

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LENOVO (UNITED STATES) INC.,
MOTOROLA MOBILITY LLC.,
Petitioners,

v.

COLLISION COMMUNICATIONS, INC.,
Patent Owner.

Case No. IPR2025-00284
U.S. Patent No. 8,089,946

**PATENT OWNER'S PRELIMINARY RESPONSE
PURSUANT TO 37 C.F.R. § 42.107(a)**

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<i>Comcast Cable Communications, LLC v. Touchstream Technologies, Inc.</i> , IPR2024-00324, Paper 13 (PTAB July 24, 2024)	44, 46, 47
<i>Sotera Wireless, Inc. v. Masimo Corp.</i> , IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020)	47
<i>Verizon Bus. Network Servs. LLC v. Huawei Techs. Co. Ltd.</i> , IPR2020-01292, Paper 13 (PTAB Jan. 25, 2021)	44

TABLE OF EXHIBITS

Exhibit	Description
2001	Declaration of Dr. Giuseppe Caire
2002	CV of Dr. Giuseppe Caire
2003	U. Madhow, <i>Fundamentals of Digital Communication</i> , Cambridge University Press 2008
2004	R.G. Gallager, <i>Principles of Digital Communication</i> , Cambridge University Press 2008
2005	A. Goldsmith, <i>Wireless Communications</i> , Cambridge University Press 2005
2006	RESERVED
2007	Judge Rodney Gilstrap Motion to Stay Pending IPR Statistics
2008	June 30, 2024 Federal District Court Case Management Statistics
2009	<i>Collision Communications, Inc. v. Lenovo Group Ltd.</i> , No. 23-cv-00594 (E.D. Tex.) Docket
2010	<i>Collision Communications, Inc. v. Lenovo Group Ltd.</i> , No. 23-cv-00594 (E.D. Tex.) Scheduling Order Dkt. 44 (Aug. 5, 2024)
2011	Declaration of Dr. Giuseppe Caire

This Petition is a copycat petition seeking to join the pending Petition in IPR2024-01250, for which PTAB has not yet issued an institution decision.¹ This Petition is substantively identical to that -01250 Petition, and it should be denied for the same reasons set forth in Patent Owner’s Preliminary Response to the -01250 Petition.

Accordingly, the following Preliminary Response is substantively identical to Patent Owner’s -01250 Preliminary Response and repeats all of those reasons for denial. In addition, Patent Owner has updated the following *Fintiv* section to address the present petitioners and align with the rescission of the June 21, 2022, Director’s Memorandum entitled “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation” (“Guidance Memo”).

I. Introduction

The Board should deny institution because (1) no Grounds establish the required reasonable likelihood of success against any challenged claim; and (2) the

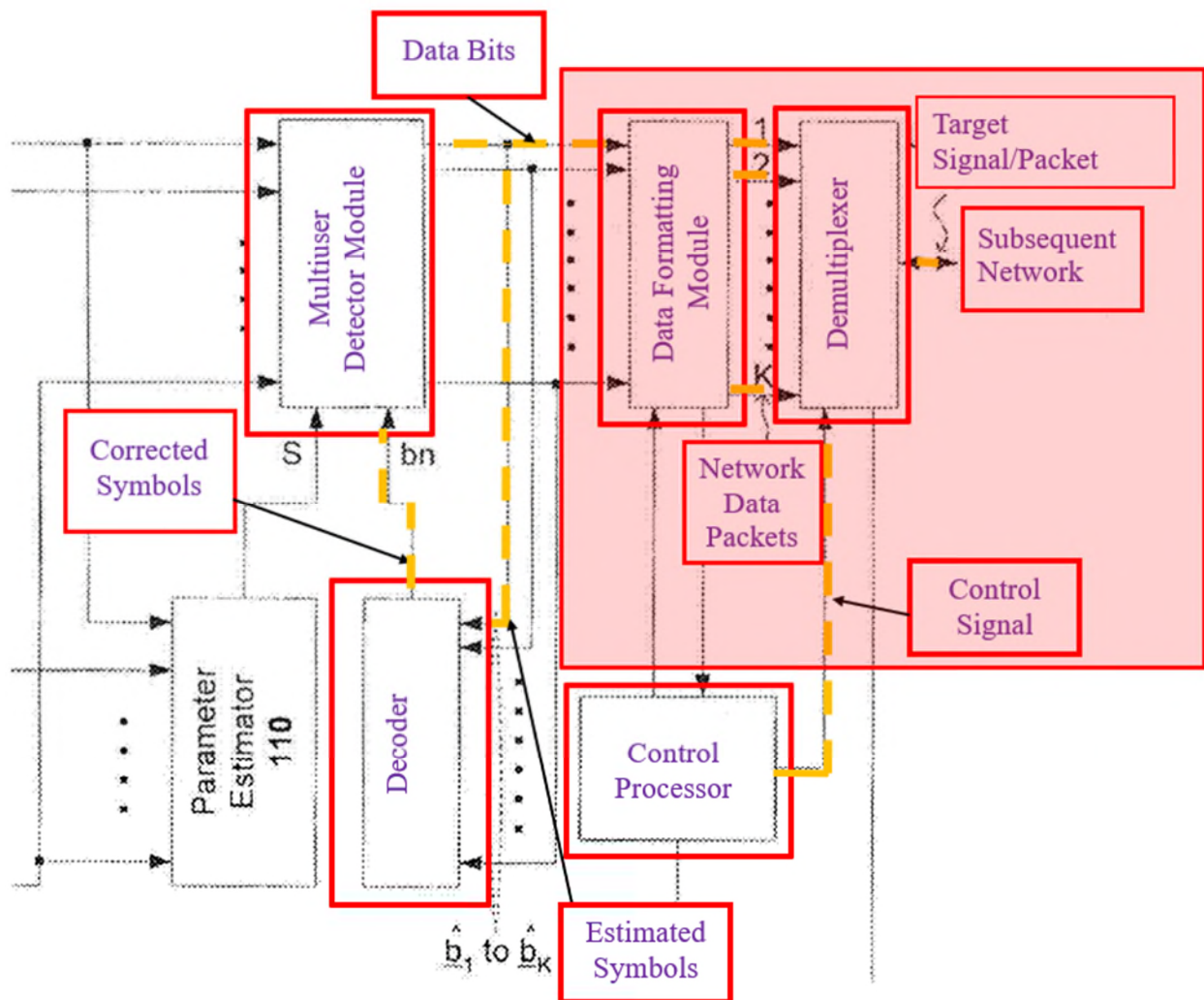
¹ Patent Owner has retained Giuseppe Caire, Ph.D. in this proceeding. (EX2011). Dr. Caire has adopted his prior opinions set forth in EX2001 (submitted in IPR2024-01250) and, for expediency, this Patent Owner Preliminary Response cites to Dr. Caire’s previously submitted declaration, also presented herein as EX2001.

ongoing parallel district court proceedings establish that institution should be discretionally denied under *Fintiv*.

Lack of Reasonable Likelihood of Success: The '946 Patent describes and claims a modem that, among other things, can packet a wireless signal received over one network for subsequent use in a different network.

In contrast, the asserted references do not concern such a “packeting” modem at all, much less one that includes the specific improvements and structures disclosed and claimed in the '946 Patent. As a result, time and time again, the references do not disclose—or even concern—limitations required by every challenged claims.

To illustrate, as a result of the significant differences between the claimed modems and those that are the subject matter of the asserted references, the asserted references include no description at all of the following general aspects of the inventive modem highlighted below in red, much less the specific implementations required by the challenged claims:



(EX2001 at ¶57).

In an effort to mask the vast material differences between the asserted references and the claimed subject matter, the Petition repeatedly confuses and conflates a number of important and distinct concepts. For example:

Data Formatting Module: All of the challenged claims require “a data formatting module” for producing network data packets for recovered signals. (EX1001 at independent claims 1, 10, and 20). But because none of the references

describe producing network data packets, the Petition simply points to a module that produces recovered signals—not packets—and presumes that these recovered signals are the same as the required packets. (Pet. at 18). They are not.

Control Processor: All of the challenged claims require “a control processor” for selecting the appropriate “network data packet formatting mode” for the packets produced by the foregoing “data formatting module.” (EX1001 at independent claims 1, 10, and 20). But again, because the references do not even concern creating packets for recovered signals, they do not discuss or address at all the selection of a “network data packet formatting mode.” The Petition simply ignores this fatal deficiency, asserting without explanation that a description of “diversity transmission modes” somehow teaches this limitation. (Pet. at 28-29). But these are completely disparate modes—“diversity transmission modes” have nothing to do with “network data packet formatting modes,” and the Petition does not assert or establish otherwise.

Demultiplexer: Each challenged claim further requires a “demultiplexer” configured to select a target signal based on a control input received from the foregoing control processor. (EX1001 at independent claims 1, 10, and 20). Because none of the references include such a demultiplexer, the Petition simply

ignores this requirement altogether, feigning that a different selection is claimed. (Pet. at 28-29).

The Petition should be denied if it fails to establish the required likelihood of success on any of the foregoing limitations. As established below, the Petition fails on all of them.

Discretionary *Fintiv* Denial: The *Fintiv* factors heavily weigh in favor of discretionary denial. In an attempt to characterize every factor as either neutral or favoring institution, the Petition is rife with conclusory statements and misapplications of controlling PTAB precedent. Under the appropriate legal standards—and considering the totality of the record evidence—the *Fintiv* factors support discretionary denial of institution.

II. Background Technology for the Claimed Packeting Modem

The challenged claims are directed to an improved modem, specifically an improved modem for demodulating and recovering a plurality of wireless signals, embedding those recovered signals in “network data packets” for use in a subsequent network, and then, from the resulting plurality of recovered signals and corresponding packets, identifying a target signal whose packet can then be sent over the subsequent network. (EX1001 at independent claims 1, 10, and 20).

The asserted references do not concern such a packeting modem at all, much less one that includes the specific improvements and structures disclosed and claimed in the '946 Patent. In an effort to map these inapposite asserted references to the claims, the Petition confuses and conflates a number of important and distinct concepts, ignoring the material differences between the relied-upon references and the claimed limitations. Among these concepts are the following, which are explained in the following background sections:

- packeting modems;
- network data packets versus recovered signals; and
- network data packet formatting modes versus diversity transmission modes.

A. Packeting Modems

In contrast with the modems that are the subject of the asserted references, the '946 Patent describes a modem that, among other things, can packet a wireless signal received over one network for subsequent use in a different network.

Such a packeting modem has a variety of applications. For example, the modem could be used in a cell phone to embed an incoming cellular signal in a packet for use in another network, such as a local Wi-Fi or Bluetooth network. (EX2001 at ¶17; EX2003 at 4; EX2005 at 2). In this manner, a cellphone could be

used to receive cellular signals and pass them on to a wirelessly connected device, such as a laptop, tablet, or listening device. (EX2001 at ¶17; EX2003 at 4; EX2005 at 2, 12, 17, 19, 537, 544).

Thus, in one application, a user could tether their laptop to their cellphone using a local Wi-Fi network, and then receive texts on their laptop via signals received, packeted, and forwarded by their cellphone modem. (EX2001 at ¶18; EX2005 at 5, 19, 537). In another application, the user could use their phone to wirelessly access the internet and a streaming service, tether earphones to the cellphone using a local Bluetooth network, and then listen to music streaming from the internet using signals received, packeted, and forwarded by their cellphone modem. (EX2001 at ¶18; EX2005 at 19-20, 601-603).

In each application, the cellphone includes a modem that (unlike any of the asserted reference modems) packets the wireless signals recovered at the phone for transmission over a second network, such as a local Wi-Fi or Bluetooth network. (EX2001 at ¶19; EX2005 at 5, 19-20, 537, 601-603).

B. Material Differences Between “Recovered Signals” and “Network Data Packets”

As discussed in more detail below, the challenged claims require a multiuser detection module configured to recover wirelessly transmitted signals: “a multiuser detection (MUD) module configured to simultaneously demodulate and recover K

wirelessly transmitted signals using co-channel demodulation.” (*E.g.*, EX1001 at claims 1, 10, and 20).²

The challenged claims further require a data formatting module configured to produce network data packets for at least one of those recovered signals: “a data formatting module operatively coupled to the multiuser detection module, and configured to **produce network data packets for at least one of the K recovered signals**.” (*E.g.*, EX1001 at claims 1, 10, and 20).

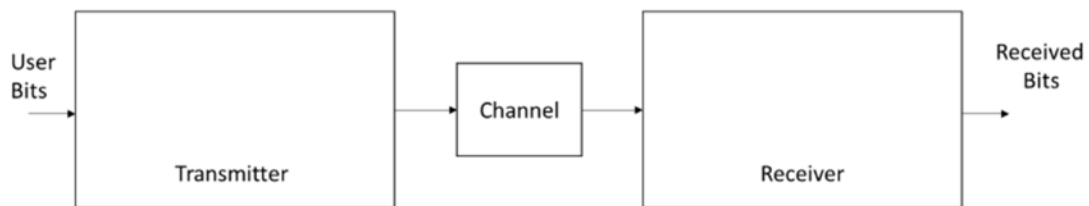
But because none of the references concern the production of network data packets, the Petition points to the mere recovery of wireless signals as somehow also satisfying the claimed subsequent production of network data packets for those recovered wireless signals. (*E.g.*, Pet. at 18). But the identified recovered wireless signals are not network data packets, and the Petition identifies no basis for its attempt to confuse and conflate the two.

1. Recovered Wireless Signals

A typical wireless transmission generally involves a transmitter and receiver at opposite ends of a wireless channel, wherein an original signal is input at the transmitter and a recovered signal is calculated at the receiver.

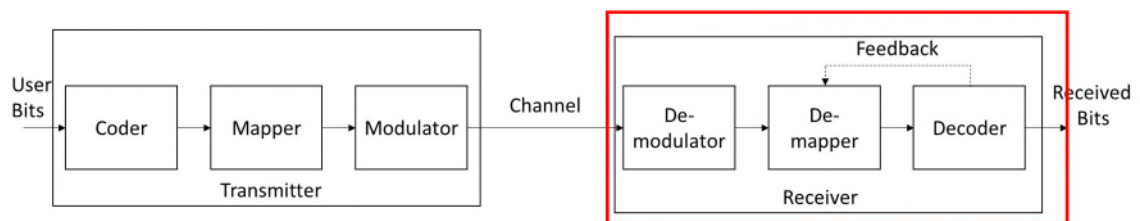
² Unless otherwise noted, all emphases herein are added.

As illustrated in the simplified figure below, an original information signal in the form of user bits (sequences of 0s and 1s) is input to the transmitter, which first converts those bits into an analog carrier wave and then transmits that carrier wave over the wireless channel to the receiver. (EX2001 at ¶22; EX2003 at 2-4; EX2004 at 1-5, 95, 181-183, 208-209). The receiver receives the wave and attempts to recover the original signal by converting the received wave into received bits. These received bits are the recovered signal. (EX2001 at ¶22; EX2003 at 2-4; EX2004 at 3-5).



(EX2001 at ¶22, based on FIG. 1.1 of EX2003).

The receiver recovers the signal using a decoder. A typical receiver includes a demodulator, a demapper, and a decoder.



(EX2001 at ¶23, based on EX2003 at 3-4; EX2004 at 4-7).

The “demodulator” receives the modulated wave via the channel and attempts to extract the wave’s symbol values. (EX2001 at ¶24; EX2003 at 3-4; EX2004 at 4-7). The extracted symbol values are then input to the “demapper,” which is used to help identify which bit sequence may correspond to the original signal. (EX2001 at ¶24; EX2003 at 3-4, 43-46; EX2004 at 4-7).

Next, the “decoder” uses information from the demapper and error-correcting code and other redundancies to identify the appropriate bit sequence and construct the recovered signal. (EX2001 at ¶25; EX2003 at 3-4; EX2004 at 11).

2. Network Data Packets

But this recovered signal is not a network data packet. Rather, the recovered signal (received bits) is merely an example of data that may be embedded within a network data packet for transmission over a packet-switching network.

Accordingly, a network data packet is more than just a recovered signal and must also include additional specialized information that allows the entire packet to be carried over a packet-switched network. (EX2001 at ¶26; EX2003 at 4; EX2005 at 2, 17, 544-546).

The ’946 Patent describes an exemplary packet in its Figure 11, one that “shows essential functions common to all network protocols.”

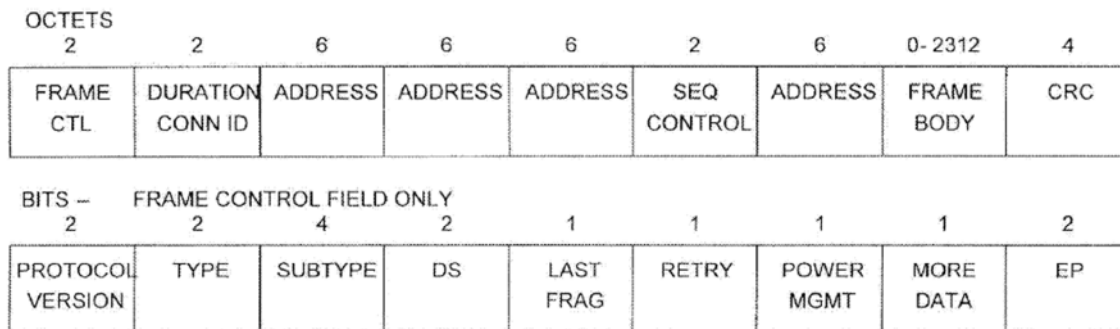


Fig. 11

(EX1001 at Fig. 11, 9:29-50).

As shown and described, a network data packet includes much more than “the actual data embedded in the packet” for transmission, but also includes synchronization information necessary for receipt of the packet; protocol type information; power control information; packet type information; fragmentation information; packet duration information; recipient address information; and error correction information:

This packet [in FIG. 11] is taken from the IEEE 802.11 protocol, but it shows essential functions common to all network protocols. The packet begins with synchronization bits necessary for network receiver elements to acquire the asynchronously transmitted packet. ... Next follows a control sequencing necessary for the correct packet interpretation. Its fields include protocol type, power control, packet type, fragmentation information, and similar network housekeeping functions. Next are bits indicating the duration of the packet. Next are address fields for identifying the intended recipient. Next comes the actual data embedded in the packet. Last comes the error correction bits.

(EX1001 at 9:29-50).

Thus, a recovered signal cannot by itself be transmitted over a subsequent packet-switching network but must first be embedded in a network data packet, which includes other necessary information not found in the recovered signal. (EX2001 at ¶29). Accordingly, contrary to the Petition’s unstated presumption, the receiver’s recovered signal and bits are not by themselves a data network packet.

C. Material Differences Between “Network Data Packet Formatting Modes” and “Diversity Transmission Modes”

Consistent with the foregoing, “packeting” modems like those described in the challenged claims can produce a data network packet for a recovered signal so that the recovered signal may be transmitted over one or more subsequent networks. And that packeting includes placing the bits into a “network data packet” particularly designed and formatted for use in that subsequent network. (EX2001 at ¶30; EX2003 at 4; EX2005 at 2, 12, 17, 19, 537, 544).

Thus, if the subsequent network is a Wi-Fi network, the network data packet will include the recovered user bits plus Wi-Fi packet data that allows for the packet to be sent and received over that Wi-Fi network. (EX2001 at ¶31; EX2005 at 5, 19, 537). If the subsequent network is a Bluetooth network, the network data packet will include the recovered user bits plus specialized Bluetooth packet data that allows for the packet to be sent and received over that Bluetooth network. (EX2001 at ¶31; EX2005 at 19-20, 601-603). And so on for other types of

potential subsequent networks, such as an Asynchronous Transfer Mode Network, Public Switched Telephone Network, or Integrated Services Digital Network – in each instance, the network data packet will include not only the reconstructed user bits but also additional specialized packet data that allows for the packet to be sent over the network in question. (EX2001 at ¶31; EX2005 at 5, 19-20, 537, 601-603).

The particular packet format that is suitable for a particular network is known as its “network data packet formatting mode.” Depending on the type of subsequent network to be used, the modem may reformat a signal into a data network packet using a Wi-Fi network data packet formatting mode, a Bluetooth network data packet formatting mode, or any other relevant network data packet formatting mode. (EX2001 at ¶32; EX2005 at 5, 19-20, 537, 601-603).

These “network data packet formatting modes” are yet another area where the Petition conflates and confuses different concepts and technology in an attempt to cover up deficiencies in the asserted references. In this instance, because none of the references concerns or addresses Packeting modems or the network data packet formatting modes used by such modems, the Petition attempts to satisfy the claimed limitations concerning “network data packet formatting modes” by instead pointing to disclosures concerning “diversity transmission modes.” (*E.g.*, Pet. at

28-29). But “diversity transmission modes” have nothing to do with “network data packet formatting modes,” and the Petition does not assert or establish otherwise.

Rather, “diversity transmission modes” concern a different concept. Some wireless communication systems may use a technique referred to as “diversity transmission” on the transmitter side to improve reliable wireless transmission. (EX2001 at ¶34; EX2005 at 204-205). As the name “diversity transmission” suggests, rather than send a carrier wave once, the carrier wave is sent two or more times, and a transmission characteristic (such as the transmit antenna) is varied between the multiple (diverse) transmissions. (EX2001 at ¶34; EX2005 at 204-205). These redundant transmissions help mitigate the effect of noise and distortion on the receiver’s ability to reconstitute the original signal. (EX2001 at ¶34; EX2005 at 204).

There are numerous diverse approaches (modes) to varying a transmission characteristic among the redundant transmission, including space, polarity, angle, and frequency. (EX2001 at ¶35; EX2005 at 204-205). These “diversity transmission modes” are entirely different from and unrelated to the claimed “network data packet formatting modes.”

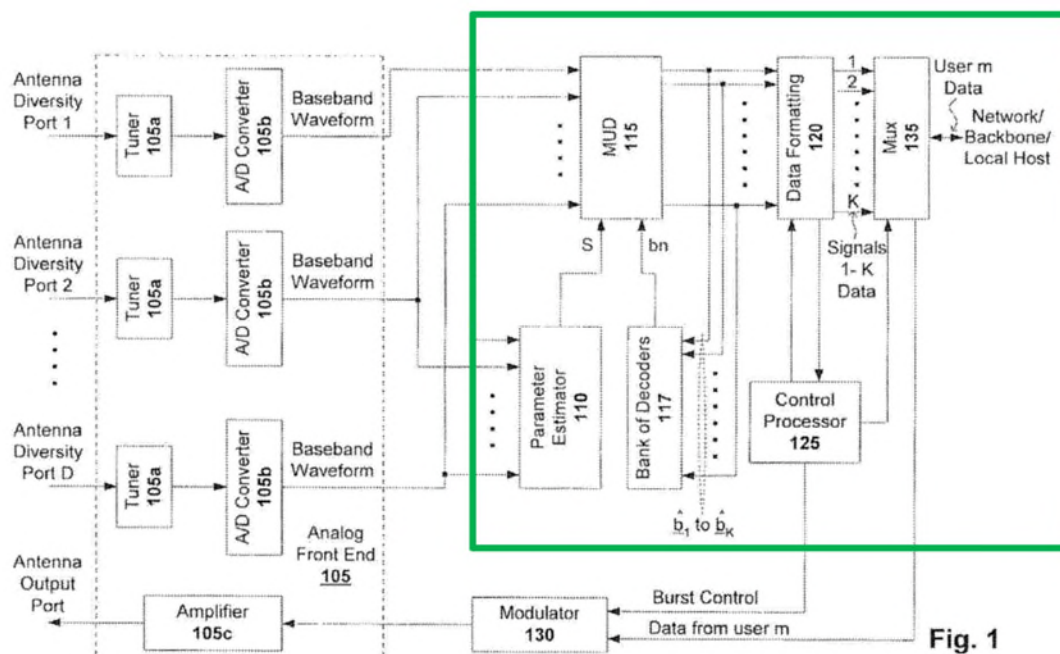
III. The '946 Patent's Improved Packeting Modem

The '946 Patent and its challenged claims generally concern wireless communication systems with multiple signals that may interfere with one another. More specifically, the claims are directed to an improved modem for demodulating and recovering a plurality of wireless signals, embedding those signals in “network data packets” for use in a subsequent network, and then, from the resulting plurality of signals and corresponding packets, identifying a target signal whose packet can then be passed on over the subsequent network. (EX1001 at independent claims 1, 10, and 20).

A. Overview

For a variety of reasons, a wireless channel may include not just one, but multiple transmissions. For example, transmissions from other channels may crossover into the channel and interfere with the intended transmission, or a channel may be intentionally overpacked with multiple signals. (EX1001 at 3:4-9; EX2001 at ¶37). There is thus a need for a modem that can receive multiple transmissions, identify the target transmission, reconstruct its signal, and embed that target signal in one or more packets to be sent over one or more subsequent networks. (EX1001 at 4:17-20).

The '946 Patent discloses and claims an improved modem for doing just that. Figure 1 illustrates an exemplary improved modem. As shown, the modem includes an analog front end that converts the received multiple transmission (numbered 1 through K) into digital waveforms and passes those waveforms onto the modem's backend, highlighted in green:

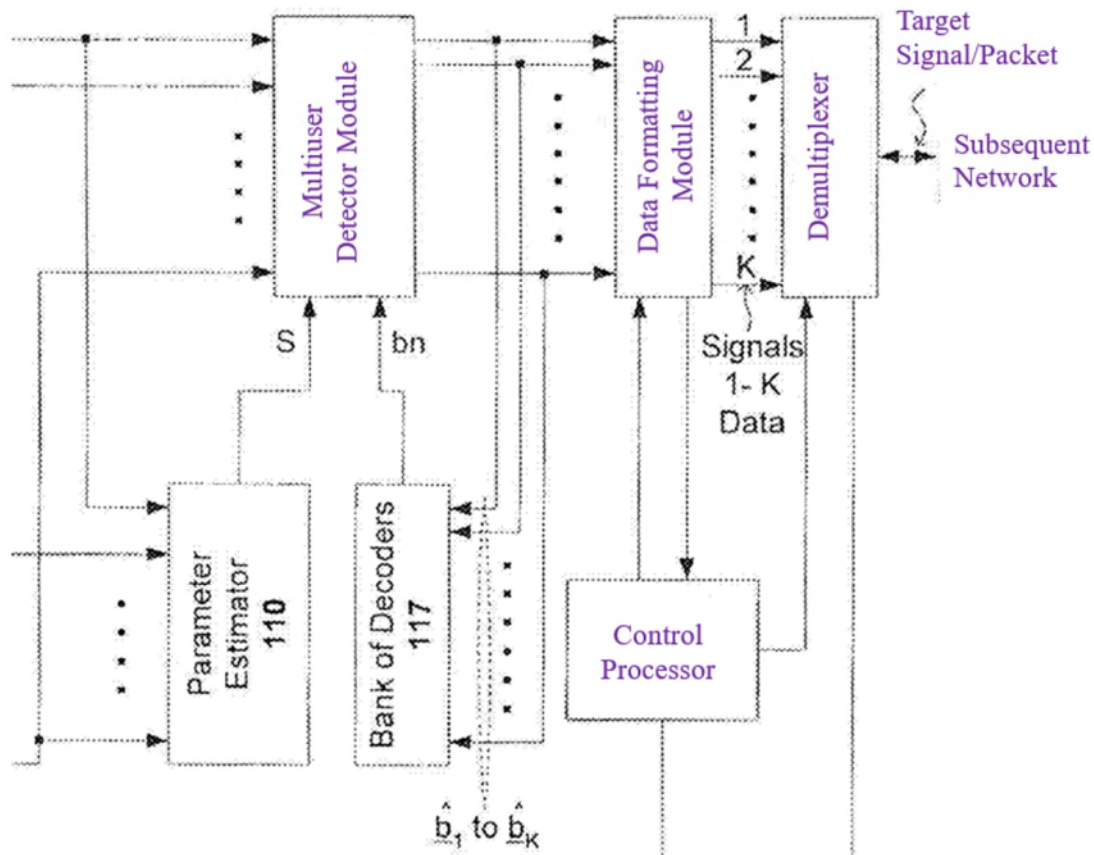


(EX1001 at Fig. 1, 12:41-64; EX2001 at ¶38).

Concentrating on the modem's backend (reproduced below) and its features relevant to this Preliminary Response, it includes:

- a multiuser detector module for demodulating and recovering the originally sent signals;

- a data formatting module for producing network data packets for the recovered signals (EX1001 at 4:5-11, 14:20-29); and
- a control processor and demultiplexer for identifying and selecting a target signal of interest so that its packet may then be relayed over a subsequent network (EX1001 at 14:44-61; 16:2-5).



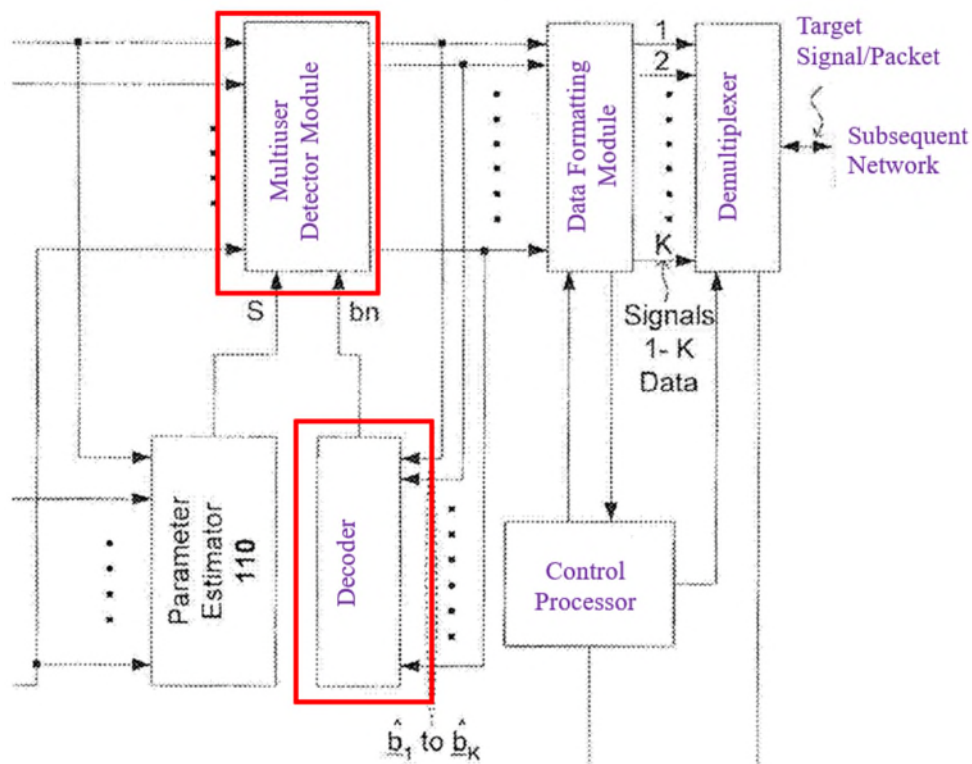
(E.g., EX1001 at Fig. 1, 12:41-64; EX2001 at ¶39).³

³ Annotations are added to this excerpt of FIG. 1 and other figures for illustrative purposes or to ease the understanding of block names. Annotations are made clear using red boxes, purple text, and orange highlighting.

These features are explained in more detail in the following sections.

B. Multiuser Detector Module

The illustrative modem of Figure 1 includes multiuser detector module that utilizes a bank of decoders to separate, demodulate, and recover the originally sent signals 1 through K:

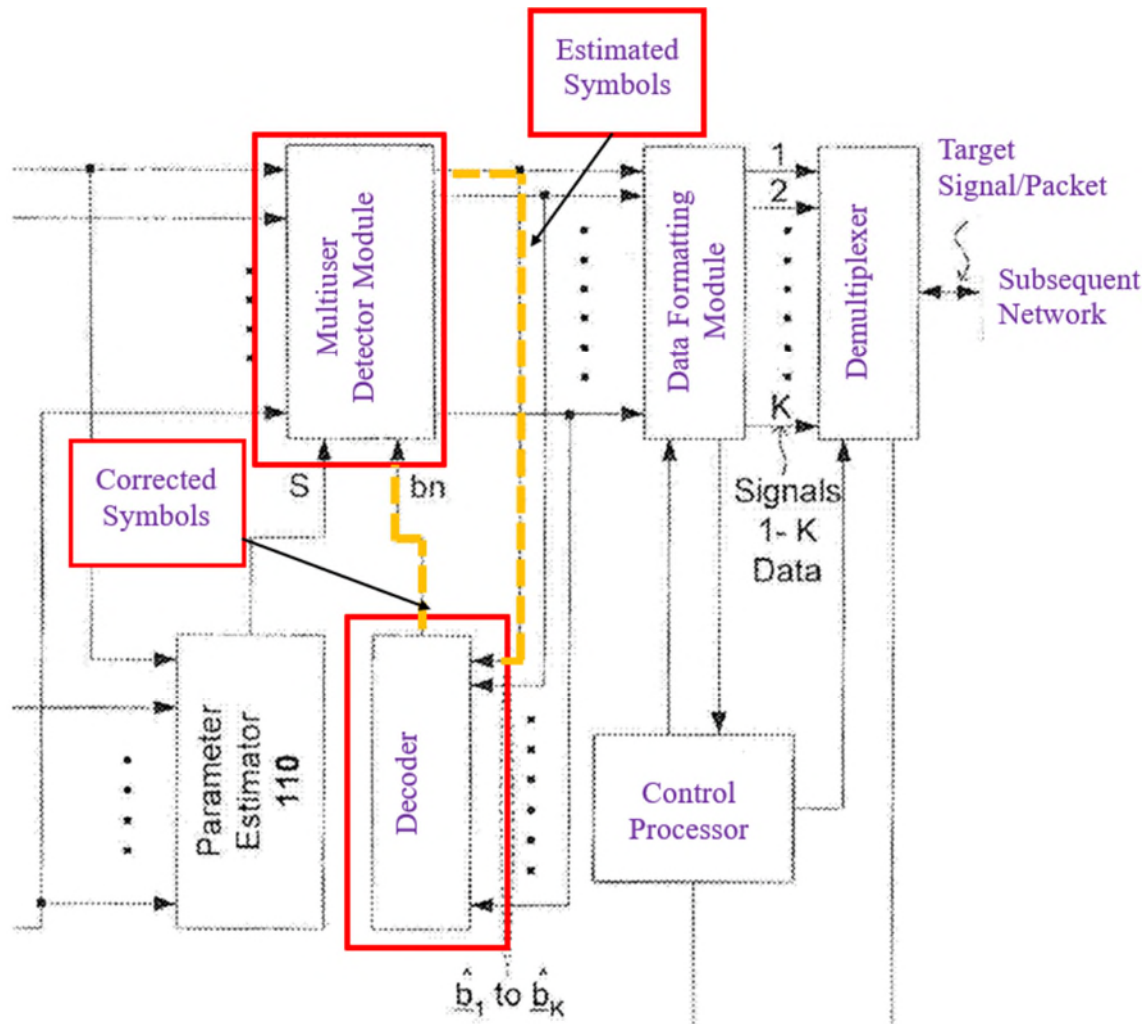


(*E.g.*, EX1001 at Fig. 1, 12:41-64, 13:40-14:6; EX2001 at ¶41).

As described, the multiuser detector module 115 (also called the MUD module) receives the multiple waveforms sent on the channel. It is configured to separate the received multiple waveforms and then estimate symbols for each.

(*E.g.*, EX1001 at 13:22-43).

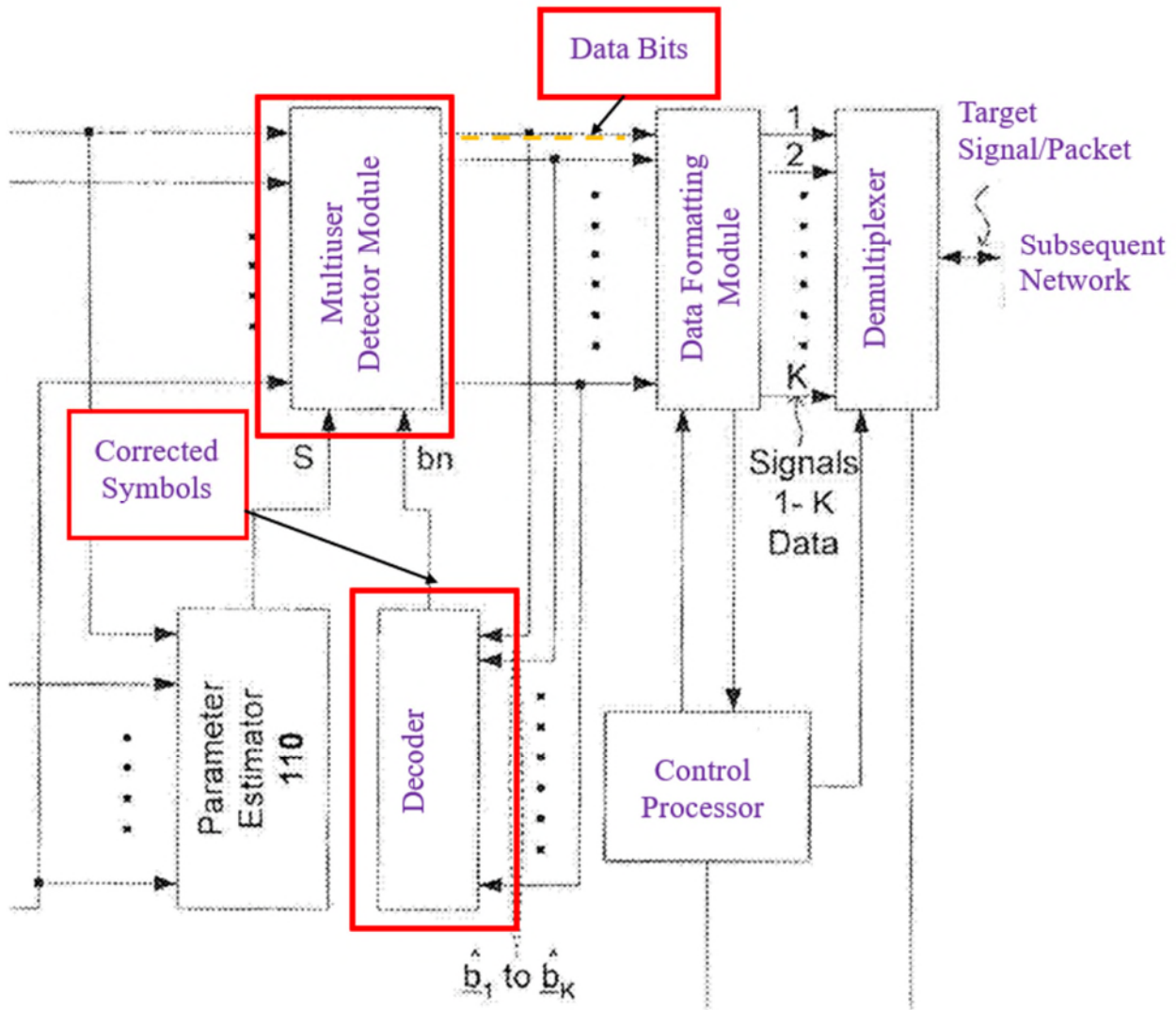
As illustrated in Figure 1, the multiuser detector module 115 then supplies the estimated symbols to a bank of decoders 117. (*E.g.*, EX1001 at Fig. 1, 13:54-66). These decoders apply error-correcting codes to calculate corrected symbols, which they send back to the multiuser detector module 115. (EX1001 at 13:54-62).



(*E.g.*, EX1001 at Fig. 1, 12:41-64, 13:54-66; EX2001 at ¶43).

Multiuser detector module 115 uses those corrected symbols to construct a signal for each received waveform 1 through K. (EX1001 at 13:47-49). The

multiuser detector module 115 then sends these signals 1-K to data formatting module 115.

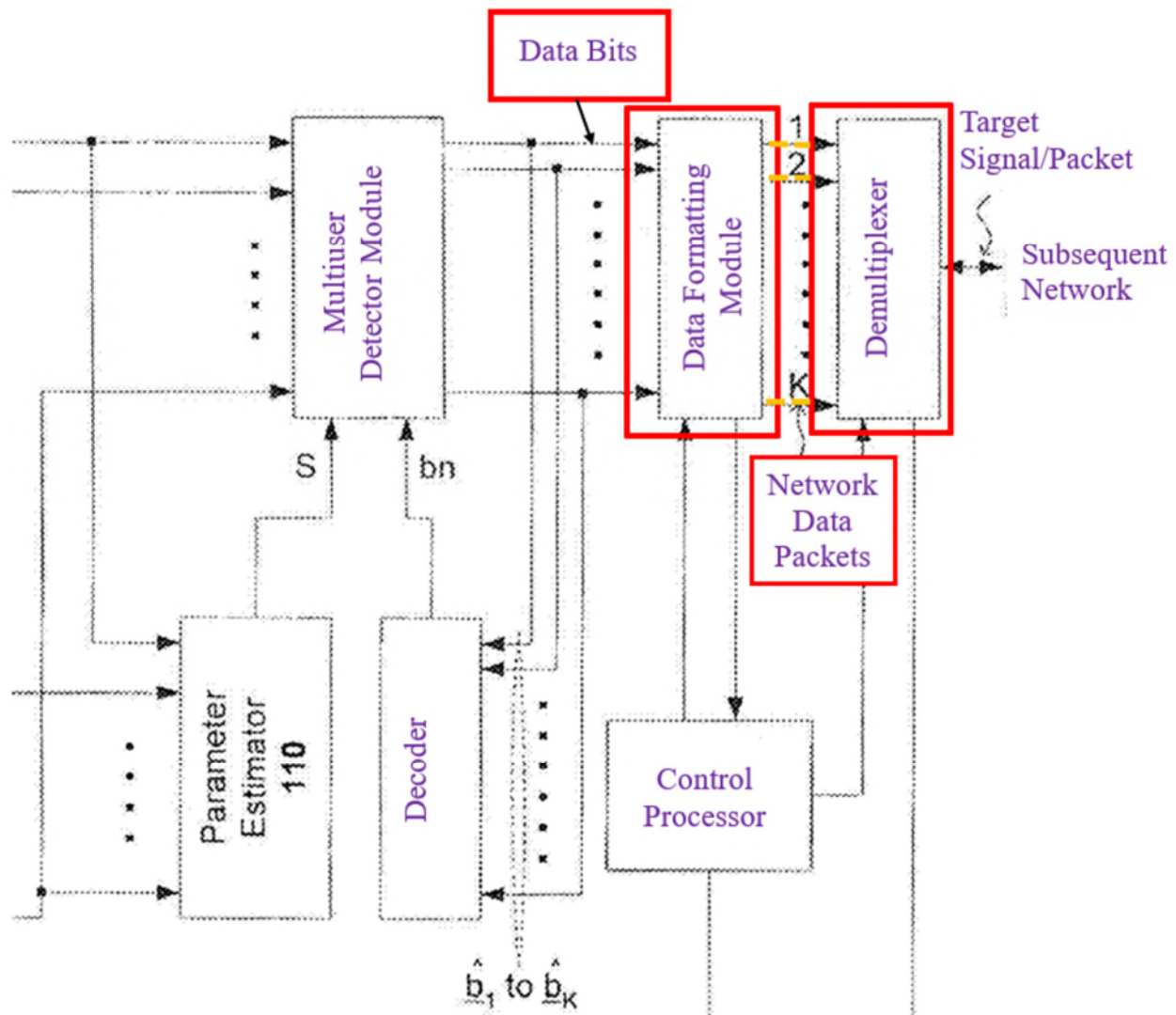


(E.g., EX1001 at Fig. 1, 12:41-64, 13:40-14:6; EX2001 at ¶44).

C. Data Formatting Module

Data formatting module 120 receives the constructed signals 1-K from multiuser detector module 115, produces network data packets for those recovered

signals, and then forwards these packets 1-K (including each packet's corresponding embedded signal) to demultiplexer 135:



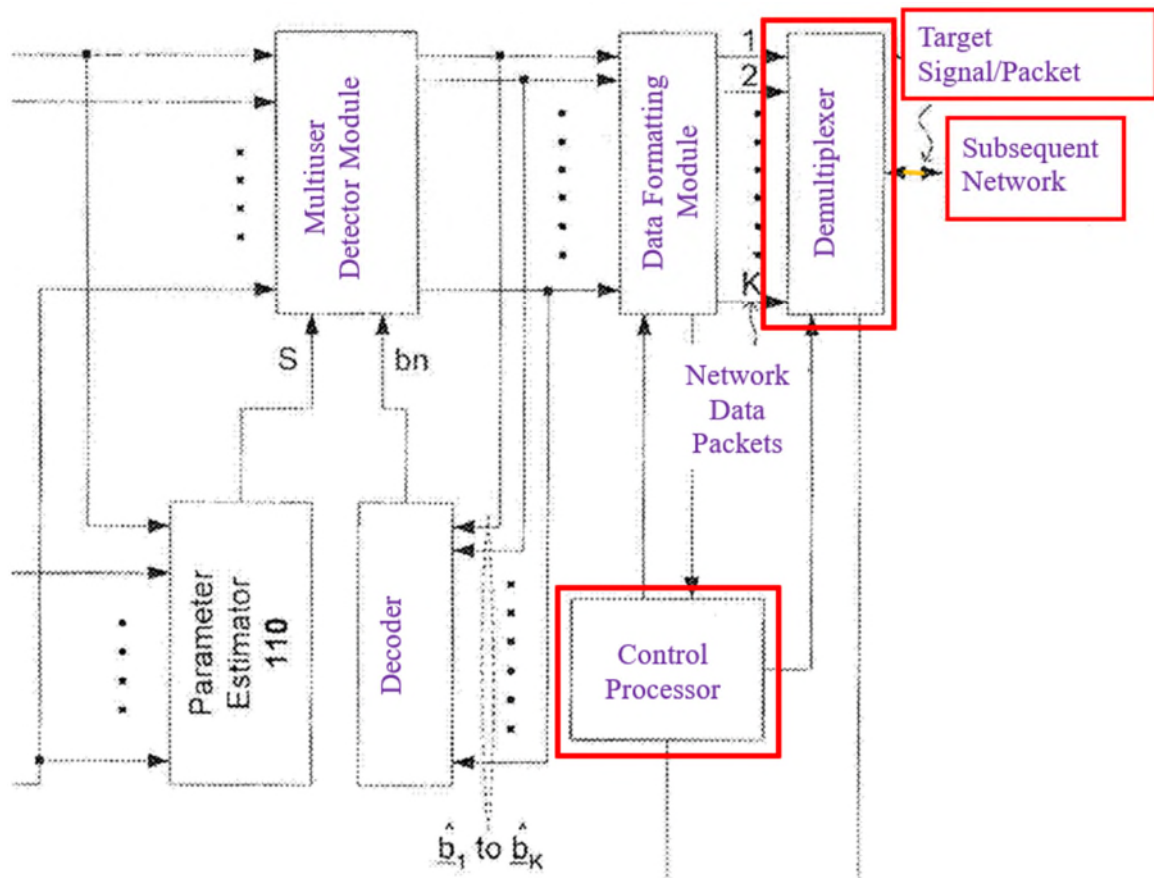
(EX1001 at 13:47-53; EX2001 at ¶45).

In the described example, data formatting module 120 operates in a data packet formatting mode, which is selected by the control processor (discussed more below) depending on the subsequent network over which the packet and

embedded signal will be sent. (EX1001 at 14:20-29). Advantageously, the data formatting module 120 may support different formats and use them selectively for each packet. (EX1001 at 14:20-29).

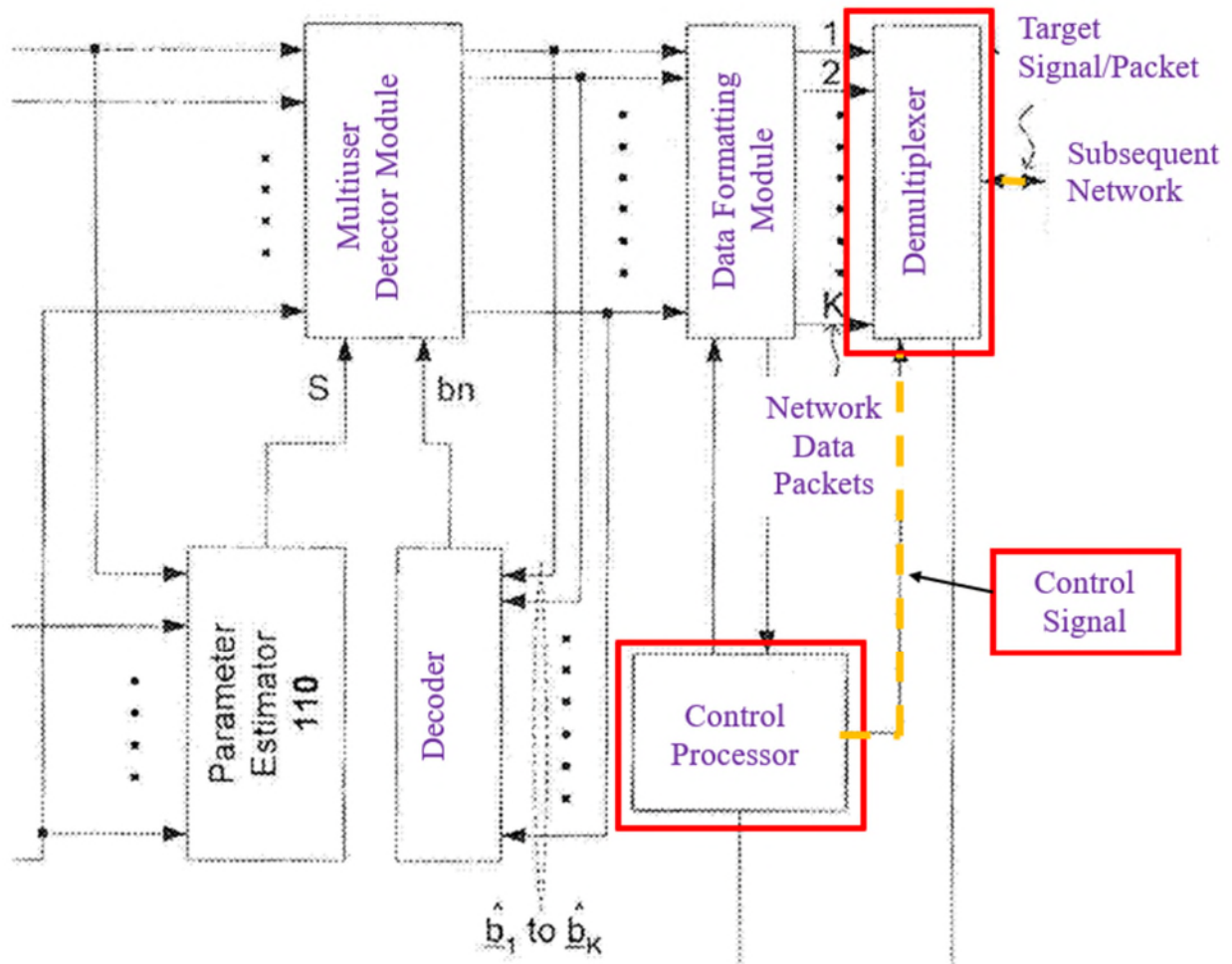
D. Control Processor and Demultiplexer

Although the demultiplexer receives packets 1 through K, not each of those packets is intended for a subsequent network. Accordingly, Figure 1's modem also includes a control processor and demultiplexer for identifying and selecting a target signal of interest so that its packet may then be relayed over a subsequent network:



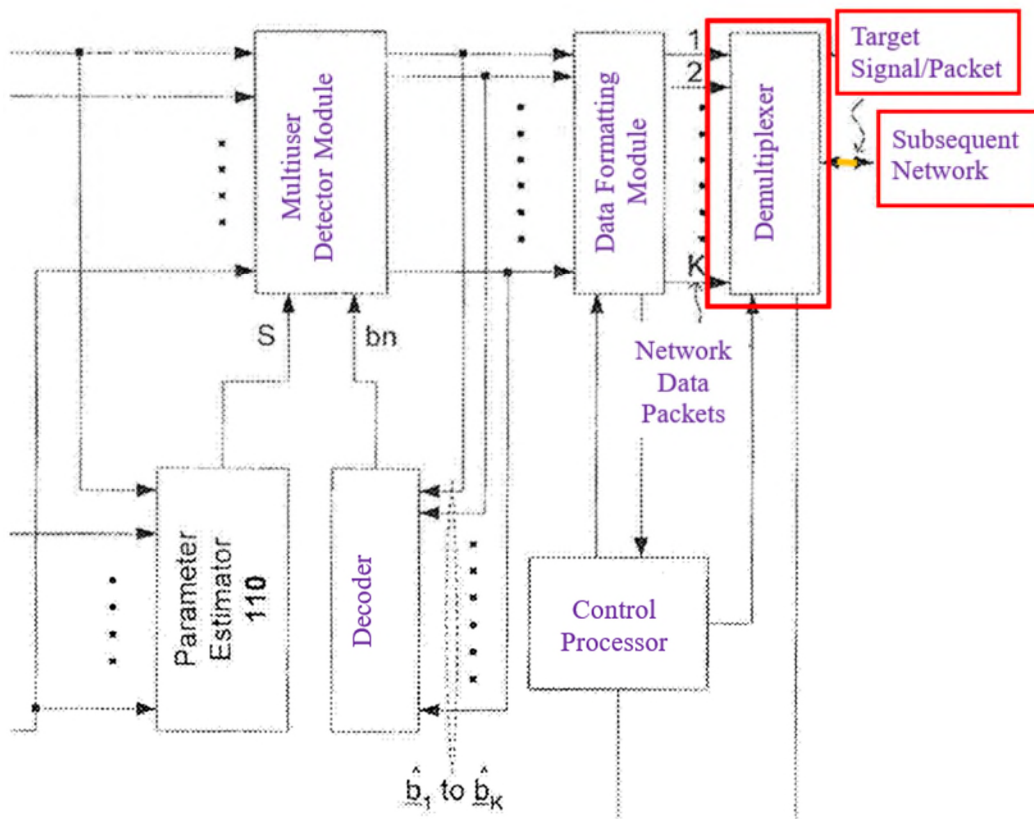
(E.g., EX1001 at Fig. 1, 12:58-64, 14:44-61; EX2001 at ¶47).

For example, the control processor may examine the network data packet headers to determine the intended destination of the data packets. (EX1001 at 14:44-49). If a given data packet is intended for the user associated with the modem, the control processor identifies that targeted packet to the demultiplexer by sending it a control signal:



(E.g., EX1001 at Fig. 1, 12:58-64, 14:44-61; EX2001 at ¶48).

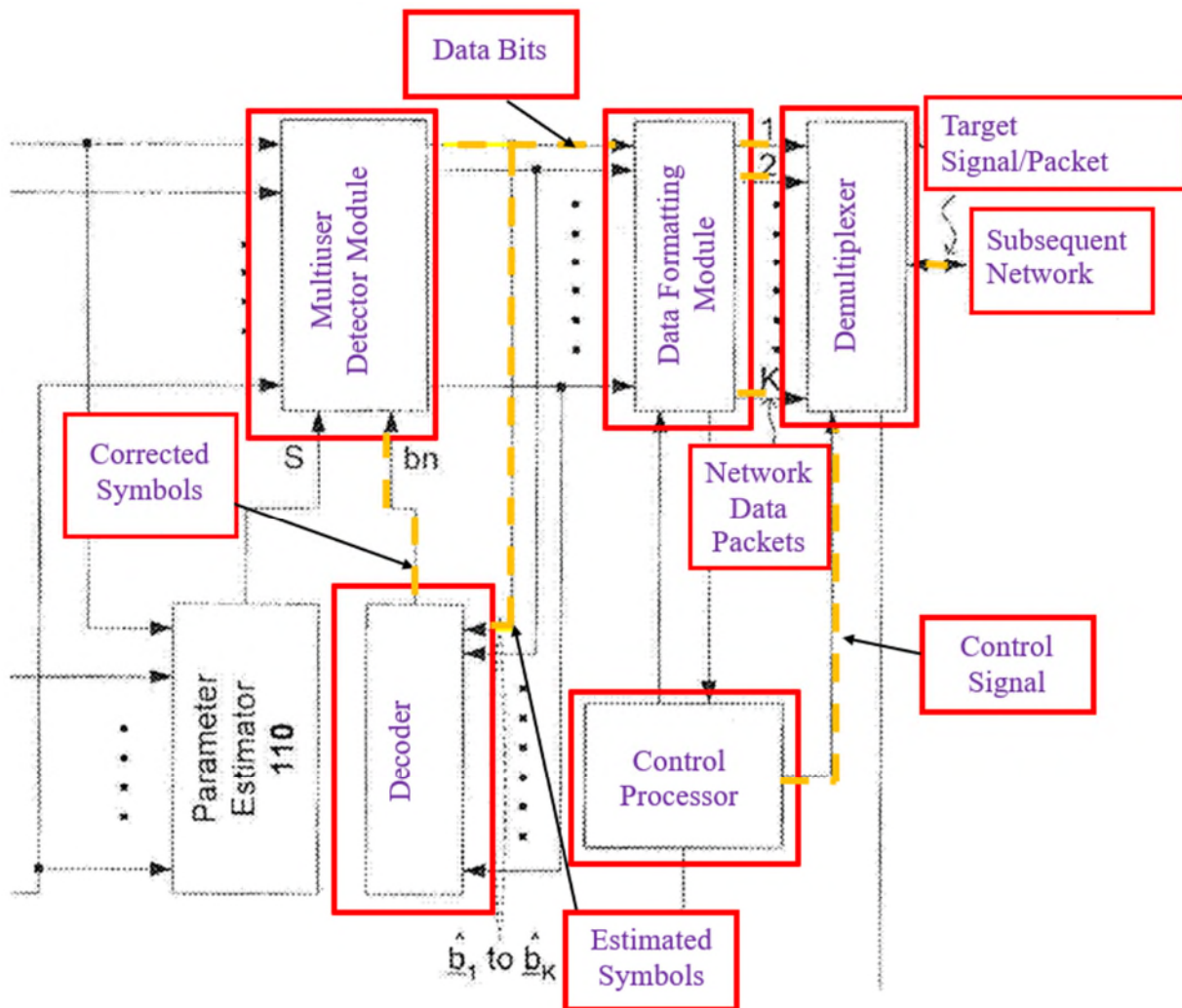
Based on that control input from the control processor, the demultiplexer then selects from packet 1-K the identified target data packet for provision to the user's subsequent network. (EX1001 at 12:54-64). This allows the modem to only forward to the subsequent network select targeted data packets intended for a particular user.



(*E.g.*, EX1001 at Fig. 1, 12:58-64, 14:44-61; EX2001 at ¶49).

* * * *

In summary, the '946 Patent thus describes an improved packeting modem that includes (as illustrated in the annotated Figure 1 below) a multiuser detector module that demodulates and recovers the originally sent signals; a data formatting module that produces network data packets for the recovered signals according to relevant network data packet mode; and a control processor and demultiplexer that use a control signal to identify and select a target signal of interest so that its packet may then be relayed over a subsequent network. (EX1001 at 12:41-15:13).



(E.g., EX1001 at Fig. 1, 12:58-64, 14:44-61; EX2001 at ¶50).

IV. The Challenged Claims

The challenged claims cover at least parts of the foregoing innovative approaches, each of which requires an improved packeting modem having a multiuser detection module, a data formatting module, a control processor, and a demultiplexer. (See, e.g., EX1001 at claims 1-5, 7, 9-16, and 20).

And consistent with the foregoing, all of the challenged claims additionally include the following limitations:

- “a multiuser detection (MUD) module configured to simultaneously demodulate and recover K wirelessly transmitted signals;”
- “a control processor ... configured to select a network data packet formatting mode;”
- “a data formatting module ... configured to produce network data packets for at least one of the K recovered signals;” and
- “a demultiplexer ... configured to select one of the recovered K wirelessly transmitted signals as a target signal intended for a user associated with the modem, where the selection is based on a control input from the control processor.”

(See, e.g., EX1001 at claims 1, 10, and 20).

For example, each of these limitations is present and highlighted in the following exemplary claim 1:

1. A modem which enables efficient use of bandwidth in a multiuser wireless network including a plurality of modems in the presence of interference and noise, the modem comprising:

a multiuser detection (MUD) module configured to simultaneously demodulate and **recover K wirelessly transmitted signals** using co-channel demodulation;

a data formatting module operatively coupled to the multiuser detection module, and **configured to produce network data packets for at least one of the K recovered signals;**

a control processor operatively coupled to the formatting module, and configured to detect with which protocol mode the at least one of the K recovered signals was transmitted, and to enable a corresponding transmission mode including one of a legacy protocol mode and a bandwidth efficient aggressive access protocol mode that exploits co-channel demodulation capabilities of the modem, wherein the signals of the one of a legacy protocol mode can be selected from the group consisting of low data rate BPSK, QPSK, GMSK and OAM; and

a demultiplexer operatively coupled to the data formatting module and the control processor, and **configured to select one of the recovered K wirelessly transmitted signals as a target signal** intended for a user associated with the modem, **where the selection is based on a control input from the control processor**, wherein the data formatting module supports multiple types of format modes, and **the control processor is configured to select a network data packet formatting mode** in which the data formatting operates.

(EX1001 at claim 1).

V. The Petition

A. The Grounds

The Petition asserts the following Grounds:

Ground	References	Basis	Challenged Claims
1	<i>Walton</i>	§ 103	1-5, 7, 9-16, and 20
2	<i>Walton</i> and <i>Learned</i>	§ 103	1-5, 7, 9-16, and 20
3	<i>Walton</i> and <i>Learned</i> and <i>Quigley</i>	§ 103	20

Although the Petition asserted three grounds and three different references, the *Walton* reference is the primary reference in each Ground. More importantly,

for purposes of this Preliminary Response, each Ground relies solely on *Walton* (not *Learned* or *Quigly*) as supposedly disclosing or making obvious each of the following limitations required in every challenged claim:

- “a control processor ... configured to select a network data packet formatting mode;”
- “a data formatting module ... configured to produce network data packets for at least one of the K recovered signals;” and
- “a demultiplexer ... configured to select one of the recovered K wirelessly transmitted signals as a target signal intended for a user associated with the modem, where the selection is based on a control input from the control processor.”

(*E.g.*, Pet. at 13-29, 41-449, 55-59, 63-64, and 75-77).

Thus, the Petition fails if *Walton* fails to disclose or render obvious any one of these limitations. But *Walton* does not disclose or render obvious any of them.

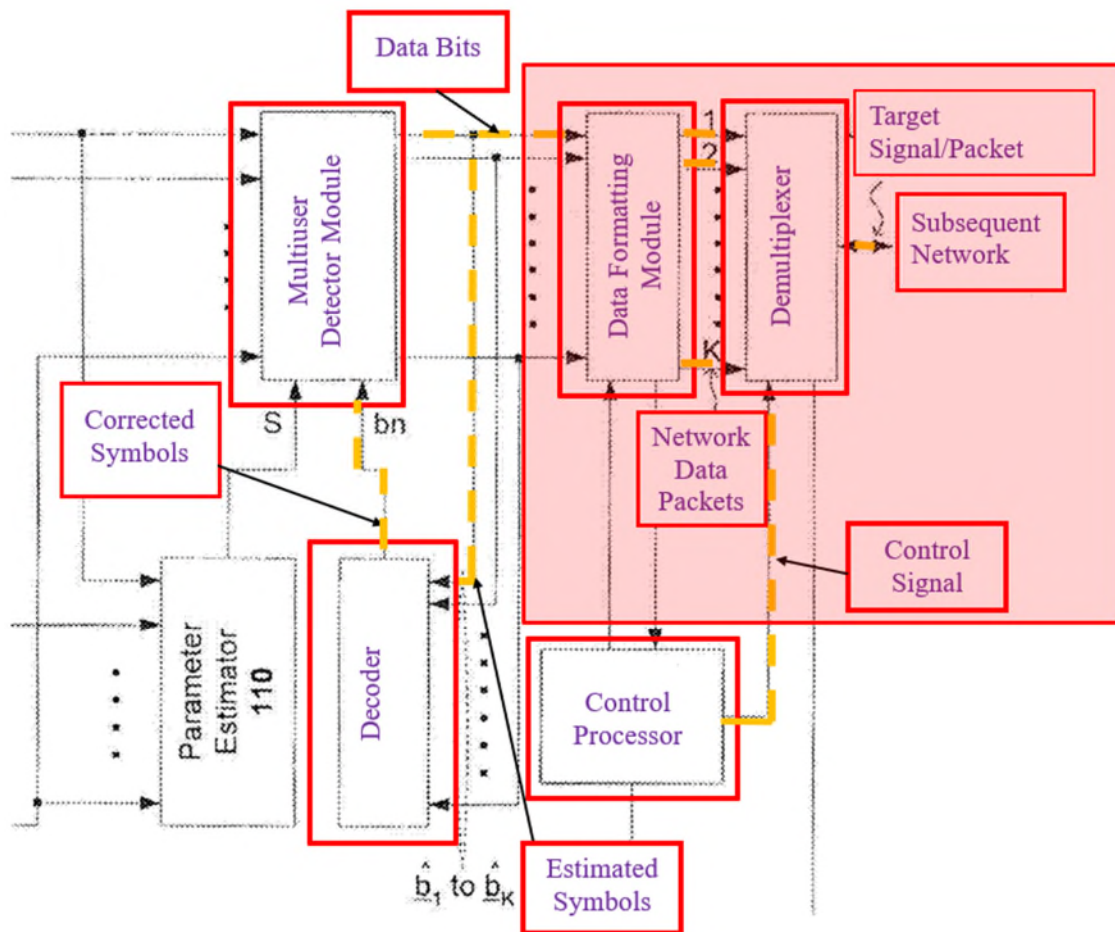
B. None of the Asserted References Concerns or Describes a Packeting Modem

Walton does not and cannot disclose or make obvious any of these limitations because the limitations all concern the packet aspects of the disclosed and claimed modem, and *Walton*—like the other asserted references—does not even concern a packeting modem.

Instead, *Walton* describes an irrelevant topic, a modem using a number of diversity transmission modes. (EX1004 at *Abstract*). *Walton* is not concerned with packeting a recovered signal to be passed on to a subsequent network.

Accordingly, *Walton* does not describe or make obvious the concepts and features such as producing network data packets for recovered signals, selecting a network data packet formatting mode for those packets, or selecting a target signal using a demultiplexer and a controller.

Put another way, *Walton* (and again, the other asserted references) does not disclose the following aspects of the inventive modem highlighted in red:



(EX2001 at ¶57).

VI. The Board should Deny Institution Because Each Asserted Ground Fails To Establish The Required Reasonable Likelihood Of Success

As established in the following sections, the Board should deny institution because the Petition fails to establish the required reasonable likelihood of success under any of the following asserted grounds on at least the following limitations required by every challenged claims:

- “a data formatting module ... configured to produce network data packets for at least one of the K recovered signals;”
- “a control processor ... configured to select a network data packet formatting mode;” and
- “a demultiplexer ... configured to select one of the recovered K wirelessly transmitted signals as a target signal intended for a user associated with the modem, where the selection is based on a control input from the control processor.”

Any one of these failures results in a lack of the required likelihood of success on **all** grounds and for **all** challenged claims.

A. Walton Does Not Disclose or Suggest the Claimed “Data Formatting Module”

Each challenged claim requires a data formatting module for producing network data packets for the recovered signals:

a data formatting module operatively coupled to the multiuser detection module, and **configured to produce network data packets for at least one of the K recovered signals**

(*See, e.g.*, EX1001 at claims 1, 10, and 20).

But contrary to each Petition Ground, *Walton* does not describe such a data formatting module—it could not because it does not describe the production of

network data packets at all, much less the claimed data formatting module for producing such data network packets.

The Petition does not even attempt to identify such a data formatting module. It instead points to and relies on *Walton*'s "receive (RX data processor) 262." (*E.g.*, Pet. at 18). But this "receive (RX data processor) 262" does not produce network data packets, and the Petition provides no evidence showing otherwise.

Instead, *Walton*'s "receive (RX data processor) 262" merely decodes and outputs the user bits—in other words, it recovers a wireless signal. (EX1004 at [0146]). But recovering a wireless signal is what the claimed multiuser detection (MUD) module does. This "receive (RX data processor) 262" does not then take the additional required step of creating a network data packet for the recovered signal, which is what the claimed (but missing from *Walton*) data formatting module must do. (EX2001 at ¶62).

As illustrated below, *Walton* describes that its "receive (RX data processor) 262" receives symbols from *Walton*'s receive processor 260 and then decodes those symbols to produce the recovered signal, i.e., the "decoded bits":

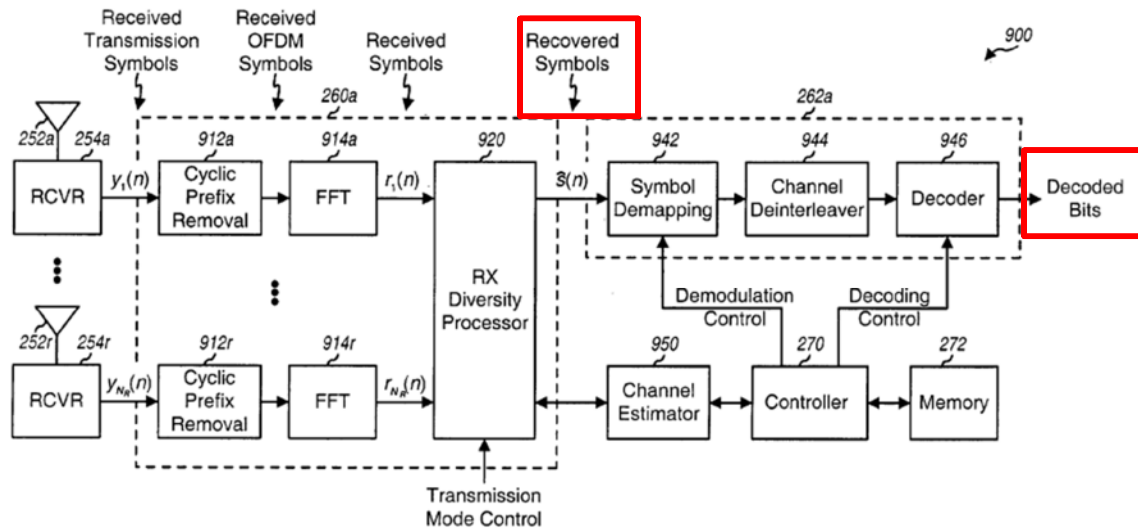


FIG. 9

(EX1004 at [0146], Figure 9; EX2001 at ¶63).

As described and depicted above, *Walton’s* “receive (RX data processor) 262” includes a symbol demapper 942, a channel deinterleaver 944, and a decoder 946. These generic structures are described and designed to receive symbols from receive processor 260 to and decode them into the recovered signal, i.e., the decoded bits. (EX1004 at 0146; EX2001 at ¶64). They are not designed to, and do not, then create network data packets in which to insert those decoded bits—the only things created and output by the “receive (RX data processor) 262” are “decoded bits.” (EX1004 at [0146]; EX2001 at ¶64).

And, as established above, these decoded bits are the recovered signal and cannot be conflated and confused with “network data packets” as the Petition attempts to do. To recap, the recovered signal (*Walton’s* decoded bits) is merely an

example of data that may be embedded within a network data packet for transmission over a packet-switching network. Accordingly, a network data packet is more than just Walton's "decoded bits" and must also include additional specialized information that allows the entire packet to be carried over a packet-switched network. (EX2001 at ¶65; EX2003 at 4; EX2005 at 2, 17, 544-546).

But *Walton's* "receive (RX data processor) 262" produces and outputs only those decoded user bits; it does not (and does not include any structures to) also produce a packet including those decoded bits plus all the other necessary packet information.

Accordingly, the decoded bits produced by *Walton's* "receive (RX data processor) 262" are not network data packets and, contrary to every asserted Ground, *Walton's* "receive (RX data processor) 262" cannot be the claimed "data formatting module ... configured to produce network data packets for at least one of the K recovered signals." Put another way, *Walton's* "receive (RX data processor) 262" only produces, at most, the one of the K recovered signals, it does not produce a network data packet for that recovered signal. The Petition should therefore be denied.

B. *Walton* Does Not Disclose or Suggest the Claimed “Control Processor”

Recall that network data packets sent over different subsequent networks require different “network data packet formatting modes.” (EX1001 at 14:20-29). Thus, depending on the type of subsequent network to be used, the foregoing claimed “data formatting module” may produce a data network packet using a Wi-Fi network data packet formatting mode, a Bluetooth network data packet formatting mode, or any other relevant network data packet formatting mode. (EX1001 at 14:25-27; EX2001 at ¶68).

To this end, each challenged claim includes “a control processor” for selecting the appropriate network data packet formatting mode for the packets produced by the “data formatting module”: “a control processor ... configured to select a network data packet formatting mode.” (*See, e.g.*, EX1001 at claims 1, 10, and 20).

Contrary to each Petition Ground, *Walton* does not describe such a control processor. Again, *Walton* does not concern or describe the production of packets for any of its recovered signals, so it has no need to—and does not—include any discussion or suggestions about a “network data packet formatting mode,” much less about the claimed “control processor ... configured to select a network data packet formatting mode.”

Attempting to avoid this fatal deficiency, the Petition simply ignores it, asserting without explanation that *Walton*'s description "diversity transmission modes" somehow teaches this limitation. (*E.g.*, Pet. at 28-29). But "diversity transmission modes" have nothing to do with "network data packet formatting modes," and the Petition does not assert or establish otherwise.

Rather, as established above, "diversity transmission modes" concern a different concept—rather than send a carrier wave once, the carrier wave is sent two or more times, and a transmission characteristic (such as the transmit antenna) is varied between the multiple (diverse) transmissions. These redundant transmissions help mitigate the effect of noise and distortion on the receiver's ability to reconstitute the original signal. (EX2001 at ¶72; EX2005 at 204).

Walton's "diversity transmission modes" are thus entirely different from and unrelated to the claimed "network data packet formatting modes." Because *Walton* does not concern the proper modes, it does not and cannot disclose or suggest the claimed "control processor ... configured to select a network data packet formatting mode." Each Ground therefore fails and the Petition should be denied.

C. Walton Does Not Disclose Or Suggest The Claimed Demultiplexer Selecting A Target Signal Based On Control Input From the Control Processor

All of the challenged claims require that the claimed demultiplexer must select a target signal based on a control input received from the control processor:

a demultiplexer operatively coupled to the data formatting module and the control processor, and **configured to select one of the recovered K wirelessly transmitted signals as a target signal** intended for a user associated with the modem, **where the selection is based on a control input from the control processor**, wherein the data formatting module supports multiple types of format modes, and the control processor is configured to select a network data packet formatting mode in which the data formatting operates.

(See, e.g., EX1001 at claims 1, 10, and 20).

Contrary to each asserted Ground, Walton does not teach this limitation for at least two reasons:

(1) The Petition does not even assert, much less prove, that the purported *Walton* demultiplexer selects a target signal based on control input from the control processor; and

(2) The Petition fails to identify any evidence that the purported *Walton* control processor provides any control input to the purported *Walton* demultiplexer.

1. The Petition Ignores The Challenged Claims' Selection Requirement

The Petition asserts that *Walton's* “multiplexer 1140” is the claimed “demultiplexer.” (*E.g.*, Pet. at 26). But multiplexer 1140 does not select a target signal based on a control input received from the control processor, as required by all of the challenged claims. And, critically, the Petition does not even assert, much less prove, otherwise.

Instead, the Petition irrelevantly asserts only that *Walton's* “multiplexer 1140” selects a “network data packeting format mode” based on a control input. (*E.g.*, Pet. at 29). Ignoring for now that *Walton's* “multiplexer 1140” does no such thing, **this is the wrong selection.** The claims do not require that the demultiplexer select a “network data packeting format mode” based on the control input from the control processor. Rather, the claims require that the demultiplexer **select a target signal based on that control input:**

a demultiplexer operatively coupled to the data formatting module and the control processor, and **configured to select one of the recovered K wirelessly transmitted signals as a target signal** intended for a user associated with the modem, **where the selection is based on a control input from the control processor**, wherein the data formatting module supports multiple types of format modes, and the control processor is configured to select a network data packet formatting mode in which the data formatting operates.

(*See, e.g.*, EX1001 at claims 1, 10, and 20).

The selection asserted by Petition is a completely different selection, and is performed by the control processor, not the demultiplexer:

a demultiplexer operatively coupled to the data formatting module and the control processor, and configured to select one of the recovered K wirelessly transmitted signals as a target signal intended for a user associated with the modem, where the selection is based on a control input from the control processor, wherein the data formatting module supports multiple types of format modes, and **the control processor is configured to select a network data packet formatting mode in which the data formatting operates.**

(See, e.g., EX1001 at claims 1, 10, and 20).

The Petition does not acknowledge or attempt to support this baseless attempt to rewrite the challenged claims. (E.g., Pet. at 29). There is none, and for this reason alone the Petition fails and should be denied.

2. Walton Does Not Disclose the Claimed “Control Input”

In addition to arguing the wrong selection, the Petition also fails to identify any evidence that the purported *Walton* control processor provides any control input to the purported *Walton* demultiplexer, as required by each challenged claim:

a **demultiplexer** operatively coupled to the data formatting module and the control processor, and **configured to select** one of the recovered K wirelessly transmitted signals as a target signal intended for a user associated with the modem, where **the selection is based on a control input from the control processor**, wherein the data formatting module supports multiple types of format modes, and the control processor is configured to select a network data packet formatting mode in which the data formatting operates.

(See, e.g., EX1001 at claims 1, 10, and 20).

The Petition asserts that *Walton*'s controller 270 is the claimed "control processor" and Walton's multiplexer 1140 is the claimed "demultiplexer." (*E.g.*, Pet. at 25-27). But controller 270 in *Walton* does not provide a control input to multiplexer 1140, and the Petition identifies no evidence to the contrary. (*E.g.*, Pet. at 25-27). Indeed, the Petition is entirely silent on multiplexer 1140 receiving a control input from the controller 270. (Pet. at 25-27).

This failure of proof is yet another reason the Petition has not established the required likelihood of prevailing on this limitation.

For any of these reasons, all the Grounds fail and the Petition should be denied.

VII. The *Fintiv* Factors Heavily Favor Discretionary Denial Of Institution Under § 314(A)

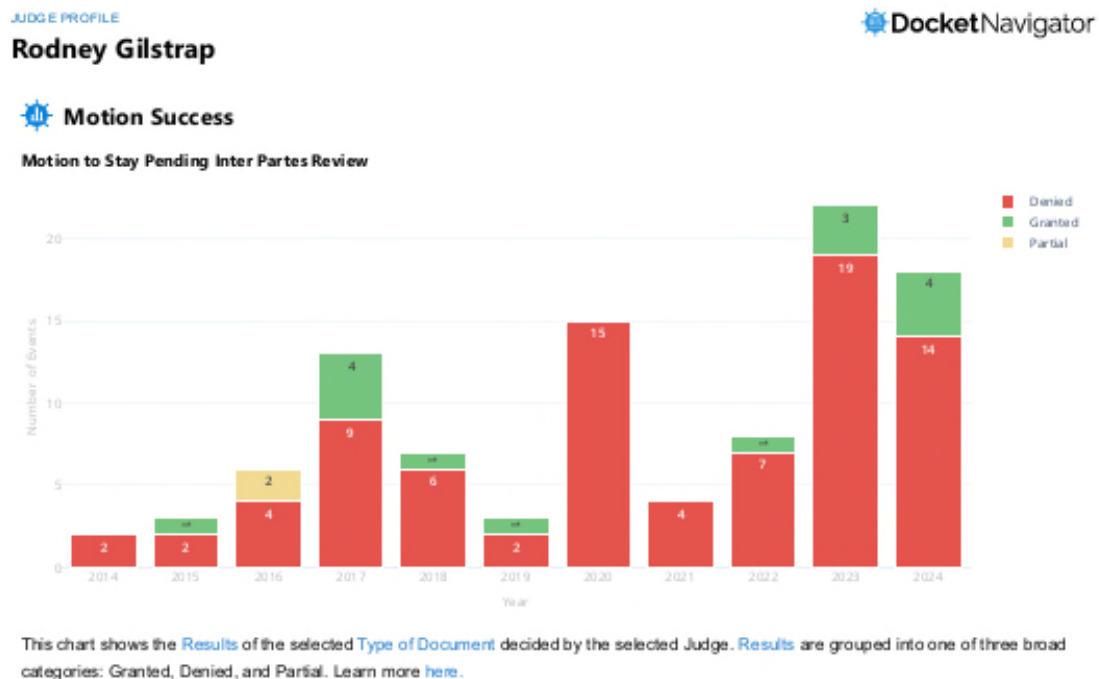
Patent Owner is currently asserting the challenged patent against the parent company of Petitioners Lenovo (United States) Inc. and Motorola Mobility LLC in the Eastern District of Texas, which has set a trial date for January 5, 2026, which is over five months earlier than a final written decision in the requested IPR.

Accordingly (and as established below), the *Fintiv* factors heavily weigh in favor of discretionary denial. In an attempt to characterize every factor as either neutral or favoring institution, the Petition is rife with conclusory statements and misapplications of controlling PTAB precedent. Under the appropriate legal

standards—and considering the totality of the record evidence—the *Fintiv* factors support discretionary denial of institution. PTAB’s recent rescission of the Guidance Memo only strengthens this support for a *Fintiv* discretionary denial.

A. Factor 1: Whether a stay exists or is likely to be granted if a proceeding is instituted

Petitioner admits that it has not sought a stay in the district court, and Patent Owner represents that it will not seek nor agree to a stay. Further, here other evidence exists that makes stay very unlikely. Over the past ten years, the presiding district court judge has denied over 83% of motions to stay pending *inter partes* review.



EX2007. Because the Petition does not even go as far to suggest that Petitioner will seek a stay, and because Judge Gilstrap has denied the overwhelming majority of motions to stay pending *inter partes* review, this factor weighs in favor of discretionary denial.

B. Factor 2: Proximity of the court’s trial date to the Board’s projected statutory deadline

Here, any final written decision would issue *over five months* after the trial date and a decision on the validity defenses presented therein. If the court’s trial date is earlier than the expected statutory deadline for the IPR’s final written decision, “the Board generally has weighed this fact in favor of exercising authority to deny institution.” *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 9 (PTAB Mar. 20, 2020) (precedential). The trial date is set for January 5, 2026, while the statutory final written decision, if the IPR were instituted, would be June 19, 2026.

Petitioners’ suggestion that the PTAB should ignore this much earlier trial date in light of the Guidance Memo is improper because PTAB has withdrawn that Guidance Memo. *See* Pet. at 77. Moreover, there was no basis in the first place for Petitioners’ speculation that “additional delays are likely.” *See* Pet. at 77-78.

To the contrary, the evidence of record strongly supports the conclusion that trial will occur months before any final written decision would issue. According to

the most recent statistics, the time to trial for the Eastern District of Texas is 21.6 months—squarely in line with the approximately 21-month schedule set by the district court. EX2008 (June 30, 2024 Federal District Court Case Management Statistics); EX2009 (Docket in *Collision Communications, Inc. v. Lenovo Group Ltd.*, No. 23-cv-00594 (E.D. Tex.) showing complaint filing date of Dec. 12, 2023); *see also Comcast Cable Communications, LLC v. Touchstream Technologies, Inc.*, IPR2024-00324, Paper 13 at 10 (PTAB July 24, 2024) (“Patent Owner’s representation of median time-to-trial of twenty-one months is consistent with the most recent available data from the judiciary. . . . We find that the related district court litigation’s trial date and the district court’s median time-to-trial favor denial.”) (discretionary denial granted upon rehearing); *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 9 (PTAB Mar. 20, 2020) (precedential) (“If the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under *NHK*.”).

Because any final written decision would issue substantially later than the district court trial, this factor weighs heavily in favor of discretionary denial. *See Verizon Bus. Network Servs. LLC v. Huawei Techs. Co. Ltd.*, IPR2020-01292,

Paper 13 at 12 (PTAB Jan. 25, 2021) (trial date seven to eight months before expected final written decision deadline weighs in favor of discretionary denial).

C. Factor 3: Investment in the parallel proceeding by the court and parties

At best for Petitioner, this factor favors denial of institution or is neutral.

Petitioner fails to evaluate the investment by both the court *and* the parties at the relevant time—at the deadline for institution. *Fintiv*, IPR2020- 00019, Paper 11 at 9-10. By the June 19, 2025 deadline for institution, the parties will have invested substantial resources in the following case events:

- Completion and service of invalidity contentions
- Completion of claim construction discovery
- Substantial completion of document production
- Exchange of privilege logs
- Filing of technical tutorials for claim construction
- Filing of opening claim construction brief
- Filing of responsive claim construction brief

EX2010 (Scheduling Order). Therefore, this case, particularly at the time of institution, will hardly be in the “very early stages of litigation” and discovery will not be in its preliminary stages. *See* Pet. at 78. The Parties will have expended

significant resources on the district court litigation by the deadline for institution, which favors denial of institution. Finally, filing the Petitions five months after receiving Patent Owner's infringement contentions and notice of asserted claims weighs in favor of denial of institution. *Comcast*, IPR2024-00324, Paper 13 at 15.

D. Factor 4: Overlap between issues raised in the petition and in the parallel proceeding

The Petition challenges the same claims as are asserted in the district court. Due to the substantial overlap in challenged claims and the similarity of Petitioner's claims and theories, this factor weighs in favor of discretionary denial. *Fintiv*, IPR2020-00019, Paper 11 at 12-13 (“[I]f a petition involves the same prior art challenges but challenges claims in addition to those that are challenged in the district court, it may still be inefficient to proceed because the district court may resolve validity of enough overlapping claims to resolve key issues in the petition.”).

Petitioners' suggestion that this factor weighs in favor of institution if the Board addresses the overlapping validity issues before they are resolved by the district court is unfounded because the district court will resolve any overlapping validity issues several months before the Board issues its final written decision. *See* Pet. at 79. Institution will not thus preserve judicial resources; it will waste them by allowing Petitioners to challenge the same claims first in the district court

and then again before the PTAB. The Board can save resources by discretionarily denying this petition and allowing the district court to adjudicate the validity of these claims under the same art nearly six months *before* the PTAB.

E. Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party

Petitioners effectively admit that the parties are essentially the same here, conceding that (1) the Petitioners manufacture the products accused of infringement in this district court; and (2) the named defendant is the parent company of the Petitioners. *See* Pet. at 79. Accordingly, this factor is not neutral as Petitioners argue without explanation, but instead favors denial. *See Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A); *see also Comcast*, IPR2024-00324, Paper 13 at 15.

F. Factor 6: Other circumstances that impact the Board’s exercise of discretion, including the merits / Compelling Merits

No other considerations warrant discretionary denial. As discussed above, Petitioner’s case does not even meet the “reasonable likelihood” standard for the statutory institution threshold. The Petition thus falls far short of showing “compelling merits.” *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 14-16 (PTAB Mar. 20, 2020) (precedential). Further, the withdrawal of the Guidance Memo’s emphasis on a compelling challenge thus does not affect the

analysis, it merely makes Petitioners' unfounded allegations regarding the Petition's strength even more irrelevant.

Accordingly, because the Petition fails to show compelling merits, and the *Fintiv* factors heavily support discretionary denial, the Board should deny institution.

VIII. Conclusion

For the foregoing reasons, the Board should deny institution of the Petition.

Dated: March 19, 2025

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Patent Owner hereby certifies, in reliance on the word count of the word-processing system (Microsoft Office Word 2010) used to prepare this preliminary response, that the number of words in this paper is 7,521. This word count excludes the tables of contents, tables of authorities, certificate of word count, certificate of service, and table of exhibits.

Dated: March 19, 2025

/William A. Meunier/

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CERTIFICATE OF SERVICE

I certify that copies of Patent Owner's Preliminary Response and accompanying Collision Exhibits 2001 through 2011 are being served by electronic mail on the following counsel of record:

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