

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAGEMCOM BROADBAND SAS,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2026-00263
Patent 11,785,275

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. ZHANG IS THE PRIOR ART CONSIDERED AND REJECTED BY THE OFFICE DURING PROSECUTION BECAUSE IT FAILED TO DISCLOSE THE “SELECTING” LIMITATION AT ISSUE HERE....	4
A. The '275 Patent And Zhang Have Fundamentally Different Architectures.....	5
B. Zhang Was Considered And Rejected During Prosecution Of The '275 Patent Because It Does Not “Select[] Desired Channels From The Digitized [Input] Signal.”	9
III. PETITIONER FAILS TO SHOW “SELECTING ... THE PLURALITY OF DESIRED CHANNELS FROM THE DIGITIZED [INPUT] SIGNAL” (ALL CLAIMS, ALL GROUNDS).....	13
A. Channels C ₁ -C _n Cannot Satisfy Both The “Selecting” And “Outputting” Limitations Because They Are Not Output To Demodulators.....	14
B. Zhang’s Channels D ₁ -D _m Are Not Selected From “The Digitized [Input] Signal.”	20
IV. CONCLUSION	31

TABLE OF AUTHORITIES

Page(s)

COURT DECISIONS

<i>Amgen, Inc. v. Hoechst Marion Roussel</i> , 126 F. Supp. 2d 69 (D. Mass. 2001)	8, 34
<i>Clare v. Chrysler Group LLC</i> , 819 F.3d 1323 (Fed. Cir. 2016)	32
<i>Curtiss-Wright Flow Control Corp. v. Velan, Inc.</i> , 438 F.3d 1374 (Fed. Cir. 2006)	32
<i>Eaton Corp. v. Rockwell Int’l Corp.</i> , 323 F.3d 1332 (Fed. Cir. 2003)	18, 25
<i>In re Facebook, Inc.</i> , 743 Fed. Appx. 998 (Fed. Cir. 2018)	23
<i>In re Felton</i> , 484 F.2d 495 (CCPA 1973)	23
<i>NTP, Inc. v. Research In Motion, Ltd.</i> , 418 F.3d 1282 (Fed. Cir. 2005)	19, 26
<i>Proveris Sci. Corp. v. Innovasystems, Inc.</i> , 739 F.3d 1367 (Fed. Cir. 2014)	18
<i>SightSound Techs., LLC v. Apple Inc.</i> , 809 F.3d 1307 (Fed. Cir. 2015)	32
<i>Univ. of Mass. v. L’Oréal S.A.</i> , 36 F.4th 1374 (Fed. Cir. 2022)	18, 25

AGENCY DECISIONS

<i>Ecto World, LLC v. RAI Strategic Holdings, Inc.</i> , IPR2024-01280, Paper 13 (May 19, 2025) (precedential)	16, 17
---	--------

I. INTRODUCTION

All of Petitioner's grounds are founded upon Zhang. But Zhang is not a new reference. It is a recycled reference that was considered and rejected during prosecution of the '275 patent as it has a fundamentally different architecture. Not surprisingly, Petitioner fails to show that Zhang discloses or renders obvious the very limitation that was found to be missing during prosecution.

While both Zhang and the '275 patent involve systems that receive an input signal and output a plurality of desired channels, the method by which they achieve this result is decisively different. Specifically, in the '275 patent, "an input signal comprising broadcast channels" is received, where "the broadcast channels compris[e] a plurality of desired channels and a plurality of undesired channels." Ex. 1043 ['275] cl. 1. The input signal is digitized, and desired channels are then selected and extracted from the digitized input signal. In accord, the '275 patent recites "selecting ... the plurality of desired channels from the digitized [input] signal." Ex. 1043 ['275] cl. 1. In contrast, Zhang's system does not select any channels from the digitized input signal; instead, it extracts all channels C_1 - C_n , which include both desired and undesired channels, from the digitized input signal without performing any selection. Only then does Zhang select the desired channels D_1 - D_m from this already extracted collection of channels C_1 - C_n . See Section II.A, *infra*.

During prosecution, the Examiner highlighted this distinction as material to patentability. Specifically, the applicant listed in an IDS the patent that issued from the same Zhang patent application publication that forms the basis of the Petition. *See* Section II.B, *infra*. The Zhang patent listed in the IDS and the Zhang patent application publication that forms the basis of the Petition have substantially identical disclosures. *Compare generally* Ex. 1049 [Zhang] *with* Ex. 1117 [Zhang-Patent]. The Examiner, in his Notice of Allowance, expressly stated that he had considered the references listed in the IDS, and had found them to be missing the “selecting” limitation of the claims. Ex. 1119 [NOA] 6-7. Specifically, the Examiner found that the prior art listed in the IDS, including Zhang, did not select desired channels from the digitized input signal as required by the claims, but instead separated the input signal into all its constituent channels:

The prior art comprising Information Disclosure Statements filed 16 August 2023 and 18 August 2023 was considered by the Examiner in view of the instant application. ...

[T]he prior art made of record teach a receiver for a wireless telecommunication system teach all of the adjacent frequency bands in the IF signal passed by a band pass filter in the radio frontend are converted to a digital signal by an ADC and then ***separated into their respective frequency bands by a channelizer*** where the separated frequency bands are processed in the normal manner by subsequent

DSP devices, see Claxton et al. US 6,735,421. *The prior art made of record do not teach selecting, by a digital frontend (DFE) coupled to the ADC, a plurality of desired channels from the digitized signal and outputting by the DFE, the selected plurality of desired channels to at least one demodulator as a digital datastream.*

Ex. 1119 [NOA] 6-7.

Petitioner does not even attempt to remedy Zhang's deficiencies identified by the Examiner. Instead, it relies on Zhang alone for the disclosure of the very "selecting" limitation that the Examiner found to be missing in Zhang. Pet., 22-25. But because Zhang's architecture is fundamentally different from the claimed invention, Petitioner maps both Zhang channel sets C_1 - C_n and D_1 - D_m , in the alternative, to the claimed "desired channels." Both alternatives fail.

With respect to channels C_1 - C_n , Petitioner's reliance fails because the '275 claims require that the same "plurality of desired channels" be both "select[ed]" in limitation 1[e] and "output ... to at least one demodulator" in limitation 1[f]. Zhang's channels C_1 - C_n cannot satisfy both requirements. Even if Zhang's channels C_1 - C_n were "selected," as alleged by Petitioner's Mapping 1, they are not the "plurality of desired channels" output to demodulators. Zhang outputs the smaller subset D_1 - D_m to its demodulators. See Section III.A, *infra*.

With respect to channels D_1 - D_m , while they are desired channels, they fail to disclose the claims because they are not selected “from the digitized signal” as required. The claims require that the “desired channels” be selected from the same “digitized signal” that is generated by the analog-to-digital converter. But Zhang channels D_1 - D_m are not selected from the “digitized signal” that the Petition identifies in Zhang. Instead, they are selected from the already-extracted channels C_1 - C_n . Even though both the ’275 patent and Zhang may ultimately achieve the same outcome (outputting desired channels), they do so through different methods, and “the very details regarding how” this result is achieved are “at the heart of a process patent.” *Amgen, Inc. v. Hoechst Marion Roussel*, 126 F. Supp. 2d 69, 101 (D. Mass. 2001), *aff’d* in relevant part, 314 F.3d 1313, 1346-1347 (Fed. Cir. 2003). *See* Section III.B, *infra*.

For these reasons and more, Petitioner fails to prove that any claim is disclosed or obvious under any of its grounds. The Board should deny institution.

II. ZHANG IS THE PRIOR ART CONSIDERED AND REJECTED BY THE OFFICE DURING PROSECUTION BECAUSE IT FAILED TO DISCLOSE THE “SELECTING” LIMITATION AT ISSUE HERE.

Zhang is the cornerstone of each of Petitioner’s grounds. Pet., 17-18. However, Zhang was considered and rejected during prosecution of the ’275 patent because it has a fundamentally different architecture that fails to disclose or render

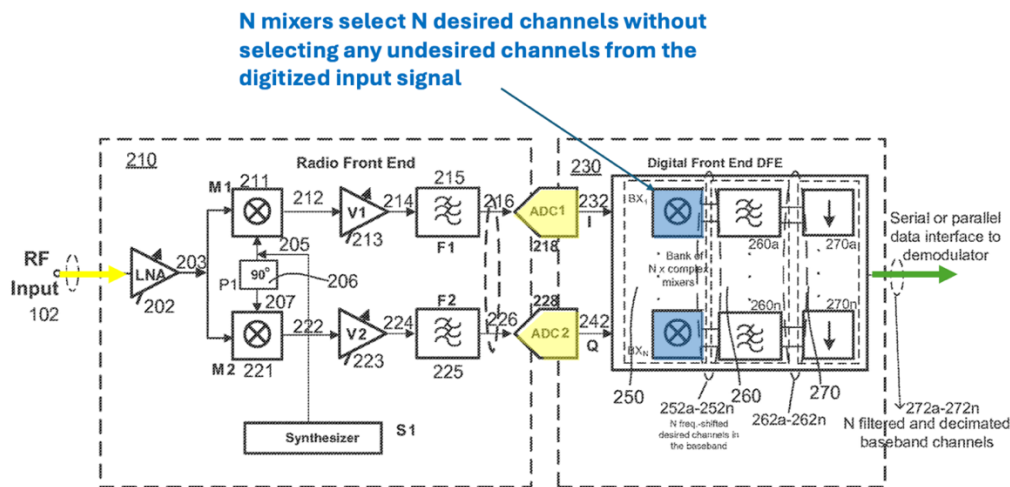
obvious the claims. *See* Section II.B, *infra*. Though both Zhang and the '275 patent involve a digitized input signal, and, ultimately, output desired channels, the method by which they achieve this result is critically different. Specifically, the '275 patent selects desired channels from the digitized input signal. In contrast, Zhang performs no selection from the digitized input signal. Instead, it indiscriminately extracts all channels, both desired and undesired, from the digitized input signal without performing any selection, and only later selects the desired channels from the already extracted channels. *See* Section II.A, *infra*. For similar reasons, the Examiner during prosecution, after considering Zhang and other references, found that they do not disclose the “selecting” limitation because the input signal in those references is merely separated into its constituent channels by a demultiplexer. Ex. 1119 [NOA] 6-7; Section II.B, *infra*.

A. The '275 Patent And Zhang Have Fundamentally Different Architectures.

As explained in this section, Zhang has a fundamentally different architecture from the '275 patent. While the '275 patent selects desired channels from the digitized input signal, Zhang indiscriminately extracts all channels from the digitized input signal without any selection, and later selects desired channels from the already separated individual channels.

As Dr. Russ explains, the '275 patent outputs desired channels by selecting them from the digitized input RF signal:

The Figure 2 embodiment of the '275 patent, annotated below, is illustrative. There, the analog input RF signal (yellow) is first digitized in the analog to digital converters (yellow). Ex. [1043] ['275] 5:53-56. Then, a bank of N mixers (blue) selects N desired channels, without selecting any undesired channels, from the digitized input signal. *Id.*, 5:56-61, 6:1-11. Specifically, each of the N mixer paths is responsible for extracting a desired channel from the digitized input signal. The selected desired channels are then output to demodulators (green). *Id.*, 7:16-20.



'275 Pat. Fig. 2 (modified and annotated)

Ex. 1107 [Russ-Decl.] ¶ 35.

In contrast, Zhang has a fundamentally different architecture. Specifically, in Zhang, the digitized input signal is separated into all its constituent channels C_1 -

C_n without any selection. Desired channels D_1 - D_m are subsequently selected from the already separated individual channels. Thus, Zhang does not select desired channels “from the digitized [input] signal.” As Dr. Russ explains, Zhang’s only numerical embodiment confirms this architecture:

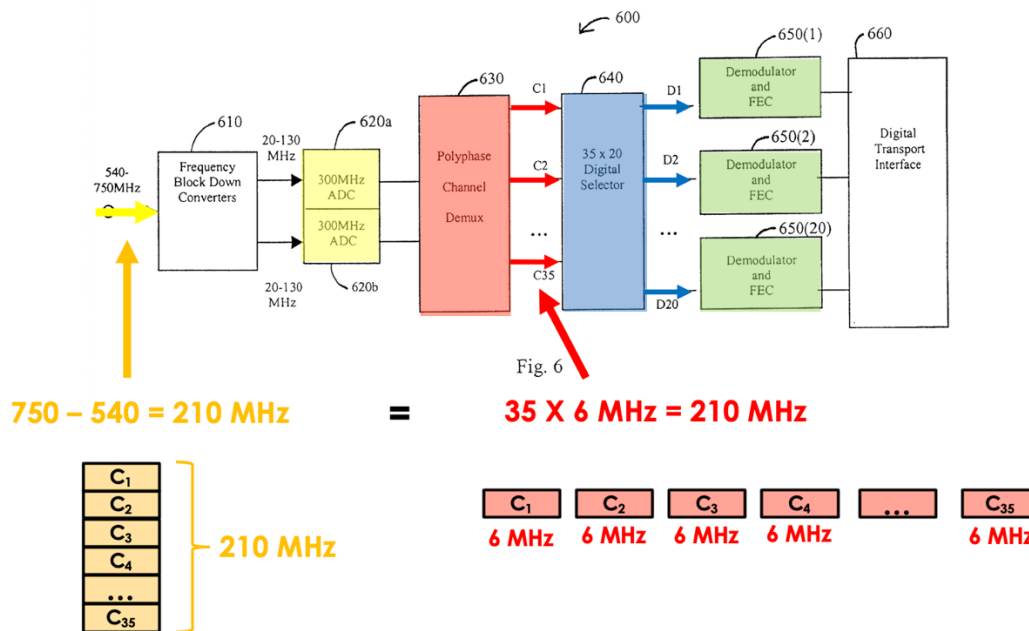
Zhang explains that in its Figure 6 embodiment, the frequency band of the input signal is 540-750 MHz. Ex. [1049] [Zhang] [0041]; Fig. 6. This means that the frequency band of the input signal is $750 - 540 = 210$ MHz.

Zhang further discloses that in its Figure 6 embodiment, there are 35 channels C_1 - C_{35} in the input signal. Ex. [1049] [Zhang] [0042]; Fig. 6. In other words, in Zhang’s Figure 6 embodiment, $n = 35$. Zhang uses the exemplary channel width of 6 MHz, which was typical at the time of Zhang (and, indeed, in North America is typical now). Ex. [1049] [Zhang] [0006]. The frequency bandwidth for 35 channels (C_1 - C_{35}), at 6 MHz each, equals 210 MHz, obtained by multiplying 35 and 6. That is exactly the frequency bandwidth of the entire input signal, 540-750 MHz. Therefore, Zhang’s only numerical example confirms that channels C_1 - C_n are all the channels in the entire signal band.

Ex. 1107 [Russ-Decl.] ¶¶ 56-57 (so explaining); *see also* Ex. 1116 [Lett-Depo. 07/23/25] 44:13-17 (Petitioner’s expert in IPR2025-00180, whose testimony Petitioner here has adopted, agreeing that in Zhang’s Figure 6, the “demultiplexer

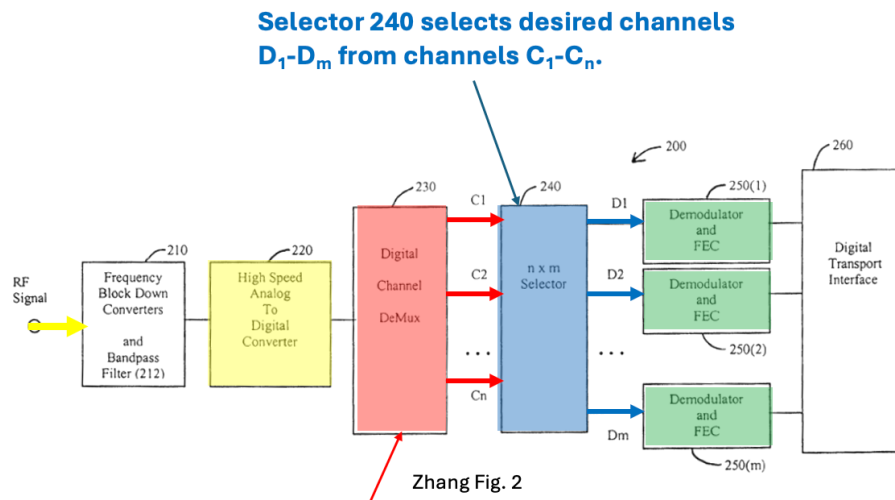
that demultiplexes Channels C_1 through C_{35} has demultiplexed all the channels — all the RF channels in the input signal” in “this specific example”).

The numerical embodiment of Zhang’s Fig. 6 is schematically shown below, where the input signal consists of 35 channels (yellow), and all channels C_1 - C_{35} are separated by channel demultiplexer 230 (red):



Ex. [1049] [Zhang] Fig. 6 (annotations added).

Zhang’s broader architecture discussed in its Figures 2 and 3 confirms Zhang’s numerical embodiment showing that the input signal is first separated into all its constituent channels, and desired channels are subsequently selected from the separated channels. Ex. 1107 [Russ-Decl.] ¶¶ 36-38, 51-55. This is shown in the annotation of Zhang’s Figure 2 below:



Digital Channel DeMux 230 indiscriminately extract all channels C_1 - C_n from the digitized input signal without any selection

Ex. 1107 [Russ-Decl.] ¶ 55.

As explained below, the difference in the methodologies utilized by Zhang and the '275 patent was recognized by the Examiner after considering Zhang.

B. Zhang Was Considered And Rejected During Prosecution Of The '275 Patent Because It Does Not “Select[] Desired Channels From The Digitized [Input] Signal.”

The fundamental distinction between Zhang and the '275 patent, and Zhang's failure to disclose the “selecting” step, was also recognized by the Examiner during prosecution of the '275 patent.

The applicant during prosecution listed U.S. Pat. 6,704,372 [Zhang-Patent] in an IDS:

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	6704372		2004-03-09	Zhang et al.	

Ex. 1118 [IDS] 1.

The Zhang patent submitted by the applicant in the IDS is the patent that issued from the same application that published as the Zhang reference relied upon by the Petition. Ex. 1049 [Zhang] 1 (Appl. No.: 09/956,479); Ex. 1117 [Zhang-Patent] 1 (Appl. No.: 09/956,479). Both the Zhang patent submitted by the applicant in the IDS and the Petition's Zhang reference have substantially identical disclosures. *Compare generally* Ex. 1049 [Zhang] *with* Ex. 1117 [Zhang-Patent].

The Examiner stamped the IDS, confirming consideration of the Zhang patent:

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.J.J/

Ex. 1118 [IDS] 1-2.

The Examiner subsequently issued a notice of allowance, confirming that he had considered the references identified in the IDS, including Zhang:

Claims 19-38 are allowed. *The prior art comprising Information Disclosure Statements filed 16 August 2023 and 18*

August 2023 was considered by the Examiner in view of the instant application. Although the prior art is from the applicant's other patents, i.e. US 8,223,775, as part of Entropic Communications, LLC, the applicant, v. Charter communications, Inc. Civil Action and Entropic Communications, LLC v. DirectTV, LLC and Dish Network Corp., Civil Action, the prior art was related to a cable modem system and architecture but not as claimed in the instant application.

Ex. 1119 [NOA] 6.

The Examiner then confirmed that the considered prior art, including Zhang, did not disclose the claimed step of selecting desired channels from the digitized input signal, because the prior art instead used a demultiplexer to separate an input signal into all its constituent channels:

The following is a statement of reasons for the indication of allowable subject matter: ***the prior art made of record*** teach a receiver for a wireless telecommunication system teach all of the adjacent frequency bands in the IF signal passed by a band pass filter in the radio frontend are converted to a digital signal by an ADC and then ***separated into their respective frequency bands by a channelizer*** where the separated frequency bands are processed in the normal manner by subsequent DSP devices, see Claxton et al. US 6,735,421. ***The prior art made of record do not teach selecting, by a digital frontend (DFE) coupled to the ADC, a plurality of desired channels from the digitized signal*** and outputting by the DFE, the selected plurality of desired channels to at least one demodulator as a digital datastream.

Ex. 1119 [NOA] 7.

A POSITA reviewing the '275 patent's prosecution history would understand that a reference similar to Zhang, which demultiplexes the digitized input signal into its constituent channels does not perform the "selecting" step of the claims. *See* Ex. 1107 [Russ-Decl.] ¶¶ 40-46.

Thus, the prosecution history further confirms the same technical deficiency in Zhang. The Examiner expressly considered the references identified in the IDS, including Zhang, and found that the "prior art made of record" did not disclose "selecting, by a digital frontend (DFE) coupled to the ADC, a plurality of desired channels from the digitized signal," but instead disclosed systems in which the digitized signal was separated into its constituent frequency bands by a channelizer. Ex. 1119 [NOA] 6-7. That is the same distinction presented here: Zhang's demultiplexer 230 separates the digitized input signal into individual channels C_1 - C_n , while the desired channels D_1 - D_m are selected only afterward from those already-separated channels.

Petitioner does not identify anything in Zhang that cures that deficiency. Instead, it relies on Zhang itself for the disclosure or obviousness of the very "selecting" limitation the Examiner found absent from the prior art made of record. Pet., 22-25, 36-37. Petitioner asserts that "[t]here was no discussion of Zhang (in

the notice of allowance or elsewhere),” Pet., 9, but that characterization omits that Zhang was identified in an IDS expressly considered by the Examiner, and that the Notice of Allowance expressly explained why the “prior art made of record” failed to disclose the same “selecting” limitation at issue here for similar reasons raised here. Ex. 1119 [NOA] 6-7. As explained below, Petitioner’s two alternative mappings—first to channels C_1 - C_n and alternatively to channels D_1 - D_m —each fail for similar reasons articulated by the Examiner. Sections III.A-B, *infra*..

III. PETITIONER FAILS TO SHOW “SELECTING ... THE PLURALITY OF DESIRED CHANNELS FROM THE DIGITIZED [INPUT] SIGNAL” (ALL CLAIMS, ALL GROUNDS).

Limitation 1[e] recites “selecting ... the plurality of desired channels from the digitized signal.” Ex. 1043 [’275] cl. 1. Independent claim 11 recites a corresponding limitation. *Id.*, cl. 11 (limitation 11[e]). Petitioner contends that Zhang alone discloses this limitation. Pet., 22-25 (contending Zhang alone discloses limitation 1[e]); 36-37 (relying on arguments for claim 1 for the alleged disclosure of claim 11).

Petitioner relies on two alternative theories. It first argues that Zhang’s channels C_1 - C_n constitute the claimed “plurality of desired channels.” Pet., 22. In the alternative, Petitioner relies on Zhang’s channels D_1 - D_m as the claimed “plurality

of desired channels.” Pet., 25. Both of Petitioner’s alternatives fail for multiple reasons. Sections III.A-B, *infra*.

A. Channels C₁-C_n Cannot Satisfy Both The “Selecting” And “Outputting” Limitations Because They Are Not Output To Demodulators.

Claim 1 recites that the same “plurality of desired channels” “selected” in limitation 1[e] must be “output” to demodulators in limitation 1[f]:

1[e] *selecting*, by a digital frontend (DFE) coupled to the ADC, *the plurality of desired channels* from the digitized signal; and

1[f] *outputting*, by the DFE, *the selected plurality of desired channels* to at least one demodulator as a digital datastream, ...

Ex. 1043 [’275] cl. 1 (emphasis added).

It is well-settled law that the term “the” invokes antecedent basis and requires repetition of the same previously recited element. *Univ. of Mass. v. L’Oréal S.A.*, 36 F.4th 1374, 1380 (Fed. Cir. 2022) (the term “the” “is the language for invoking an antecedent—for repeating, not departing from, the claim’s prior reference to [the initial antecedent phrase]”); *see also Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (finding that “[t]he phrase ‘the image data’ clearly derives antecedent basis from the ‘image data’” previously recited in the claim.); *Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“By stating that the retaining step is performed ‘during *the* gear shift ratio,’ the claim

requires this step to be performed during the particular sequence defined by the preamble as the gear ratio shift.”) (emphasis in original); *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1306 (Fed. Cir. 2005) (holding that “the at least one of the plurality of destination processors” refers back to the “plurality of destination processors” recited in the preamble).

Thus, the claims require that the same “plurality of desired channels” be (1) selected in limitation 1[e] and (2) output to demodulators in limitation 1[f]. But, as explained below, Zhang does not output channels C_1 - C_n to demodulators and, to the extent Petitioner relies on channels C_1 - C_n as the “desired channels” that are selected in limitation 1[e], it fails to show that they are output to demodulators in limitation 1[f].

Zhang explains that it selects channels D_1 - D_m from channels C_1 - C_n , and it is channels D_1 - D_m , not channels C_1 - C_n , that are output to demodulators:

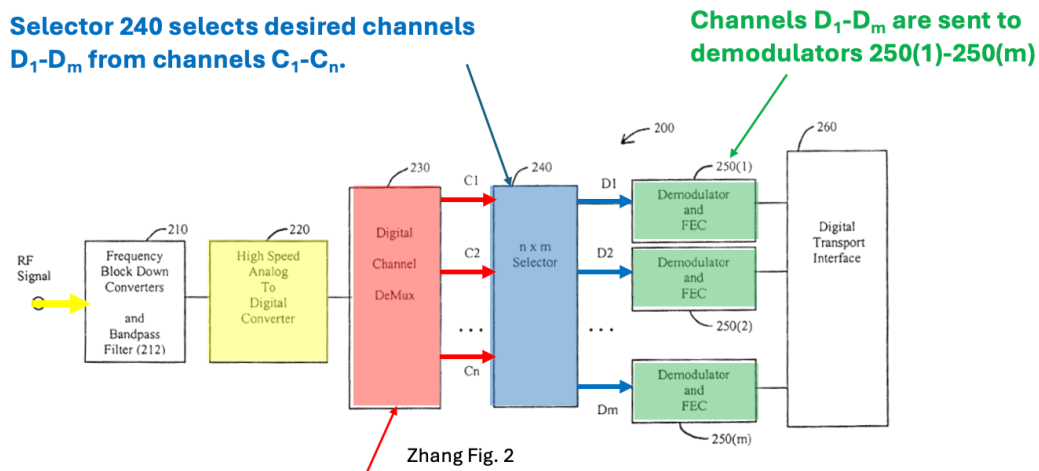
A digital channel demultiplexer 230 then demultiplexes the multi-channel digital RF signal into separate digital RF channels C_1 to C_n [A]n $n \times m$ digital selector 240 receives the demultiplexed digital RF channels C_1 to C_n and then selects one or more of the RF channels D_1 to D_m from one or more of the digital RF channels C_1 to C_n .

[...]

The m selected RF channels are then fed into respective demodulators 250(1), 250(2), ... 250(m).

Ex. 1049 [Zhang] [0028]-[0029] (emphasis added); *see also id.* [0039] (“digital selector 500 digitally selects one or more RF channels D_1 to D_m from the digital RF channels C_1 to C_n and then sends them to appropriate demodulators ...”); [0042] (“For example, in FIG. 6, there are 35 separate RF channels C_1 to C_{35} . Of those RF channels, 20 RF channels D_1 to D_{20} are selected. Those 20 selected RF channels are sent to a set of demodulators 650(1 ... 20) for demodulation.”). The number m of demodulators 250(1)-250(m) further confirms that it is channels D_1 - D_m , not C_1 - C_n , that are output to demodulators. Ex. 1107 [Russ-Decl.] ¶¶ 78-80.

That channels D_1 - D_m , not C_1 - C_n , are sent to demodulators is also readily apparent from Zhang’s Figure 2 (annotations added):



Digital Channel DeMux 230 indiscriminately extract all channels C_1 - C_n from the digitized input signal without any selection

Ex. 1107 [Russ-Decl.] ¶ 82.

In response, the Petition first asserts that “[i]n the disclosed embodiment where $m=n$,” all of the channels C_1 - C_n would be sent to demodulators. Pet., 34-35. However, Zhang does not disclose any embodiment where all channels C_1 - C_n are transmitted to demodulators. Indeed, Petitioner’s expert, Mr. Lett, testified in IPR2025-00180 (and whose testimony Petitioner here has adopted) that Zhang’s method *by design* extracts more channels than are transmitted to demodulators to allow the user to quickly change the channel that is demodulated (and thus viewed):

Q. So did I understand correctly that Zhang demultiplexes more channels that at one time may be sent to the demodulator so that the user can switch between the desired channels at a faster speed?

A. Yeah. So Zhang discloses the digital selector provides the subscriber with fast channel search capabilities. That’s in paragraph in 28 cited in Zhang.

Ex. 1114 [Lett-Depo. 12/11/24] 8:14-22; *see also id.*, 8:4-8 (Petitioner’s IPR2025-00180 expert opining that “I don’t think it’s wasted. It’s really—it’s there for a quick channel change to the new—to the new desired channel that may be going from an undesired to a desired channel.”); Ex. 1049 [Zhang] [0028] (“Channel-search capabilities of the digital selector 240 renders it much faster than traditional analog channel switching through RF tuners.”).

The Petition next argues that “Zhang’s Figure 5 provides an example of selector 240, showing how it feeds ... the target channels C_1 - C_n through one or more data buses 520.” Pet., 35. But both Figure 5 and its accompanying disclosure confirm that it is channels D_1 - D_m , not channels C_1 - C_n , that are transmitted to demodulators. As Zhang explains:

FIG. 5 is a simplified high-level schematic diagram of an $n \times m$ digital selector 500, which in some embodiments of the present invention, can be used to implement digital selector 240 of FIG. 2.

In operation, digital selector 500 digitally *selects one or more RF channels D_1 to D_m from the digital RF channels C_1 to C_n and then sends them to appropriate demodulators* or output ports (not shown) through different data buses (not shown).

Ex. 1049 [Zhang] [0038]-[0039]. Zhang’s Figure 5 itself confirms its text:

Figure 5 “selects one or more RF channels D_1 to D_m from the digital RF channels C_1 to C_n and then sends them to appropriate demodulators or outputs ports ... through different data buses” Ex. 1013 [Zhang] [0039]

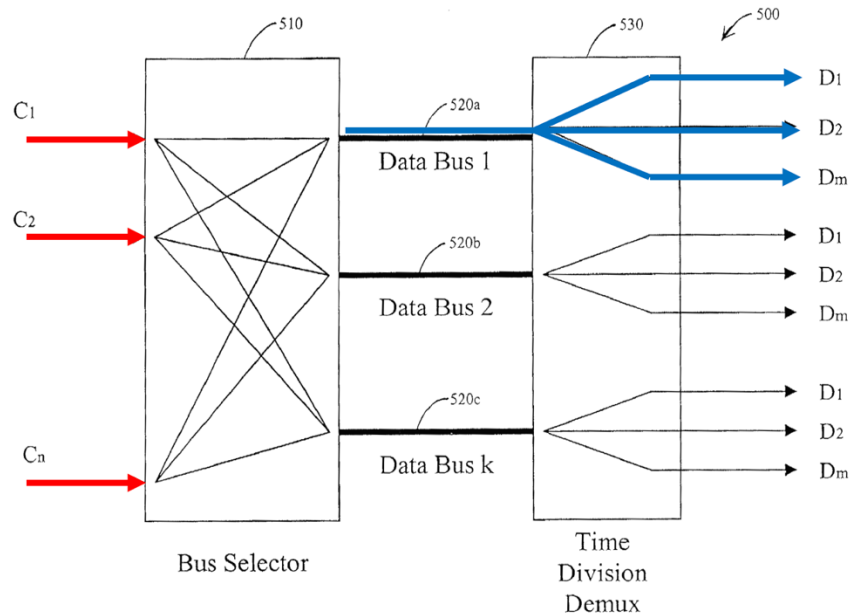


Fig. 5

Ex. [1049] [Zhang] Fig. 5 (annotations added).

Furthermore, while it is undisputed that Zhang by design extracts more channels C_1 - C_n than are sent to demodulators, the theoretical happenstance that all extracted channels C_1 - C_n could subsequently all be selected as the desired channels D_1 - D_m cannot disclose the claimed method. *In re Facebook, Inc.*, 743 Fed. Appx. 998, 1001-1002 (Fed. Cir. 2018) (reversing the Board’s anticipation and obviousness determination because even if the examples in the prior art “happened to result in” the claimed limitation, “[n]othing about [the prior art’s] algorithm required” that outcome); *In re Felton*, 484 F.2d 495, 500 (CCPA 1973) (reversing anticipation and obviousness determinations where “it would be mere happenstance if any structure

made according to [the prior art] met the limitations of the claims.”). Ex. 1107 [Russ-Decl.] ¶¶ 84-85.

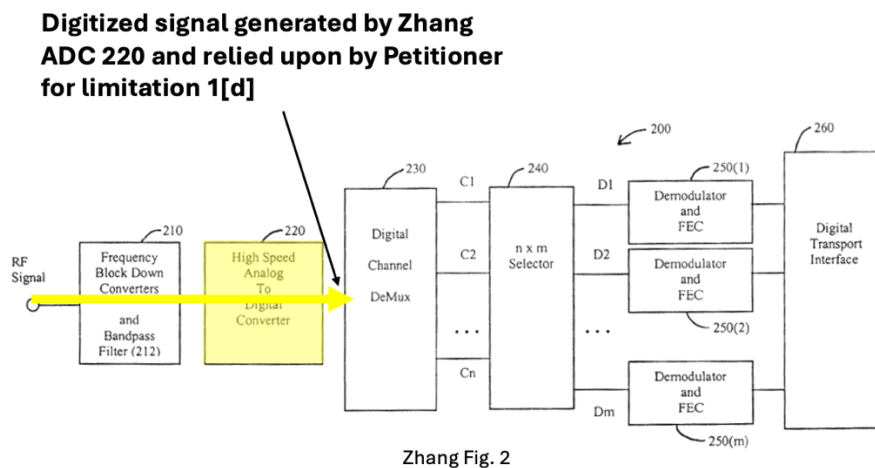
Accordingly, Zhang’s channels C_1 - C_n cannot be the claimed “plurality of desired channels” because they cannot satisfy both limitations 1[e] (selecting) and 1[f] (outputting to demodulators), which the antecedent-basis structure of the claim requires.

B. Zhang’s Channels D_1 - D_m Are Not Selected From “The Digitized [Input] Signal.”¹

Petitioner relies on channels D_1 - D_m as the claimed “plurality of desired channels” but fails to prove that Zhang discloses or renders obvious the claims because channels D_1 - D_m are not selected “from the digitized signal,” as required.

¹ The Board previously disagreed with Patent Owner on a potentially similar argument. *See, e.g.*, Ex. 1092, 25-27. Patent Owner respectfully disagrees with the Board’s decision, which is currently on appeal to the Federal Circuit. Furthermore, unlike the patent that was the subject of prior decisions, the Examiner during the prosecution of the ’275 patent expressly considered Zhang and found that it fails to disclose the selecting limitation at issue here.

Limitations 1[b] and 1[d] recite, respectively, receiving “an input signal,” and “digitizing, by an analog-to-digital converter (ADC) coupled to the radio front end, the processed input signal to generate a digitized signal.” As shown in Zhang’s Figure 2, for the disclosure of the claimed “digitized signal” generated by the ADC in limitation 1[d], Petitioner relies on the Zhang’s Analog To Digital Converter 220, which generates a digitized signal and inputs that digitized signal to the Channel Demultiplexer 230. Pet., 13, 21-22.



Ex. [1049] [Zhang] Fig. 2 (annotations added).

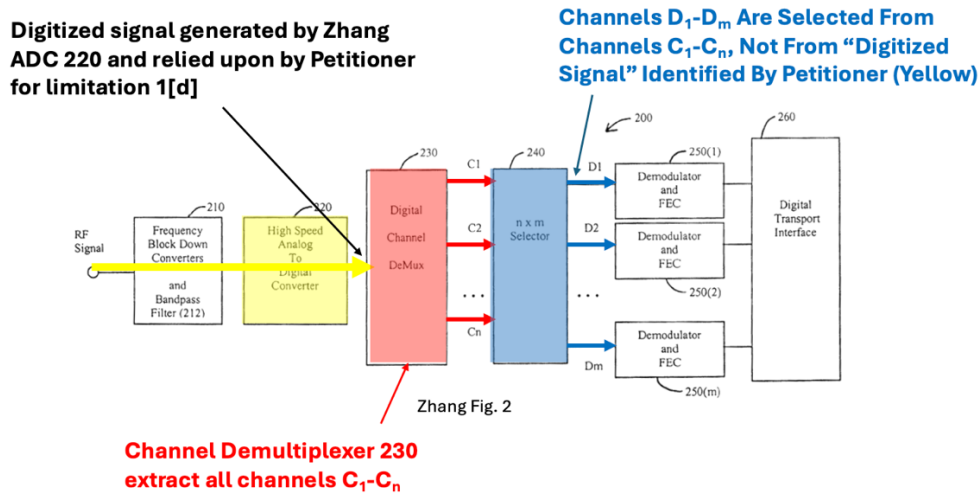
Limitation 1[e] further requires “selecting ... the plurality of desired channels from the digitized signal.” The antecedent basis for “the digitized signal” of limitation 1[e] is the digitized signal that is generated by the ADC in limitation 1[d]. *See Univ. of Mass. v. L’Oréal S.A.*, 36 F.4th 1374, 1380 (Fed. Cir. 2022) (the term “the” “is the language for invoking an antecedent—for repeating, not departing

from, the claim's prior reference to [the initial antecedent phrase]"); *see also Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (finding that "[t]he phrase 'the image data' clearly derives antecedent basis from the 'image data'" previously recited in the claim); *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) ("By stating that the retaining step is performed 'during the gear shift ratio,' the claim requires this step to be performed during the particular sequence defined by the preamble as the gear ratio shift.") (emphasis in original); *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1306 (Fed. Cir. 2005).

As summarized in the table below and further discussed in this section, Zhang expressly states, using the same terminology as the claims, that its channels D_1 - D_m are "select[ed] ... from one or more of the digital RF channels C_1 to C_n ," not from the digitized input signal mapped by Petitioner:

Claim 1: desired channels are “select[ed] ... from the digitized signal”	Ex. 1049 [Zhang]: channels D_1 - D_m are “select[ed] ... from one or more of the digital RF channels C_1 to C_n ”
[1D] digitizing, by an analog-to-digital converter (ADC) coupled to the radio front end, the processed input signal to generate a digitized signal [1E] selecting, by a digital frontend (DFE) coupled to the ADC, the plurality of desired channels from the digitized signal	“An ADC 220 then converts the down-converted multi-channel analog RF signal to a multi-channel digital RF signal.” [0027] “A digital channel demultiplexer 230 then demultiplexes the multi-channel digital RF signal into separate digital RF channels C_1 to C_n.” [0028] “an $n \times m$ digital selector 240 receives the demultiplexed digital RF channels C_1 to C_n, and then selects one or more of the RF channels D_1 to D_m from one or more of the digital RF channels C_1 to C_n.” [0028]

As Dr. Russ explains below with reference to Zhang’s annotated Figure 2, channels D_1 - D_m (blue) in Zhang are not selected “from the digitized signal” (yellow) identified by Petitioner as the claimed “digitized signal.” Instead, channels D_1 - D_m (blue) are selected from the already extracted channels C_1 - C_n (red):



Zhang states that the $n \times m$ selector 240 selects the desired channels D_1 - D_m from the extracted channels C_1 - C_n , not from the digitized input signal:

Still referring to FIG. 2, an $n \times m$ digital selector 240 receives the demultiplexed digital RF channels C_1 to C_n and then *selects one or more of the RF channels D_1 to D_m from one or more of the digital RF channels C_1 to C_n .*

Ex. [1049] [Zhang] [0028]; *see also id.*, [0039] (“digital selector 500 digitally selects one or more RF channels D_1 to D_m from the digital RF channels C_1 to C_n .”).

Ex. 1107 [Russ-Decl.] ¶ 92.

As Dr. Russ further explains, the embodiment of Zhang’s selector 240 itself (relied upon by Petition at 27) confirms that Zhang selects the desired channels D_1 - D_m from already extracted channels C_1 - C_n , not from “the digitized signal”:

Zhang's Figure 5 shows an exemplary implementation of Zhang's selector 240, and confirms that Zhang selects the desired channels D_1 - D_m from extracted channels C_1 - C_n , not from the digitized input signal. Ex. [1049] [Zhang] [0038] ("FIG. 5 is a simplified high-level schematic diagram of an $n \times m$ digital selector 500, which in some embodiments of the present invention, can be used to implement digital selector 240 of FIG. 2.").

In Zhang's Figure 5, channels C_1 - C_n (red), which were extracted from the digitized input signal by the digital channel demultiplexer 230, enter the selector on the left-hand side of the figure. The circuitry within the selector 240 selects and outputs desired channels D_1 - D_m (blue) from the channels C_1 - C_n :

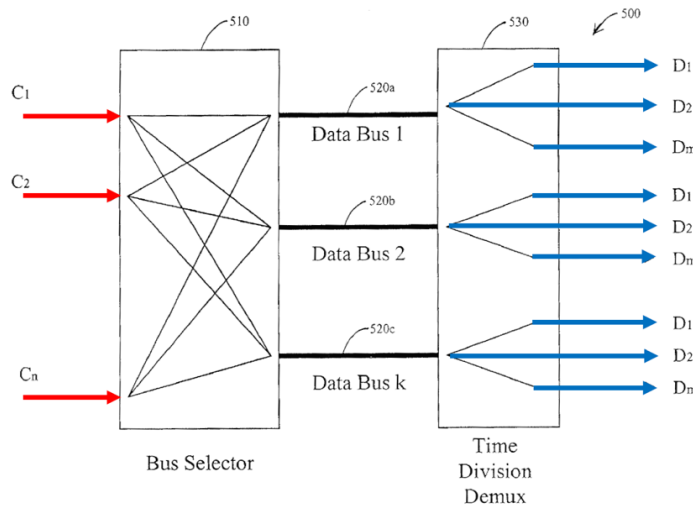


Fig. 5

Zhang's explanation of Figure 5 also confirms that the desired channels D_1 - D_m are selected from channels C_1 - C_n , not from the digitized input signal. Ex. [1049] [Zhang] [0039] ("digital selector 500 digitally

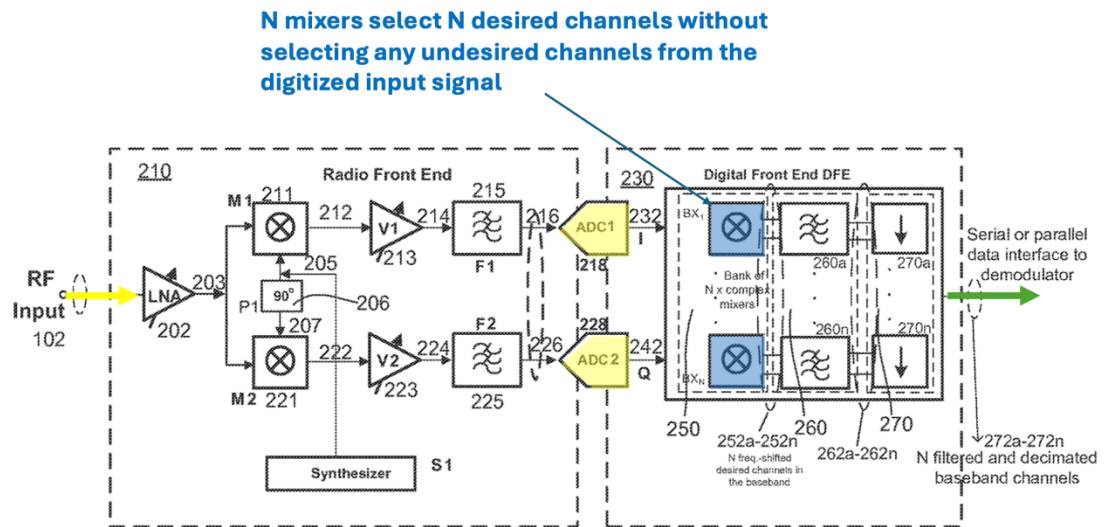
selects one or more RF channels D_1 to D_m from the digital RF channels C_1 to C_n and then sends them to appropriate demodulators”).

Ex. 1107 [Russ-Decl.] ¶¶ 93-95.

The demultiplexed channels C_1 - C_n are not the “digitized signal” identified by Petitioner. As shown above, Petitioner relies on the digital signal generated by Zhang’s ADC 220 and input into Channel Demultiplexer 230 as the claimed “digitized signal.” Pet., 21-22.

The ’275 patent’s specification confirms that Zhang’s selection of desired channels D_1 - D_m from channels C_1 - C_n does not disclose selecting the desired channels “from the digitized signal.” As Dr. Russ explains:

In all embodiments of the ’275 patent, the desired channels are selected from the digitized input signal. For example, in the ’275 patent’s Figure 2, annotated below, the input signal (yellow) is first digitized in the analog to digital converters (yellow). Ex. [1043] [’275] 5:48-51. Then, a bank of N mixers (blue) selects N desired channels from the digitized input signal. *Id.*, 5:51-55, 5:63-6:6. The selected desired channels are then output to demodulators (green). *Id.*, 7:10-14. This is in contrast to Zhang where, as explained above, the digitized input signal is demultiplexed into channels C_1 - C_n , with those separate outputs C_1 - C_n sent to the digital selector 240. The desired channels are then selected by the digital selector 240 from channels C_1 - C_n , not from the digitized input signal.



'275 Pat. Fig. 2 (modified and annotated)

Ex. 1107 [Russ-Decl.] ¶ 99.

A comparison of the claims of the '275 patent with claims in US 11,381,866, which has a common specification with the '275 patent, further confirms the significance of selecting the desired channels “from the digitized signal.” For example, claim 1 of the '866 patent recites a “digital front end” that is configured to “concurrently select and provide each of the plurality of desired channels without providing any of the plurality of undesired channels,” but does not expressly recite that the selection must be “from the digitized signal.” Ex. 1112 [’866-Patent] cl. 1. This is shown in the table below:

'275 Patent Limitation 1[e]	'866 Patent Limitation 1[b]
“selecting, by a digital frontend (DFE) coupled to the ADC, the plurality of desired channels from the digitized signal”	“a digital frontend (DFE) coupled to the wideband ADC, wherein the DFE is configured to concurrently select and provide each of the plurality of desired channels, via a serial interface, without providing any of the plurality of undesired channels.”

As is shown in the comparison above, while claim 1 of the '275 patent recites that the selection of desired channels must be “from the digitized signal,” claim 1 of the '866 patent does not explicitly recite the source signal from which the selection must be performed. Ex. 1107 [Russ-Decl.] ¶¶ 100-101. If claim 1 of the '275 patent were read so broadly as to cover the selection of Zhang’s channels D_1 - D_m , then the language of the claim requiring that these channels be selected “from the digitized signal” would be rendered superfluous. *See SightSound Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1316 (Fed. Cir. 2015) (“This distinction [between two claims] further underscores that ‘second memory’ must be different...because otherwise the additional language... would be redundant.”); *see also Curtiss-Wright Flow Control*

Corp. v. Velan, Inc., 438 F.3d 1374, 1381 (Fed. Cir. 2006) (“[C]laim differentiation takes on relevance in the context of a claim construction that would render additional, or different, language in another independent claim superfluous”); *see also Clare v. Chrysler Group LLC*, 819 F.3d 1323, 1330 (Fed. Cir. 2016) (explaining that the doctrine of claim differentiation applies across related patents).

The Petition appears to argue that it can simply draw a larger box around Zhang’s demultiplexer 230 and selector 240 and label the combined circuitry as the claimed “digital front end.” Pet., 36-37. From this, Petitioner reasons that because the input to that enlarged box is the digitized signal and the output is channels D_1 - D_m , the channels must be “selected from the digitized signal.” *Id.* This logic does not follow.

Claim compliance depends on how the reference actually operates, not how expansively a petitioner defines block boundaries. Zhang expressly teaches that channels D_1 - D_m are selected “from one or more of the digital RF channels C_1 to C_n .” Ex. 1049 [Zhang] [0028]. That remains true regardless of how Petitioner labels or groups Zhang’s components. The issue is not what constitutes the DFE; the issue is where channels D_1 - D_m are selected from.

No matter what is mapped to the claimed DFE,
Zhang channels D_1 - D_m are selected from
channels C_1 - C_n not from the digitized signal.

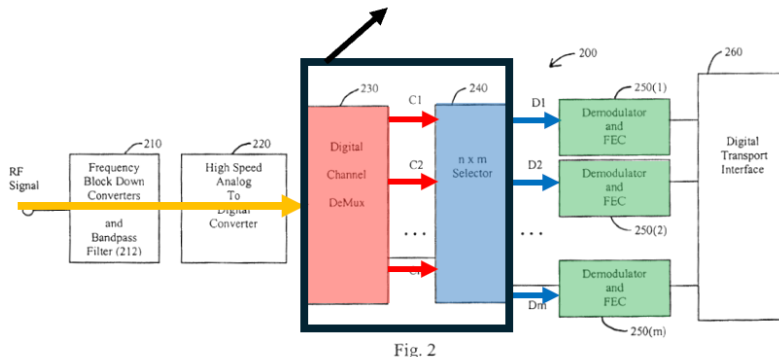


Fig. 2

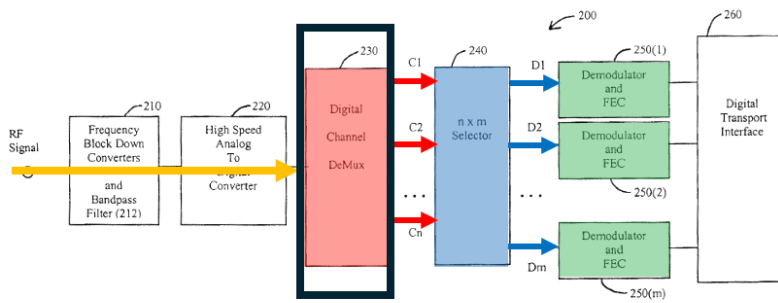


Fig. 2

Ex. [1049] [Zhang] Fig. 2 (Duplication and annotations added).

Claims directed to methods are not satisfied by achieving the same result through a different process. “[T]he very details regarding how” a result is achieved are “at the heart of a process patent.” *Amgen, Inc. v. Hoechst Marion Roussel*, 126 F. Supp. 2d 69, 101 (D. Mass. 2001), *aff’d* in relevant part, 314 F.3d 1313, 1346-1347 (Fed. Cir. 2003).

For all these reasons, Petitioner’s reliance on Zhang’s channels D_1 - D_m as the claimed “plurality of desired channels” fails to meet the claims because they are not selected “from the digitized signal” as required.

IV. CONCLUSION

For the foregoing reasons, Petitioner has failed to demonstrate a reasonable likelihood that it would prevail with respect to any challenged claim. The Board should deny institution.

Respectfully submitted,

/s/ Parham Hendifar

Parham Hendifar, Reg. No. 71,470
LOWENSTEIN & WEATHERWAX LLP

Date: September 15, 2026

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response (the “POPR”) consists of 5374 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Parham Hendifar /

Date: September 15, 2026

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served
by electronic service, by agreement between the parties, on the date below:

PATENT OWNER'S PRELIMINARY RESPONSE

The names and addresses of the parties being served are as follows:

Jessica Kaiser	kaiser-ptab@perkinscoie.com
Amanda Tessar	Tessar-ptab@perkinscoie.com
Tyler Knox	Knox-ptab@perkinscoie.com
	Sagemcom-Entropic-IPR@perkinscoie.com

Respectfully submitted,

/ Parham Hendifar /

Date: September 15, 2026