to transmit the wireless signal to a device configured to receive the wireless signal.	[B2] a wireless transmitter configured to transmit the first wireless signal to a device configured to receive the first wireless signal;
13. The intelligent device of claim 1, comprising: [A] a wireless receiver configured to receive a wireless signal carrying digital information thereon; and	[C] a wireless receiver configured to receive a second wireless signal carrying digital information thereon; and
[B] a wireless demodulator unit configured to demodulate the digital information carried on the wireless signal,	[D] a wireless demodulator unit configured to demodulate the digital information carried on the second wireless signal,
[C] wherein the combiner is configured to output the digital information demodulated by the wireless demodulator unit as an outgoing digital information stream to a wideband distribution unit.	[E] wherein the combiner is configured to output the digital information demodulated by the wireless demodulator unit as an outgoing digital information stream to a wideband distribution unit.
Claims 14 and 28	
14. The intelligent device of claim 13, wherein the combiner is configured to combine the digital information demodulated by the wireless demodulator unit with digital information received from at least one addressable device, and output the combined digital information as the outgoing digital information stream to the wideband distribution unit.	28. The intelligent device of claim 27, wherein the combiner is configured to combine the digital information demodulated by the wireless demodulator unit with digital information received from at least one addressable device, and output the combined digital information as the outgoing digital information stream to the wideband distribution unit.
Claims 15 and 30	

15. The intelligent device of claim 1, wherein:	30. The intelligent device of claim 19, wherein:
[A] the intelligent device is configured to be implemented as a distribution unit for use in a wideband signal distribution system, the wideband signal distribution system being configured to distribute signals modulated onto carrier signals of a frequency in the range of about 5 MHz to at least about 1 GHz among a plurality of outlets;	[A] the intelligent device is configured to be implemented as a distribution unit for use in a wideband signal distribution system, the wideband signal distribution system being configured to distribute signals modulated onto carrier signals of a frequency in the range of about 5 MHz to at least about 1 GHz among a plurality of outlets;
[B] the input of the intelligent device comprises a plurality of input ports configured to receive at least one incoming signal from at least one outlet;	[B] the input of the intelligent device comprises a plurality of input ports configured to receive at least one incoming signal from at least one outlet;
[C] the output of the intelligent device comprises a plurality of output ports;	[C] the output of the intelligent device comprises a plurality of output ports;
[D] the combiner is configured to combine all incoming signals at said input ports into an additive signal;	[D] the combiner is configured to combine all incoming signals at said input ports into an additive signal;
[E] the intelligent device further comprises at least one splitter configured to split the additive signal and distribute the additive signal among said plurality of output ports for distribution to the plurality of outlets; and	[E] the intelligent device further comprises at least one splitter configured to split the additive signal and distribute the additive signal among said plurality of output ports for distribution to the plurality of outlets; and
[F] the additive signal distributed to the plurality of outlets comprises at least one baseband signal on a carrier signal of a frequency in the range of about 5 MHz to at least about 1 GHz.	[F] The additive signal distributed to the plurality of outlets comprises at least one baseband signal on a carrier signal of a frequency in the range of about 5 MHz to at least about 1 GHz.
Claims 16 and 31	
16. A signal distribution system comprising:	31. A signal distribution system comprising:
[A1] the intelligent device of claim 1;	[A2] the intelligent device of claim 19;
[B] a wideband signal distribution system connected to the intelligent device and configured to transmit the	[B] a wideband signal distribution system connected to the intelligent device and configured to transmit the

modulated RF signal to the intelligent device; and	modulated RF signal to the intelligent device; and
[C] at least one addressable device connected to the intelligent device and configured to receive the digital stream outputted by the intelligent device.	[C] at least one addressable device connected to the intelligent device and configured to receive the digital stream outputted by the intelligent device.
Claim 17	
17. A signal distribution system comprising:	
[A] the intelligent device of claim 12;	
[B] a wideband signal distribution system connected to the intelligent device and configured to transmit the modulated RF signal to the intelligent device; and	
[C] at least one addressable device configured to receive at least one of the digital stream outputted by the intelligent device and the wireless signal transmitted by the wireless transmitter of the intelligent device.	
Claim 18	
18. A signal distribution system comprising:	
[A] the intelligent device of claim 13;	
[B] a wideband signal distribution system connected to the intelligent device and configured to receive the outgoing digital information stream from the combiner of the intelligent device; and	
[C] at least one addressable device configured to transmit the wireless signal carrying the digital information thereon to the intelligent device.	
Claim 29	
29. The intelligent device of claim 19, wherein:	
[A] the modulated RF signal received by the input includes channel identification information identifying the channels contained in the modulated RF signal; and	
[B] the detector is configured to detect each channel contained in the received modulated RF signal that includes information addressed to the at least one addressable device based on the channel identification information included in the modulated RF signal.	

**B. Ground 1: Claims 1-31 Are Obvious Over Rakib (Ex. 1007)
in View of the DOCSIS Specification (Ex. 1005).**

This ground relies in part upon a document entitled “Data-Over-Cable Service Interface Specifications, Radio Frequency Interface Specification, SP-RFI-I04-980724,” attached as Ex. 1005, which was published on or around July 24,

1998, and well before the critical date of the ‘822 patent (i.e., December 27, 1999). (Kop. ¶¶ 44-51.) This document is referred to herein as “the DOCSIS specification.” The DOCSIS specification is prior art at least under 35 U.S.C. § 102(b).¹

Rakib (Ex. 1007) is a published patent application filed December 8, 2003, as a continuation of an application filed January 14, 2000. Rakib is prior art at least under at least under 35 U.S.C. § 102(e). (Kop. ¶ 101.) As illustrated in Rakib’s Fig. 3, Rakib describes a gateway 14 for interfacing one or more addressable devices (e.g., PC 22, network adaptor 30, digital telephone 60) on local area networks (LANs) 18, 20 in a subscriber premises with any of a number of “subscription services,” such as a digital data distribution service of a cable television system, a digital satellite distribution network, or phone lines of the public services telephone network. ([0038]; Kop. ¶ 102.) (All bracketed numbers in this Petition, e.g., “[0001],” refer to paragraphs of Rakib.)

Rakib renders all claims of the ‘822 patent obvious in view of the DOCSIS

¹ Because the DOCSIS specification was incorporated by reference in prior filed patents, *e.g.*, U.S. Patent Nos. 6,598,232 (Ex. 1016) and 6,771,614 (Ex. 1017), it also qualifies as prior art under 35 U.S.C. § 102(e) as of the filing dates of those patents. (Kop. ¶ 51.)

specification. This ground relies primarily upon Rakib's disclosure relating to circuitry in gateway 14 for interfacing the addressable devices on LANs 18, 20 with a head end modem of a cable TV Hybrid Fiber Coax (HFC) network coupled to the Internet, video servers, etc. [0055]. Rakib explains that a modem at the customer premises may be either external to gateway 14 (element 12 in Fig. 3) or internal to the gateway (element 70 in Fig. 4A). ([0053]; Kop. ¶ 103.)

In either case, modem 12, 70 is described as being DOCSIS compatible [0053, 0060, 0118-0119], and "can be any known or future developed modem that conforms to the DOCSIS standard." ([0265]; Kop. ¶ 104.) The DOCSIS standard is well known in the cable industry and was quite familiar to those of ordinary skill in the art *circa* 2000. (Kop. ¶¶ 45-51.) Rakib's reference to the DOCSIS standard would immediately have communicated a great deal of information to a POSA *circa* 2000. In particular, the POSA would have understood that the referenced cable modems would comply with the DOCSIS standard then in effect, i.e., DOCSIS 1.1, and would operate as discussed paragraphs 52-100 of the Koperda declaration.

Furthermore, a POSA would have found it obvious to apply the teachings of the DOCSIS specification (Ex. 1005) to the cable modem 70 Rakib discloses, particularly in view of Rakib's express suggestion that the modem 70 can be DOCSIS compatible and Rakib's multiple references to the use of DOCSIS

modems and DOCSIS data. (Fig. 4A, Fig. 8, [0053,0060, 0118, 0119, 0131, 0150-0152, 0159, 0161, 0199, 0200, 0203, 0211, 0245, 0245, 0265].) Applying such teachings to Rakib would result in Rakib's modem 70 operating as discussed in paragraphs 52-100 of the Koperda declaration.

This ground focuses primarily on the disclosure of Rakib's Fig. 4A (reproduced below), and in particular the mechanism by which video on demand (VOD) data packets and DOCSIS data packets are routed from coax cable input 10

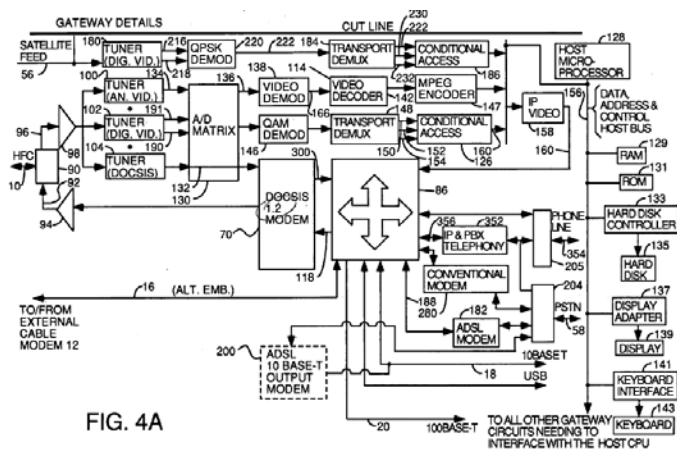


FIG. 4A

(Ex. 1007, Fig. 4A.)

All such packets are described as including an IP address of a device to which they are directed, and can thus be referred to as “IP packets” and can be considered to contain an address of an addressable device. ([0142, 0155, 0166, 0199, 0200]; Kop. ¶ 107.)

As will be explained in more detail below, at the center of gateway 14 is routing circuit 86, which is responsible for all of the above-described IP packet

to addressable devices on LANs 18, 20, and by which data packets are routed from addressable devices on LANs 18, 20 to the head end via the same coax cable. (Kop. ¶ 107.)

routing. Routing circuit 86 corresponds to the “combiner” referenced in the ‘822 patent’s independent claims, as both components combine data from multiple channels into a digital stream that is output to one or more addressable devices. (Kop. ¶ 108.)

The head end modem modulates VOD data onto 6 MHz wide channels in a band above 500 MHz and modulates DOCSIS data onto frequency channels above the VOD carrier frequencies. [0119]. Pursuant to the DOCSIS standard, the head end modem also modulates “management and control information” onto one or more control channels separate from the foregoing data channels. ([0143, 0158]; Kop. ¶¶ 109).

In view of Rakib and the DOCSIS specification, a POSA would have recognized that DOCSIS modem 70 would continuously determine whether received management and control information includes messages (corresponding to the claimed “channel in use information”) identifying channel frequencies to which tuners 102, 104 should be set to receive RF channels for the VOD and DOCSIS data services. ([0133, 0211]; Kop. ¶ 110-116.)

DOCSIS and VOD data that is extracted from identified channels of the incoming RF signal are combined by routing circuit 86 and output to one or more devices on LANs 18, 20. Routing circuit 86 also works in the opposite direction by routing data received from devices on LANs 18, 20 to DOCSIS modem 70 for

transmission to the head end via coax cable 10 via bus 118. ([0131, 0140, 0199]; Kop. ¶ 117-118.)

How a POSA would have found obvious claims 1-31 of the '822 patent in view of Rakib and the DOCSIS specification is explained below, with reference to the limitation identifiers in the table provided in Section IX.A above.

1[P] and 19[P]: Gateway 14, shown in Rakib's Figs. 3 and 4A, is an intelligent device that receives and processes RF signals. ([0118-0120]; Kop. ¶ 140.)

1[A] and 19[A]: Coax cable 10, shown in Rakib's Fig. 4A, receives modulated RF containing both Video On Demand (VOD) channels and DOCSIS data channels. ([0119]; Kop. ¶ 141.)

1[B1] and 19[B2]: The difference between these limitations is that in 1[B1] the "channel in use information" is received by the intelligent device, whereas in 19[B2] the "channel in use information" is generated by a "detector" configured to detect each channel that includes "information addressed to at least one addressable device."

Information modulated in Rakib's downstream DOCSIS control channels identifies channels in the downstream RF signal that contain VOD packets [0150, 0159] or DOCSIS data packets. (Ex. 1005, § 6.3.2.5 (pp.72-73), § 6.3.2.5.3 (pp.75-76), §§ 7.2.9-7.2.13 (pp. 108-110), § 9.2.2 (p. 121-122), § C.3 (p. 129), § C.8.3 (p.

133), § C.8.6 (p. 134); Kop. ¶¶ 76-97, 142-44, 149.) Tuners 102, 104, A/D matrix 130, QAM demodulator 146, DOCSIS modem 70, and microprocessor 128 (shown in Rakib's Fig. 4A), together form a "detector" configured to detect such channels by separating and demodulating downstream control channels to generate control messages that identify the channels that contain such packets. Each packet in the identified channels contains an address identifying at least one device on LAN 18 or 20. ([0155, 0166, 0168, 0200, 0211, 0250]; Kop. ¶¶ 145, 148-50.)

The "at least one addressable device" element can be read on any one or more devices on Rakib's LAN 18. (Kop. ¶¶ 146-47.) As one example mapping, the "at least one addressable device" element can be read on PC 22 shown in Rakib's Fig. 3. The DOCSIS data packets include the IP address of the PC 22. [0200, 0211, 0250]. In addition to video and audio data, the VOD data includes "associated data." [0164-0166]. The associated data can include the IP address of PC 22. [0166]. The DOCSIS data channel and the VOD channel can thus both include information addressed to PC 22. [0166, 0211]. (Kop. ¶ 146.) As another example mapping, the "at least one addressable device" element can be read on a group of devices on LAN 18 that receives data from the DOCSIS and VOD channels, e.g., PC 22, network adaptor 30, and telephone 60 shown in Rakib's Fig. 3, in an embodiment where LANs 18 and 20 are a single LAN 18 (as Rakib discusses in [0077]). [0164-0166, 0168, 0211]. The DOCSIS data channel and the

VOD channel can each include information addressed to one or more devices in that group. (*Id.*; Kop. ¶ 147.)

1[C] and 19[C]: Tuners 102, 104, A/D matrix 130, QAM demodulator 146, and DOCSIS modem 70 (shown in Rakib’s Fig. 4A), together form a “demodulator unit” that operates as claimed. [0133-0135, 0159-0163, 0211]. For VOD packets, tuner 102, A/D matrix 130, and QAM demodulator 146, together demodulate an identified VOD channel and recover the baseband VOD data from that channel, after the VOD channel has been identified as containing VOD packets that are addressed to the requesting network adapter. [0133-0135, 0159-0163]. For DOCSIS data packets, tuner 104, A/D matrix 130, and DOCSIS modem 70, together demodulate an identified DOCSIS data channel and recover the baseband DOCSIS data from that channel, after the DOCSIS data channel has been identified as containing DOCSIS data packets that are addressed to a device on LAN 18, e.g., PC 22. ([0211]; Kop. ¶¶ 148-56.)

1[D] and 19[D]: Routing circuit 86, shown in Rakib’s Fig. 4A, meets the claimed “combiner” limitation because it (a) combines all of the information – including the data from both the VOD and DOCSIS data channels– addressed to the devices on LAN 18 after the channels have been identified as containing information addressed to the devices, and (b) provides the combined data to a network interface of gateway 14 for distribution as Ethernet packets in a digital

stream on LAN 18. ([0039, 0080, 0087, 0120, 0139-0140, 0166, 0211]; Kop. ¶¶ 157, 160.)

The digital stream is output by the routing circuit 86 to addressable PC 22. Information from the DOCSIS data channel (i.e., the DOCSIS data packets addressed to PC 22) and information from the VOD channel (i.e., the “associated data” addressed to PC 22) is combined by routing circuit 86 and output to PC 22 via LAN 18. ([0039, 0080, 0087, 0120, 0139-0140, 0166, 0211] ; Kop. ¶ 158.)

Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., PC 22, network adaptor 30, and telephone 60), DOCSIS data packets from the DOCSIS data channel and VOD packets from the VOD channel are combined by the routing circuit 86 and output to that group of devices via LAN 18. ([0039, 0080, 0087, 0120, 0139-0140, 0166, 0211]; Kop. ¶ 159.)

2[A1] and 20[A2]: These limitations are identical except that 20[A2] requires the processor to receive the “channel in use information” that is “generated by the detector,” whereas 2[A1] requires only that such information be received. DOCSIS modem 70 and host microprocessor 128, shown in Rakib’s Fig. 4A, together form a processor that receives control information (extracted from a control channel of the downstream RF data stream) that identifies channels in the downstream RF signal that contain DOCSIS data or VOD data. [0143, 0158-159,

0119, 0207]. That control information is generated by the “detector” noted above in connection with 19[B2], i.e., the combination of tuners 102, 104, A/D matrix 130, QAM demodulator 146, DOCSIS modem 70, and microprocessor 128. (Kop. ¶¶ 162-65.)

2[B] and 20[B]: Tuner 102, A/D matrix 130, and QAM demodulator 146, shown in Rakib’s Fig. 4A, together form a first demodulator for a VOD channel [0133-0135, 0159-0163]. Tuner 104, A/D matrix 130, and DOCSIS modem 70, also shown in Fig. 4A, together form a second demodulator for a DOCSIS data channel. [0211]. These two demodulators together form a demodulator unit. (Kop. ¶ 166.)

2[C] and 20[C]: The processor (i.e., the combination of DOCSIS modem 70 and microprocessor 128) instructs the first and second demodulators to demodulate the channels identified as containing DOCSIS or VOD data, respectively, based on the channels identified in the received control information. ([0055, 0118-120, 0131, 0133-135, 0143, 0158, 0200, 0211]; Kop. ¶ 167.)

3[A] and 21[A]: Pursuant to the requirements of the DOCSIS standard, the processor (i.e., the combination of DOCSIS modem 70 and microprocessor 128) stores identifiers for DOCSIS data and VOD services, as well as information mapping IP destination addresses of devices on the LANs 18, 20 to those stored identifiers. Once such an identifier has been mapped to one or more destination IP

addresses, that identifier effectively serves as an address of the device(s) on the LAN(s) 18, 20 to which it is mapped. The processor could access those stored identifiers. ([0143, 0211]; Ex. 1005, § 6.3.2.5 (pp.72-73), § 6.3.2.5.3 (pp.75-76), § 7.2 (p. 97), §§ 7.2.9-7.2.13 (pp. 108-110), § 9.2.2 (p. 121-122), § C.3 (p. 129), § C.8.3 (p. 133), § C.8.6 (p. 134); Kop. ¶¶ 76-98, 169-171.)

Where the “at least one addressable device” is the PC 22, the processor could access the identifiers to which the destination address of the PC 22 had been mapped. Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., the PC 22, the network adaptor 30, and the telephone 60), the processor could access the identifiers to which the destination addresses of that group of devices had been mapped. (Kop. ¶¶ 172-73.)

3[B1] and 21[B2]: 21[B2] differs from 3[B1] only in that the language of 21[B2] requires that the “channel in use information” be “generated by the detector.”

Pursuant to the requirements of the DOCSIS standard, the processor (i.e., the combination of DOCSIS modem 70 and microprocessor 128) compares the stored identifiers of DOCSIS data and VOD services to identifiers contained in the received control information. The received control information includes control messages containing an identifier with an associated instruction providing the

modem with the downstream channel it is to use for receiving data directed to IP destination address(es) mapped to the identifier. (See limitations 3[A] and 21[A]; Kop. ¶¶ 76-98, 174-76, 179.)

If the identifier in the control message matched the stored identifier for the VOD service, the processor (i.e., the combination of DOCSIS modem 70 and microprocessor 128) would instruct the first demodulator (i.e., the combination of the tuner 102, A/D matrix 130 and QAM demodulator 146) to demodulate the channel specified in the control message to obtain the baseband VOD data directed to the IP destination address(es) mapped to that identifier. ([0143, 0158-0159]; *see* limitations 3[A] and 21[A]; Kop. ¶¶ 94- 98, 177.)

If the identifier in the control message matched the stored identifier for the DOCSIS data service, the processor (i.e., the combination of DOCSIS modem 70 and microprocessor 128) would instruct the second demodulator (i.e., the combination of the tuner 104, A/D matrix 130 and DOCSIS modem 70) to demodulate the channel specified in the control message to obtain the baseband DODSIS data directed to the IP destination address(es) mapped to that identifier. ([0211]; *see* limitations 3[A] and 21[A]; Kop. ¶¶94- 98, 178.)

Claims 4 and 22: The demodulator unit (i.e., tuners 102, 104, A/D matrix 130, QAM demodulator 146, and DOCSIS modem 70) comprises at least one demodulator configured to demodulate two channels containing information

addressed to the “at least one addressable device.” Tuner 102, A/D matrix 130, and QAM demodulator 146 together demodulate a VOD channel [0133-0135, 0159-0163], and tuner 104, A/D matrix 130, and DOCSIS modem 70 together demodulate a DOCSIS data channel. ([0211]; Kop. ¶ 180.)

Where the “at least one addressable device” is PC 22, the demodulator unit demodulates VOD and DOCSIS channels that contain VOD and DOCSIS data addressed to PC 22. [0159, 0166, 0211]. Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., PC 22, network adaptor 30, and telephone 60), the demodulator unit demodulates VOD and DOCSIS channels that contain VOD and DOCSIS data addressed to devices in that group. ([0159, 0166, 0211]; Kop. ¶¶ 181-82.)

5[A] and 23[A]: The VOD and DOCSIS data functions can be used independently. When only one of the services is being used, the information in the downstream DOCSIS control channel would identify only the single channel that is to be used for that service. The demodulator for the service in use would demodulate the identified channel. ([0159, 0211]; Kop. ¶ 184.)

Where the “at least one addressable device” is PC 22, DOCSIS or VOD “associated data” packets for the service in use would include the IP address of the PC 22 and the corresponding demodulated channel data would be output to the PC

22. [0164-0166, 0200, 0211, 0250]. Where the “at least one addressable device” element is the group of one or more devices on LAN 18 that receives data from a DOCSIS or VOD channel, e.g., PC 22, network adaptor 30, and/or telephone 60, all DOCSIS or VOD packets for the service in use would include IP address(es) of the device(s) in that group and the corresponding demodulated channel data would be output to that group. ([0164-0166, 0200, 0211, 0250]; Kop. ¶¶ 185-86.)

5[B] and 23[B]: The VOD and DOCSIS data functions can be used independently. When only one of the services is being used, routing circuit 86 would output packets for the demodulated channel for that service to the network interface of gateway 14 for distribution as Ethernet packets on LANs 18, 20. ([0039, 0080, 0087, 0120, 0139-0140, 0211]; Kop. ¶ 187.)

Where the “at least one addressable device” is PC 22, information from either the DOCSIS data channel (i.e., the DOCSIS data packets addressed to PC 22) or information from the VOD channel (i.e., the “associated information” addressed to PC 22) would be forwarded by routing circuit 86 and output to PC 22 via LAN 18. ([0039, 0080, 0087, 0120, 0139-0140, 0166, 0211]; Kop. ¶ 188.)

Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., PC 22, network adaptor 30, and telephone 60), DOCSIS data packets from the DOCSIS data channel or VOD packets from the VOD channel are forwarded by routing circuit 86 and

output to that group of devices via LAN 18. ([0039, 0080, 0087, 0120, 0139-0140, 0166, 0211] ; Kop. ¶ 189.)

Claim 6: The downstream DOCSIS control channels that identify channels in the downstream RF signal that contain VOD packets or DOCSIS data packets are received as part of the modulated RF signal received at coax cable 10. ([0143, 0158]; Kop. ¶ 190.)

7[A1] and 24[A2]: See above discussion of limitations 2[A1] and 20[A2].

7[B1] and 24[B2]: See above discussion of limitations 3[A] and 21[A]. By receiving and storing identifiers for DOCSIS data and VOD services, as well as a mapping of such identifiers to IP destination addresses, the processor (i.e., the combination of the DOCSIS modem 70 and the microprocessor 128) instructs the detector (i.e., the combination of tuners 102, 104, A/D matrix 130, QAM demodulator 146, DOCSIS modem 70, and microprocessor 128) of addresses of devices on LANs 18, 20. ([0143,0211]; Ex. 1005, § 6.1.2.3 (p. 47), § 6.2.1.4 (p. 51), § 6.2.6 (p. 60-61), § 7.2 (p. 97), §§ 7.2.9-7.2.13 (pp. 108-110); Kop. ¶¶ 76-99, 194-95.)

7[C] and 24[C]: See above discussion of limitations 19[B2], 3[B1], and 21[B2]. The detector (i.e., the combination of tuners 102, 104, A/D matrix 130, QAM demodulator 146, DOCSIS modem 70, and microprocessor 128) identifies a channel containing DOCSIS data or IP video addressed to a device on LANs 18,

20 each time DOCSIS modem 70 receives a channel assignment message for which a currently assigned identifier for such a service matches the identifier contained in the message. [0143, 0158, 0211; Ex. 1005, § 6.3.2.5 (pp.72-73), § 6.3.2.5.3 (pp.75-76), § 7.2 (p. 97), §§ 7.2.9-7.2.13 (pp. 108-110), § 9.2.2 (p. 121-122), § C.3 (p. 129), § C.8.3 (p. 133), § C.8.6 (p. 134); Kop. ¶¶ 76-99, 196).

Once an identifier for DOCSIS data or VOD services has been mapped to one or more destination IP addresses, that identifier effectively serves as an address of the device(s) on LANs 18, 20 to which it is mapped. The channel identification performed by the detector is thus done in accordance with the addresses of the addressable devices on LANs 18, 20. (Kop. ¶¶ 96, 197.)

Where the “at least one addressable device” is the PC 22, the DOCSIS data packets can include the IP address of the PC 22. [0200, 0211, 0250]. In addition to video and audio data, the VOD data includes “associated data.” [0164-0166]. The associated data can include the IP address of PC 22. [0166]. The DOCSIS data channel and the VOD channel can thus each include information addressed to PC 22. Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels, e.g., PC 22, network adaptor 30, and telephone 60. [0164-0166, 0168, 0211], the DOCSIS channel and the VOD channel can each include information addressed to one or more devices in that group. ([0166, 0211]; Kop. ¶¶ 198-99.)

7[D]: See above discussion of limitation 19[B2].

8[A] and 25[A]: Gateway 14 is connected to a plurality of addressable devices on LAN 18, including network adaptor 30 and PC 22, each of which has a unique IP address. ([0087, 0139-0140, 0211]; Kop. ¶ 202.)

8[B] and 25[B]: See discussion of limitations 1[D] and 19[D]. The output from routing circuit 86 to the network interface is a digital stream containing combined data from the two identified channels. ([0039, 0080, 0087, 0120, 0139-0140, 0211]; Kop. ¶ 203.)

Claim 9: The modulated RF signal received via the coax cable 10 is within this range. ([0119] ; Kop. ¶ 204.)

10[A] and 26[A]: There is a modulated RF channel using the DOCSIS protocol and it carries IP packets. [0211]. There is a modulated RF channel that carries analog video which does not have an IP address. ([0119, 0123, 0125]; Kop. ¶ 206.)

10[B] and 26[B]: Gateway 14 is able to simultaneously receive IP data (DOCSIS) and receive a non-IP portion (analog video) that is forwarded to an outlet. The analog video channel is received using tuner 100 and processed by blocks 130, 138, 114, 147, 158, and 86 before being transmitted to the LAN outlet (LAN 18 or 20). [0122-0125, 0267, 0140]. The DOCSIS channel is selected by the tuner 104 before being transmitted to the demodulator unit (i.e., the combination of

tuners 102, 104, A/D matrix 130, QAM demodulator 146, and DOCSIS modem 70). [0211]. The “separation unit” of these claims is thus a combination of tuners 100 and 104, as well as blocks 130, 138, 114, 147, 158, and 86. (Kop. ¶ 207-209.)

Claim 11 and 26[C]: After processing, the analog video channel received (using tuner 100), is “encapsulated into IP packets addressed to the network adapter of the TV where the CATV video channel is to be viewed.” [0125]. The “IP packets are then encapsulated into Ethernet packets and routed to the appropriate LAN network interface card for LAN 18 or 20. [0126] When “the IP packets reach the network adapter of the TV that requested the CATV channel, they are converted to a video signal that can be displayed by the TV.” [0127]. Thus the outlet (LAN 18 or 20) is connected to both a video receiver (TV 28) and to a device having an IP address (network adaptor 30). (Kop. ¶¶ 210-11.)

12[A1], 12[B1], 27[A2] and 27[B2]: Rakib describes that LANs 18, 20 can be “an RF or infrared wireless LAN system.” [0079]. A POSA would have understood *circa* 2000 that, in such an implementation, information in at least one of the channels contained in the modulated RF signal that are selected by tuners 100, 102, 104 for routing to LANs 18, 20 via routing circuit 86 would be converted into a wireless signal and transmitted via a wireless transmitter to devices configured to receive the wireless signal. (Kop. ¶¶ 213-16.)

13[A] and 27[C]: Rakib discloses that LANs 18, 20 can be “an RF or

infrared wireless LAN system.” [0079]. A POSA would have understood *circa* 2000 that, in such an implementation, gateway 14 would include a wireless receiver to receive a wireless signal carrying digital information thereon from devices on LAN 18 or 20. (Kop. ¶ 217, 221.)

13[B] and 27[D]: When at least one of LANs 18, 20 is implemented as “an RF or infrared wireless LAN system” [0079], gateway 14 would also include a wireless demodulator unit to demodulate the digital information carried on the wireless signal. (Kop. ¶¶ 218, 222.)

13[C] and 27[E]: When at least one of LANs 18, 20 is implemented as “an RF or infrared wireless LAN system” [0079], routing circuit 86 would be configured to output packets containing the baseband digital information obtained by a wireless demodulator to cable modem 70 for distribution to wide area networks. ([0053, 0055, 0077, 0082, 0086-0088, 0131-0132, 0148-50, 0196-203]; Kop. ¶¶ 219, 223.)

Claims 14 and 28: When at least one of LANs 18, 20 is implemented as “an RF or infrared wireless LAN system” [0079], routing circuit 86 would be configured to combine digital signals obtained by a digital demodulator of one of LANs 18, 20 with digital information received from an addressable device on the other of LANs 18, 20, and output the combined digital information as the outgoing digital information stream to the modem 70 for distribution over the wide area

networks. ([0053, 0055, 0077, 0082, 0086-0088, 0131-0132, 0148-0150, 0196-0203]; Kop. ¶ 224.)

15[A] and 30[A]: Gateway 14 is configured for use as a distribution unit for use with a wideband signal distribution system including at least a head end that distributes wideband signals to many outlets, including outlets feeding other modems servicing IP telephone devices on the Internet. ([0055, 0088, 0245, 0246, 0250]; Kop. ¶ 226.)

15[B] and 30[B]: LANs 18, 20 are input ports configured to receive at least one incoming signal from an outlet of a device on LANs 18, 20. For example, LANs 18, 20 may each have a PC running an Internet phone application, with each such PC having an outlet for IP phone data. ([0245]; Kop. ¶ 227.)

15[C] and 30[C]: Coax cable 10 and phone line 354 are output ports of gateway 14. ([0199, 0245]; Kop. ¶ 228.)

15[D] and 30[D]: In a circumstance where two IP telephone devices on different ones of LANs 18, 20 are multicasting packets to both the IP & PBX telephony circuit 352 and two or more devices on the Internet (accessed via the head end modem), e.g., during a conference call, routing circuit 86 will combine IP packets from the telephone devices on the LANs 18, 20 into an additive signal. ([0126, 0140, 0211, 0245]; Kop. ¶ 229.)

15[E] and 30[E]: In a circumstance where two IP telephone devices on

different ones of the LANs 18, 20 are multicasting packets to both the IP & PBX telephony circuit 352 and two or more devices on the Internet, the routing circuit 86 acts as a splitter to split and distribute the additive signal (including the IP packets from the telephone devices on the LANs) among an outlet port for the bus 356 of the IP & PBX telephony circuit 352 and an outlet port for the bus 118 of the DOCSIS modem 70. [0245, 0246]. The DOCSIS modem 70 would transmit the additive signal received via bus 118 to the head end via the coax cable 10 for distribution to the outlets feeding other modems servicing IP telephone devices on the Internet. ([0126, 0140, 0211, 0245, 0246]; Kop. ¶ 230.)

15[F] and 30[F]: The additive signal (including the IP packets from the telephone devices on the LANs) distributed by the head end to the outlets feeding other modems servicing IP telephone devices on the Internet comprises a baseband signal that is modulated on a carrier in the claimed range. ([0019, 0119, 0250]; Kop. ¶ 231.)

16[A1] and 31[A2]: See above discussion of claims 1 and 19.

16[B] and 31[B]: A head end modem of a cable TV Hybrid Fiber Coax (HFC) network coupled to the Internet, video servers, etc., is connected to gateway 14 via coaxial cable 10 and transmits a modulated RF signal to gateway 14. ([0055, 0119]; Kop. ¶ 235.)

16[C] and 31[C]: The devices on LANs 18, 20 are addressable devices that

receive the digital stream output by routing circuit 86. ([0120, 0126, 0140, 0211]; see also 1[D] *supra*). For LAN configurations described, all of the devices on LANs 18, 20 would receive the entirety of such a digital stream. ([0079]; Kop. ¶¶ 236-37.)

17[A]: See above discussion of claims 1 and 12.

17[B]: See above discussion of limitation 16[B].

17[C]: See above discussion of limitation 16[C]. Furthermore, LANs 18, 20 can be “an RF or infrared wireless LAN system.” [0079]. In such an implementation, the devices on LANs 18, 20 would receive the wireless signal transmitted by the wireless transmitter of gateway 14. ([0079]; Kop. ¶ 241.)

Where the “at least one addressable device” is PC 22, PC 22 is configured to receive the digital stream output by gateway 14 via LAN 18. (See discussion of limitation 1[D] above.) Where LAN 18 is wireless, moreover, PC 22 would include a wireless receiver configured to receive a wireless signal transmitted by a wireless transmitter of gateway 14. ([0079]; Kop. ¶ 242.) Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., PC 22, network adaptor 30, and telephone 60), those devices are configured to receive the digital stream output by gateway 14 via LAN 18. (See above discussion of limitation 1[D].) (Kop. ¶ 243.)

18[A]: See above discussion of claims 1 and 13.

18[B]: A cable TV Hybrid Fiber Coax (HFC) network coupled to the Internet, video servers, etc., is connected to cable modem 70 of gateway 14 via coaxial cable 10. The cable modem 70 is connected to routing circuit 86 of gateway 14 and is configured to receive the outgoing digital stream therefrom. ([0053, 0055, 0077, 0082, 0086-0088, 0131-0132, 0148-0150, 0196-0203]; Kop. ¶ 246.)

18[C]: LANs 18, 20 can be “an RF or infrared wireless LAN system.” [0079]. In such an implementation, digital information from PC 22 or other addressable devices on the LANs would communicate a wireless signal carrying the digital information to the wireless receiver of gateway 14. (Kop. ¶ 247.)

Where the “at least one addressable device” is PC 22 and where LAN 18 is wireless, PC 22 would be configured to transmit a wireless signal carrying digital information from the PC 22 to a wireless receiver of gateway 14. Where the “at least one addressable device” is the group of devices on LAN 18 that receives data from the DOCSIS and VOD channels (e.g., PC 22, network adaptor 30, and telephone 60) and where LAN 18 is wireless, those devices would be configured to transmit a wireless signal carrying digital information from the devices to gateway 14. (Kop. ¶¶ 248-49.)

29[A]: Claim 29 introduces the term “channel identification information,” used in both limitations 29[A] and 29[B]. As discussed above in section VII.D, the

BRI for this term should be “information that identifies two or more channels contained in the modulated RF signal.” As noted above in connection with limitation 19[B2], Rakib includes a “detector” configured to detect channels in the downstream RF signal that contain VOD packets or DOCSIS data packets by separating and demodulating downstream control channels to generate “channel in use information” identifying channels that contain such packets. Those control channels include parameters that identify the channels the modem 70 is to use to receive VOD and DOCSIS data). Those parameters thus qualify as “channel identification information,” as they identify two or more channels contained in the modulated RF signal. (Kop. ¶ 251.)

29[B]: See above discussion of limitation 19[B2].

C. Ground 2: Claims 1-9, 16, 19-25, 29, and 31 Are Obvious over Haugli (Ex. 1009) in View of Grindahl (Ex. 1010)

Haugli (Ex. 1009) is a PCT patent application published on September 30, 1999, more than one year before the earliest claimed priority date of the ‘822 patent. It is thus prior art under 35 U.S.C. § 102(b). (Kop. ¶ 119.) Haugli discloses (*see* Fig. 1 – reproduced below) a communication system that allows data packets to be exchanged between a ground station 10 and one or more mobile or fixed terminals 11 via a two-way RF link. (Fig. 1; 5:20-30; 11:8-25; Kop. ¶ 120.)

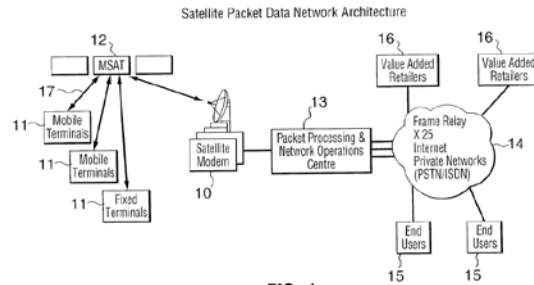


FIG. 1

(Haugli (Ex. 1009), Fig. 1.)

Haugli teaches that data addressed to a terminal 11 may be distributed across multiple RF channels and that a control channel transmitted with the data channels informs the recipient terminal 11 whether the data channels contain any data for that terminal 11 and of the identity of the channels that contain that data. (3:12-17; 9:19-10:12.) If the control channel identifies channels containing data for the recipient terminal 11, circuitry in the terminal 11 demodulates the identified channels and arranges the data from those channels for use by data processing circuitry. (3:18-23; 9:28-10:14; Kop. ¶ 121-24.)

Grindahl (Ex. 1010) is a patent for which an application was filed April 1, 2005, as a divisional of an application filed October 23, 2000. It is thus prior art at least under 35 U.S.C. § 102(e). (Kop. ¶ 125. Grindahl discloses (*see* Fig. 3) a consumer premise equipment (CPE) unit 14 that enables one or more host computers 12 to communicate with a base station 18 using a communication medium that such computers are not ordinarily built to use, e.g., long range wireless communication. (Kop. ¶ 126.)

CPE unit 14 is connected via Ethernet either directly to the computers 12 and/or to a LAN server associated with them. (4:64-5:10.) The base station 18 is similarly connected via Ethernet to a network, e.g., the Internet. (5:25-36.) The CPE unit 14 and the base station 18 are located about 1-5 miles apart and they communicate using RF signals of about 2.5 GHz. (3:53-60; Kop. ¶ 127.)

After CPE unit 14 becomes registered with base station 18, base station 18 creates a table including the IP address of each host computer 12, the associated low-level physical network hardware address, and the associated over-the-air hardware address of the CPE unit 14. (6:67-7:8.) The base station will communicate a message over the air to the CPE unit 14 when the base station determines that the level 3 address of the host computer 12 to which the message is directed is in its table. (6:67-7:8.) Once the CPE unit 14 and base station 18 have learned the IP addresses of the host computers 12 the CPE unit services, they effectively operate like a standard Ethernet switch. (6:9-15; Kop. ¶ 128-29.)

A POSA would have found it obvious to modify terminal 11 of Haugli to incorporate “hardware necessary to implement Ethernet communication with a user’s host computer 12 or LAN server,” as taught by Grindahl (e.g., at 4:64-67), for the reason of allowing Haugli’s terminal 11 to transfer data it receives from the ground station 10 to one or more host computers, and *vice versa*, and thus enabling the transfer of data between the computers and Haugli’s ground station 10. (Kop. ¶

253, 255, 257-259, 263-64.)

Haugli expressly discloses connections to terminal 11 through block 43 shown in Fig. 6. (Haugli, 10:18-20). One such Haugli interface connection (i.e., serial I/O) can be used to connect a computer with the terminal. (10:18-20.)

Motivated by a need to provide other common computer interfaces, a POSA would have found it obvious to turn to Grindahl's Ethernet LAN solution. (Kop. ¶ 260.)

How the disclosures of Haugli and Grindahl lead a POSA to a combination that renders obvious claims 1-9, 16, 19-25, 29, and 31 of the '822 patent is explained below, with reference to the limitation identifiers of Section IX.A above.

1[P] and 19[P]: Haugli's terminal 11 and Grindahl's CPE unit 14 are both intelligent devices that receive and process RF signals. (Haugli, Figs. 1 and 5; 5:2-6; Grindahl, 4:55-57; 4:64-5:13.) As noted above, it would have been obvious to a POSA to incorporate certain functionality of Grindahl's CPE unit 14 into Haugli's terminal 11. (Kop. ¶ 255.)

1[A] and 19[A]: Antenna 30 of Haugli's terminal 11 receives a modulated RF signal containing multiple channels. (Fig. 5; 3:21-23; 5:2-6; 5:17-19; 7:8-20; 9:10-15.) Haugli teaches distributing data over several channels per terminal in order to increase data throughput. (5:14-19; Kop. ¶ 256.)

1[B1] and 19[B2]: The only difference between these limitations is that in 1[B1] the "channel in use information" is received by the intelligent device,

whereas in 19[B2] the “channel in use information” is generated by a “detector” configured to detect each channel that includes “information addressed to at least one addressable device.”

Haugli’s antenna 30 (*see* Fig. 5) receives a control channel that contains information indicating whether data on the modulated RF signal is addressed to terminal 11 and how the information is distributed across the channels. (Fig. 5; 2:14-22; 3:1-5, 12-21; 5:14-30; 7:8-11;9:1-10:13.) Haugli’s DSP 35 detects each channel contained in the received modulated RF signal that includes information addressed to terminal 11 (Fig. 5; 2:15-22; 3:1-5; 5:25-30; 9:17-10:5.), and generates such channel in use information, by extracting control information from the control channel received by antenna 30. (Fig. 5; 3:2-5, 12-17; 9:16-10:13; Kop. ¶ 257, 262.) Using the “channel in use information,” Haugli’s “DSP 35 looks at the appropriate carrier frequencies to extract the digital data destined for the terminal.” (9:30-10:2).

Haugli additionally discloses the transmission of Internet data as one application for its multi-channel data transmission technique. (4:1-3; 5:20-22; Kop. ¶ 257.) Grindahl’s host computers 12 are addressable devices that are connected to consumer premise equipment (CPE) unit 14, the “intelligent device” which receives and processes RF signals from base station 18. (Figs. 2-3; 6: 9-11, 35-42, 52-67.) The channel contained in the received modulated RF signal includes

information addressed to at least one host computer 12, at least by being addressed to the CPE unit 14 connected to the at least one host computer 12 and including the address of the at least one host computer 12. (6:32-42; 6:60-7:8.) Grindahl also teaches the desirability of using a processor (i.e., CPE unit 14) as an interface between an RF signal transceiver (i.e., base station 18) and one or more computers (i.e., host computers 12) to enable data flow between the computers and an external network (e.g., the Internet) connected to the base station 18. (Fig. 3; 1:44-60; 3:44-50; 4:42-57, 64-67; Kop. ¶ 258, 263.)

In the combination noted above, the antenna 30 of Haugli receives a control channel that contains information that indicates whether data is present on the modulated RF signal and addressed to at least one of the host computers 12, and how such data is distributed across multiple channels, and Haugli's DSP 35 generates channel in use information that indicates whether data is present on the modulated RF signal and addressed to at least one of the host computers 12, and how such data is distributed across multiple channels, by extracting control information from a control channel received by antenna 30. (Kop. ¶¶ 259-61, 264-266.)

1[C] and 19[C]: The control channel of Haugli indicates whether data is present on the modulated RF signal and addressed to terminal 11. (3:12-17; 9:28-10:13.) A demodulator unit (including Q demodulator 31 and the demodulation

function of DSP 35) demodulates the channels contained in the modulated RF signal that are identified as containing information addressed to the terminal 11, based on the DSP 35 identifying the appropriate channels for data extraction. (Figs 2, 5; 9:10-10:13; Kop. ¶ 267.)

In the Haugli/Grindahl combination noted above, the channel in use information from the control channel indicates whether data is present on the modulated RF signal and addressed to at least one of the host computers 12, and how such data is distributed across multiple channels; and the demodulator unit (i.e., the Q demodulator 31 and the demodulation function of DSP 35) demodulates the channels identified as containing such data, based on the DSP 35 identifying the appropriate channels for data extraction. (Kop. ¶ 268.) As explained above, using the “channel in use information,” “DSP 35 looks at the appropriate carrier frequencies to extract the digital data destined for the terminal.” (9:30-10:2).

1[D] and 19[D]: Haugli’s DSP 35 combines channels by arranging data packets extracted from identified channels in the appropriate order in accordance with the information received on the control channel. (3:18-23; 9:28-10:13; Fig. 3.) DSP 35 then outputs the arranged data packets as a single stream to data processing circuitry. (3:12-23; 9:28-10:13.) Grindahl’s CPE unit 14 outputs a digital stream to at least one of the addressable host computers 12 connected to the CPE unit 14. (Fig. 3; 4:64-67; 6:28-35; 14:40-45; Kop. ¶ 269-70.)

In the Haugli/Grindahl combination noted above, the channel in use information from the control channel indicates whether data is present on the modulated RF signal and addressed to at least one of the host computers 12, and how such data is distributed across multiple channels. After the demodulator unit (i.e., the Q demodulator 31 and the demodulation function of DSP 35) demodulated the channels identified as containing such data, DSP 35 combines the data from those channels into a digital stream and terminal 11 outputs the digital stream to at least one of the host computers 12 via an Ethernet connection added to the terminal's I/O interface 43. (Kop. ¶ 271.)

2[A1] and 20[A2]: These limitations are identical except that 20[A2] requires the processor to receive “channel in use information ... generated by the detector,” whereas 2[A1] requires only that such information be received. Haugli's DSP 35 is a processor configured to receive channel in use information contained in the control channel. (9:16-10:11.) Haugli's DSP 35 is also a processor configured to receive channel in use information the demodulator unit generates by decimating and demodulating the control channel. (9:8-10:11; Kop. ¶¶273-74.)

2[B] and 20[B]: Haugli's demodulator unit (i.e., Q demodulator 31 and the demodulation functions of DSP 35) is configured to demodulate multiple channels coming out of buffer 34 (*see* Kop.¶¶ 124, 267) and thus effectively functions as multiple demodulators. (9:28-10:13; Kop. ¶ 275.)

2[C] and 20[C]: Haugli's DSP 35 is configured to instruct the respective demodulation functions of the demodulator unit to demodulate those channels the information in the control channel identifies as containing data for the terminal 11. (9:16-10:12.) In the Haugli/Grindahl combination noted above, the channel in use information from the control channel indicates whether data is present on the modulated RF signal and addressed to at least one of the host computers 12, and how such data is distributed across multiple channels; and DSP 35 instructs the respective demodulation functions of the demodulator unit to demodulate the channels identified as containing such data. (Haugli, 3:18-27; Kop. ¶¶ 276-77.)

3[A] and 21[A]: As noted above, after CPE unit 14 becomes registered with base station 18, base station 18 creates a table including the address of each host computer 12, the associated low-level physical network hardware address, and the associated over-the-air hardware address of the CPE unit 14. (6:67-7:8.) The base station will communicate a message over the air to the CPE unit 14 when the base station determines that the level 3 address of the host computer 12 to which the message is directed is in its table. (6:67-7:8.) The address of the CPE unit 14 thus serves as an address of at least one host computer 12 listed in the base station's table. (*Id.*; Kop. ¶ 279.)

Haugli's control channel is communicated to multiple terminals 11 simultaneously (2:12-17; 3:2-5; 5:25-30; 7:9-11; 9:28-10:2) and contains

information indicating whether an associated message is “addressed” to a particular terminal. (3:2-5.) The control channel information thus includes addresses of any terminals 11 for which the associated message data is directed. As such, the DSP 35 accesses its terminal’s address, so as to allow it to compare that address with the address(es) contained in the current control message to determine whether the control message is directed to that terminal. (Kop. ¶ 280.)

In the Haugli/Grindahl combination noted above, terminal 11 of Haugli is assigned a unique address that serves as an address of at least one host computer 12. After Haugli’s terminal 11 (Grindahl’s CPE unit 14) becomes registered with Haugli’s ground station 10 (Grindahl’s base station 18), Haugli’s ground station 10 creates a table including the address of each host computer 12, the associated low-level physical network hardware address, and the associated over-the-air hardware address of the terminal 11. The ground station 10 communicates a message over the air to the terminal 11 when the ground station 10 determines that the level 3 address of the host computer 12 to which the message is directed is in its table. The address of the terminal 11 thus serves as an address of at least one host computer 12 listed in the ground station’s table. As such, DSP 35 accesses the address of at least one host computer (i.e., the address of terminal 11) to determine whether information in a control message indicates there is a channel with data for at least one host computer the terminal 11 is servicing. (Kop. ¶ 281.)

3[B1] and 21[B2]: See above discussion of limitation 2[C]. The only difference between 21[B2] and 3[B1] is the limitation of 21[B2] specifying that the “channel in use information” was “generated by the detector.”

In the Haugli/Grindahl combination noted above, DSP 35 instructs the respective demodulation functions of the demodulator unit to demodulate the channels the control information indicates contain data addressed to the at least one host computer it services. The control information contains an address of the terminal 11 to which it is directed. The DSP 35 compares the address in the control information with the address of the terminal 11, which serves as an address of the at least one host computer the terminal 11 services, to see whether they match, and instructs the demodulation functions to demodulate the identified channels when the compared addresses match. (Kop. ¶¶ 282-83.)

Claims 4 and 22: See above discussion of limitation 1[C]. In the Haugli/Grindahl combination noted above, Haugli’s demodulator unit (i.e., Q demodulator 31 and the demodulation functions of DSP 35) performs multiple demodulations and thus functions as at least one demodulator that demodulates the identified channels contained in the modulated RF signal. The identified channels include information addressed to at least one host computer 12. (Kop. ¶ 284.)

5[A] and 23[A]: See above discussion of limitations 1[A] and 1[C]. In the Haugli/Grindahl combination noted above, the channel in use information from the

control channel indicates whether data is present on the modulated RF signal and addressed to the at least one host computer 12. Haugli's demodulator unit (i.e., Q demodulator 31 and the demodulation functions of DSP 35) demodulates any number of identified channels—which may be a single channel “[i]f packets arrive for a particular terminal at a very low bit rate”—contained in the modulated RF signal. (7:6-8; Kop. ¶ 286.)

5[B] and 23[B]: See above discussion of limitation 1[D]. In the Haugli/Grindahl combination noted above, DSP 35 combines data from any number of identified channels—which may be a single channel—demodulated by Haugli's demodulator unit (i.e., Q demodulator 31 and the demodulation functions of DSP 35), and terminal 11 outputs the combined data to one or more host computers. (Kop. ¶ 287.)

Claim 6: See above discussion of limitation 1[B1]. In the Haugli/Grindahl combination noted above, the antenna 30 of terminal 11 receives the channel in use information from the control channel as part of the modulated RF signal. (Haugli, 9:16-18; Kop. ¶ 288.)

7[A1] and 24[A2]: See above discussion of limitations 2[A1], 19[B2], and 20[A2].

7[B1] and 24[B2]: See above discussion of limitations 19[B2], 3[A], and 21[A]. As explained above, after Haugli's ground station 10 creates a table

including the IP address of each host computer 12, etc., the address of the terminal 11 serves as an address of at least one host computer 12 listed in that table. As such, in the Haugli/Grindahl combination noted above, DSP 35 instructs its detector of that address of the at least one host computer (i.e., the address of the terminal 11) to enable it determine whether information in a control message indicates there is a channel with data for at least one host computer the terminal 11 services. (Kop. ¶ 292-93.)

7[C] and 24[C]: See above discussion of limitations 19[B2], 3[B1], and 21[B2]. In the Haugli/Grindahl combination noted above, DSP 35 detects channels containing information addressed to the at least one host computer its services by comparing the address of the terminal 11, which serves as an address of the at least one host computer the terminal 11 services, with the address(es) contained in the control message, and determines that the channels identified in the control message contain information addressed to the at least one host computer when the addresses match. (Kop. ¶ 294.)

7[D]: See above discussion of limitation 19[B2].

8[A] and 25[A]: Grindahl's CPE unit 14 can be connected to multiple host computers 12, each of which has a respectively unique Internet protocol (IP) address. (6:35-42; 6:52-67.) In the Haugli/Grindahl combination noted above, the terminal 11 is likewise connected to multiple host computers, each of which has a

respectively unique Internet protocol (IP) address. (Kop. ¶ 297-98.)

8[B] and 25[B]: See above discussion of limitation 1[D].

Claim 9: The 13 GHz modulated RF signal received by Haugli's antenna 30 is within the claimed frequency range of "in excess of 1 GHz". (6:9-11; Kop. ¶ 300.)

16[A1] and 31[A2]: See above discussion of claims 1 and 19.

16[B] and 31[B]: Haugli discloses transmitting Internet data as one application for its multi-channel data transmission technique, and specifically discusses transmission of wideband data to the terminals 11 via ground station 10. (3:19-21; 4:1-3; 5:20-22, 14-19.) Similarly, Grindahl's base station 18 is part of a wideband distribution system 10 that is connected to CPE unit 14 and transmits the modulated RF signal to CPE unit 14. (Figs. 2-3, 9-9C; 4:28-31; 6:9-11; 13:49-53; Kop. ¶¶ 304-305 .)

In the Haugli/Grindahl combination noted above, the ground station 10 of Haugli forms, in at least some implementations, at least a part of a wideband signal distribution system that is connected to the terminal 11 via the RF link 17 and transmits the modulated RF signal to the terminal 11 via that link. (Kop. ¶ 306.)

16[C] and 31[C]: Grindahl's host computers 12 are addressable devices that are connected to CPE unit 14 and receive the digital stream output by CPE unit 14. (Fig. 3; 4:64-67; 6:35-42; 6:52-67; 14:40-45.) In the Haugli/Grindahl combination

noted above, the host computers 12 are addressable devices that are connected to terminal 11 and receive the digital stream output by the DSP 35 via an Ethernet connection added to the I/O interfaces 43 of the terminal 11. (Haugli, 3:21-23;10-14-17; Kop. ¶¶ 307-308.)

29[A]: Claim 29 introduces the term “channel identification information,” used in both limitations 29[A] and 29[B]. As discussed above in section VII.D, the BRI for this term should be “information that identifies two or more channels contained in the modulated RF signal.” As noted above in connection with limitation 19[B2], Haugli’s terminal 11 includes a “detector” that uses information in a control channel to detect each channel contained in the received modulated RF signal that includes information addressed to terminal 11. Haugli’s control channel includes information indicating whether data on the modulated RF signal is addressed to terminal 11 and how the information is distributed across the channels. That information thus qualifies as “channel identification information,” as it identifies two or more channels contained in the modulated RF signal. (Kop. ¶ 310.)

29[B]: See above discussion of limitation 19[B2].

D. Ground 3: Claims 10-11 and 26 Are Obvious over Haugli (Ex. 1009) in view of Grindahl (Ex. 1010), and further in view of Otten (Ex. 1011)

Otten (Ex. 1011) is a U.S. patent filed August 10, 1999. It is thus prior art at

least under 35 U.S.C. § 102(e). (Kop. ¶ 130.) Otten discloses (*see* Figs. 3 and 6) a satellite communication system in which Internet data can be transmitted from a Direct Broadcast System (DBS) satellite 6 to a DBS receiver 50 coupled to a computer 1. (Figs. 3, 6; 5:4-25; 6:48-54; 8:1-14.) Otten also discloses an embodiment (*see* Fig. 6) in which an RF signal received by the DBS receiver 50 “includes both television signals 52 and Internet signals 54,” and in which “the DBS receiver includes a splitter which separates the TV signals 52 and Internet signals 54 for transmission to respective television 56 and computer 1.” (8:6-14; Kop. ¶ 131, 314.)

A POSA would have found it obvious to combine Otten with Haugli and Grindahl. Haugli (Ex. 1009) discloses the transmission of Internet data as one application for its multi-channel data transmission technique. (4:1-3; 5:20-22.) Grindahl (Ex. 1010) teaches communication of data to host computer 12 using IP addresses. (6:28-42; 6:60-7:8.) A POSA would have found it obvious to modify the terminal 11 of Haugli (modified to communicate with host computers 12, as taught by Grindahl) to allow the reception of both TV channels (a non-IP portion) and Internet data channels (an IP portion), as suggested by Otten. This allows an additional type of device, i.e., a television, to receive a signal from the satellite 12 of Haugli. (Kop. ¶312, 317.)

How a POSA would have combined the teachings of Haugli, Grindahl, and

Otten to arrive at a combination rendering obvious claims 10-11 and 26 of the '822 patent is explained below, with reference to the limitation identifiers in the table provided in Section IX.A above.

10[A] and 26[A]: In the Haugli/Grindahl/Otten combination noted above, the modulated RF signal received by Haugli's antenna 30 includes at least one channel carrying TV data (a non-IP portion) and at least one channel carrying Internet data (an IP portion). (Kop. ¶¶ 314-18.)

10[B] and 26[B]: Further to the Haugli/Grindahl/Otten combination noted above, the terminal 11 of Haugli includes a splitter, as taught by Otten, to separate TV data (a non-IP portion) and Internet data (an IP portion), and to transmit the Internet signals to the demodulator unit of Haugli (including the Q demodulator 31 and the DSP 35), and to transmit the TV signals to an outlet which is connectable to a television 56 (a video receiver), as taught by Otten. (Kop. ¶ 319.)

Claim 11 and 26[C]: See above discussion of limitations 10[B] and 26[B], where the outlet is connectable to a video receiver, i.e., Otten's TV 56.

E. Ground 4: Claims 12-14, 17, 18, 27, and 28 Are Obvious over Haugli (Ex. 1009) in view of Grindahl (Ex. 1010), and further in view of Ollikainen (Ex. 1012)

Ollikainen (Ex. 1012) is a U.S. patent filed November 20, 1997. It is thus prior art at least under 35 U.S.C. § 102(e). (Kop. ¶ 132.) Ollikainen discloses a cyberstation 20 that "provides for a flexible interface between satellite ... two-way

interactive data services and personal computers.” (1:46-47.) For example, the cyberstation may be used to interface personal computers with an Internet service provider via a satellite link. (3:31-44, 59-62.) The cyberstation includes a satellite receiver 21 that receives interactive data (e.g., Internet data) from a satellite 11 (3:24-30), as well as a satellite transmitter 21a to transmit data to the satellite 11. (3:59-62; Kop. ¶ 134-35, 326-27.)

Ollikainen’s cyberstation 20 is thus analogous to Haugli’s terminal 11 and to Grindahl’s CPE 14 in that all three devices receive modulated RF signals that are converted into a digital data stream for use by end devices. (Haugli, 2:9-22; Grindahl, 2:44-67.) All three references describe the communication being two-way: transmitting and receiving. (Ollikainen, 1:45-49; Grindahl, 2:65-67; Haugli, 11:8-25; Kop. ¶ 324-28.)

According to Ollikainen, “[t]he cyberstation 20 also comprises a low-cost wireless local area network (LAN) interface 28 having an antenna 28a, and may include an optional wired local area network interface 29. The wireless local area network interface 28 communicates over a wireless link (RF or infrared, for example) with personal computers 35 that include a similar wireless local area network interface 28 and antenna 28a. The optional wired local area network interface 29 communicates with personal computers 35 equipped with local area network interface cards 29 by way of a local area network 32, such as an Ethernet

network, for example.” (3:66-4:9.) This is similar to Grindahl’s CPE 14 Ethernet (Grindahl, 4:64-67), with the addition of explicitly providing both a wireless and a wired LAN. (Kop. ¶ 136, 329.)

Given the Haugli/Grindahl combination noted above, and motivated by the need to implement Ethernet communication with a computer connecting to terminal 11 of Haugli, it would have been obvious to incorporate the functionality of Ollikainen to enable that terminal to communicate with host computers 12 wirelessly in addition to via a wired Ethernet connection. Doing this would eliminate the need for a wired connection to all of those computers. (Kop. ¶ 330.)

How a POSA would have combined Haugli, Grindahl, and Ollikainen to arrive a combination that renders obvious claims 12-14, 17, 18, 27, and 28 of the ’822 patent is explained below, with reference to the limitation identifiers in the table provided in Section IX.A above.

12[A1], 12[B1], 27[A2] and 27[B2]: In the Haugli/Grindahl/Ollikainen combination noted above, the terminal 11 includes the low-cost wireless local area network (LAN) interface 28 of Ollikainen, which converts the combined digital signals output by Haugli’s DSP 35 (*see* Haugli, 3:21-23) into a wireless signal and wirelessly transmits that signal from an antenna 28a to one or more host computers 12 “that include a similar wireless local area network interface 28 and antenna 28a.” (Ollikainen, 3:66-4:5; Kop. ¶ 331.)

13[A] and 27[C]: See above discussion of limitation 12[A1], 12[B1], 27[A2], and 27[B2]. In the Haugli/Grindahl/Ollikainen combination noted above, at least one host computer 12 includes a low-cost wireless LAN interface 28 of Ollikainen, which converts the digital signals output to that computer into a wireless signal and transmits that signal from an antenna 28a to another antenna 28a and wireless LAN interface 28 in terminal 11 of Haugli. (Ollikainen, 3:66-4:5; Kop. ¶¶ 335, 339.)

13[B] and 27[D]: In the Haugli/Grindahl/Ollikainen combination, the wireless LAN interface 28 in Haugli's terminal 11 demodulates the digital information carried on the wireless signal. (Ollikainen, 3:66-4:5; Kop. ¶¶ 336, 340.)

13[C] and 27[E]: In the Haugli/Grindahl/Ollikainen combination noted above, the wireless LAN interface 28 in the terminal 11 of Haugli forms a part of the "combiner," which combines signals including that from wireless LAN interface 28 to an outgoing digital information stream for transmission to ground station 10, which is part of a wideband distribution system. (Haugli, 3:29-4:3; 5:1-10; 7:25-31; 11:8-25; Kop. ¶¶ 337, 341.)

Claims 14 and 28: See above discussion of limitation 27[E]. In the Haugli/Grindahl/Ollikainen combination noted above, multiple host computers 12 communicate digital information to the terminal 11 via the wireless LAN interface.

The wireless LAN interface forms a part of the “combiner,” which combines signals including the digital information received from those host computers and demodulated by the wireless LAN interface 28. The combiner outputs the combined digital information as a digital information stream for transmission to ground station 10, which is part of a wideband distribution system. (Haugli, 3:29-4:3; 5:1-10; 7:25-31; 11:8-25; Kop. ¶ 342.)

17[A]: See above discussion of claim 12.

17[B]: See above discussion of limitation 16[B].

17[C]: See above discussion of limitations 12[A1], 12[B1], and 16[C].

18[A]: See above discussion of claim 13.

18[B]: See above discussion of limitation 16[B]. In the Haugli/Grindahl combination noted above, ground station 10 of Haugli, which is connected to terminal 11 of Haugli via a two-way RF link, receives the outgoing digital information stream from terminal 11. (Kop. ¶ 349.)

18[C]: See above discussion of limitation 27[C].

X. CONCLUSION

For the above reasons, *inter partes* review of claims 1-31 of the ‘822 patent is respectfully requested.

Respectfully submitted,
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CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (e)(4)

I certify that on November 20, 2015, I am causing a copy of the foregoing
Petition for *Inter Partes* Review, including all attachments, exhibits, and
documents filed herewith, to be served via FedEx Overnight upon the attorneys of
record for the patent at the following address:

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Date: November 20, 2015

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