

REMARKS

Claims 1 and 11 are subject to reexamination. No new matter has been added. Patent Owner respectfully requests reconsideration of the claims in view of the following remarks. Patent Owner respectfully thanks the Examiner for the opportunity to discuss the rejection telephonically on June 6, 2024.

References Relied Upon in First Rejection***McNeely***

World Intellectual Property Organization Publication No. WO 2006/119490 (“McNeely”) relates to “an apparatus and method for performing frequency translation.” (McNeely at Abstract). In particular, McNeely “describes a circuit used for processing satellite signals.” (*Id.* at 5:27–28). McNeely explains that during receipt of signals in a typical satellite system installation at a customer home, satellite transponders located on satellites 102a–c transmit satellite signals to satellite dishes 104a–c located at or near the customer’s home. (*Id.* at 6:10–18; Fig. 1). LNBs in the satellite dishes amplify and convert the satellite signal from an 11–13 GHz range to an “L-band signal” in the 1–2 GHz range. (*Id.* at 6:26–28).

McNeely explains that the L-band signals in their entirety cannot be supplied through a single coaxial cable for delivery into the customer home because the L-band signals occupy too much frequency bandwidth. (*Id.* at 7:6–9). Accordingly, McNeely discloses a frequency translation module (FTM) 110 located outside or very near to the entry point into the customer home, which performs a “preselection” of certain physical channels and outputs a signal comprising multiple channels over a single coaxial cable into the customer home. (*Id.* at 7:11–26). From there, the signal is provided to terminals and/or set-top boxes within the customer home, each of which receives the signal comprising multiple channels, tunes to the desired physical channel within the

signal, demodulates the physical channel to produce a transport stream, and extracts the desired bitstream(s) from the transport stream. (*Id.* at 7:26–8:7).

Notably, McNeely is directed to improvements within the FTM itself. McNeely explains that “a conventional FTM contains analog signal processing used for the filtering, mixing, and recombining of the L-band signals,” but “[t]he utilization of digital signal processing within the FTM structure permits greater flexibility and removes some of the limitations of analog signal processing.” (*Id.* at 8:24–31). McNeely does ***not*** teach any improvements to the tuning of television channels, but rather relies upon the use of conventional set-top boxes within the customer home (downstream from the FTM) to perform the tuning and demodulation. (*Id.* at 8:3–7). McNeely specifically notes that “the process used by the FTM 110 ***is different from a direct tuning*** of those certain physical channels since other energy besides the selected channel may be present, and ***the channels are then recombined*** to form a new signal for further distribution.” (*Id.* at 7:17–21 (all emphasis added unless otherwise noted)).

Pugel

World Intellectual Property Organization Publication No. WO 2007/145637 (“Pugel”) relates to a “multichannel digital cable tuner.” (Pugel at Title). In one embodiment, a multichannel receiver circuit includes a plurality of amplifier-filter circuits, a plurality of analog-to-digital converters, a digital tuner, and a plurality of demodulator circuits. (*Id.* at [0023]). Pugel discloses that the plurality of amplifier-filter circuits segregates the analog input signal into a plurality of separate analog signals of differing frequency ranges, or “bands.” (*Id.* at [0024]). For example, an arrangement of three amplifier-filter circuits might be used, wherein the three circuits are configured to process frequencies from 5–300 MHz, 300–600 MHz, and 600–900 MHz respectively. (*Id.* at [0028]). Each separate analog signal band is then converted from analog to digital form by an analog-to-digital converter (ADC). (*Id.* at [0024]).

Pugel next discloses that the converted digital signals are coupled to digital tuner 130, which demultiplexes the converted digital signals to generate a plurality of digital channel signals. (*Id.* at [0027]). Pugel notes in particular that “[t]he digital tuner 130 may include a channel selector 315 to permit selection of one or more particular digital channels desired to be recovered.” (*Id.* at [0038]). Each digital channel signal is then coupled to a separate demodulator, which performs demodulation and forward-error-correction (FEC) operations appropriate for the content of that digital channel. (*Id.* at [0027]).

Response to First Rejection under 35 U.S.C. § 103

Claims 1 and 11 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over McNeely in view of Pugel.

McNeely Is Not Analogous Art

The OA fails to demonstrate that McNeely is analogous art. “A reference qualifies as prior art for an obviousness determination . . . only when it is analogous to the claimed invention.” *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011). An obviousness ground that relies upon non-analogous art fails. *Id.*, 1352. To be analogous, a reference must be either (1) from the same field of endeavor as the patent-at-issue, or (2) reasonably pertinent to the particular problem with which the inventor of the challenged patent is involved. *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992). McNeely meets neither criterion.

As its title suggests, the ’362 Patent is directed to a “wideband tuner architecture.” *See Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380-81 (Fed. Cir. 2019) (affirming Board’s finding of field of endeavor based on “the title of the [] patent and the preamble of a . . . claim”). The ’362 Patent explains that tuners are “[r]eceptors used to down-convert and selectively filter TV channels.” (1:24-27). This is why, for example, Claim 1 recites “[a] wideband receiver system

comprising . . . digital circuitry configured to: *select* said plurality of desired television channels.”

The '362 Patent further states:

Existing tuners for these applications down-convert a swath of channels to an intermediate frequency, which are then sent to a demodulator. Because the swath of channels is not contiguous, this swath includes the desired channels as well as undesired channels. The demodulator employs a high-speed data converter to capture this swath of desired and undesired channels in the digital domain and subsequently filters out the desired channels.

(1:27-34). The '362 Patent explains that one disadvantage of existing tuners is that achieving a high bandwidth “would require a very expensive digital processing circuitry such as very high-speed analog to digital conversion and high-speed processor in the demodulator.” (2:20-23). Accordingly, the '362 Patent aims to improve upon wideband tuner architecture by “eliminat[ing] the need of expensive data conversion, filtering and channel selection on the demodulator side” and by “remov[ing] undesired channels from the signal path at an early stage, thus reliev[ing] the large dynamic range requirement in the demodulator.” (6:60-64).

McNeely is not directed to a tuner, nor does it attempt to solve the problem of eliminating expensive data conversion, filtering, and channel selection from the demodulator side of a tuner. As explained above, McNeely is directed to an improved frequency translation module (FTM). McNeely explains that an FTM is used in satellite television systems because the signals travelling from the satellite dishes into the customer home occupy too much frequency for delivery over a single coaxial cable. (McNeely, 7:6-9). The FTM addresses this problem by performing what McNeely calls a “preselection” of certain physical channels, a process even McNeely acknowledges is different than tuning. (*Id.* at 7:11–26).

McNeely makes it explicitly clear that its FTM is *not* a tuner. This is because “the process used by the FTM 110 is *different from a direct tuning* of those certain physical channels since *other energy besides the selected channel may be present*, and the channels are then recombined

to form a new signal for further distribution.” (*Id.* at 7:17–21 (emphasis added)). In other words, McNeely’s FTM filters out some—but not all—of the undesired channels and outputs a combination of desired and undesired channels. And this is because McNeely is only concerned with making sure the signal bandwidth is narrow enough for delivery into the home on a single coaxial cable, rather than making sure that only the selected channels arrive at the demodulator side of a tuner. This is also why McNeely still relies on the use of conventional terminals and/or set-top boxes to perform tuning prior to demodulation, and why it is silent as to the architecture of those boxes (confirming that the set top boxes would still be responsible for tuning). (*Id.* at 8:1-7).

Thus, McNeely and the ’362 Patent are directed towards entirely different problems, and the issues addressed by McNeely have no bearing upon the tuning of selected channels, nor the elimination of expensive data conversion, filtering, and channel selection circuitry from the demodulator side of a wideband tuner.

Thus, the OA fails to demonstrate that McNeely is analogous art to the ’362 Patent.

McNeely Does Not Disclose or Suggest “Select[ing] Said Plurality of Desired Television Channels”

Claim 1 requires digital circuitry configured to “select said plurality of desired television channels from said digitized plurality of frequencies.” Likewise, claim 11 requires “selecting, by digital circuitry of said wideband receiver system, said plurality of desired television channels from said digitized plurality of frequencies.” The Examiner appears to take the position that this “selecting” is performed by McNeely’s digital channel selector 230 (*See* OA at 4), which is a component of frequency translation module (FTM) 110. (McNeely at 9:1–5).

However, McNeely makes it expressly clear that FTM 110 does not “select said plurality of desired television channels” as required by the claims. As McNeely explains:

The FTM 110 extracts certain ranges of frequencies containing selected physical channels as portions of the three L-band signals provided. . . . The process used by

the FTM 110 may be described as a preselection of certain physical channels. However, the process used by the FTM 110 is different from a direct tuning of those certain physical channels since other energy besides the selected channel may be present, and the channels are then recombined to form a new signal for further distribution.

(*Id.* at 7:11–21). In other words, rather than selecting (and outputting) the desired television channels, McNeely’s FTM selects *ranges of frequencies containing the desired channels* (and undesired channels). (*Id.* at 7:11–13). McNeely itself characterizes this as only a “preselection” because the outgoing signal still contains a mix of desired and undesired channels. (*Id.* at 7:15–19). This is why McNeely still relies on the set-top boxes to actually tune to the desired channels before those channels can be demodulated. (*Id.* at 8:3–7).

Therefore, the Examiner has not shown that the alleged combination discloses or renders obvious “select[ing] said plurality of desired television channels.”

The OA Fails to Allege a Rational Basis to Modify McNeely Based On Pugel’s Alleged Teaching of “Outputting the Selected Plurality of Television Channels to a Demodulator”

The Examiner acknowledges that McNeely “does not explicitly teach outputting the selected plurality of television channels to a demodulator.” (OA at 4). In fact, McNeely discloses *neither* outputting to a demodulator *nor* outputting a digital datastream, both of which are required by claims 1 and 11.

As depicted in Figure 2, McNeely’s FTM outputs an analog signal. (McNeely at Fig. 2).

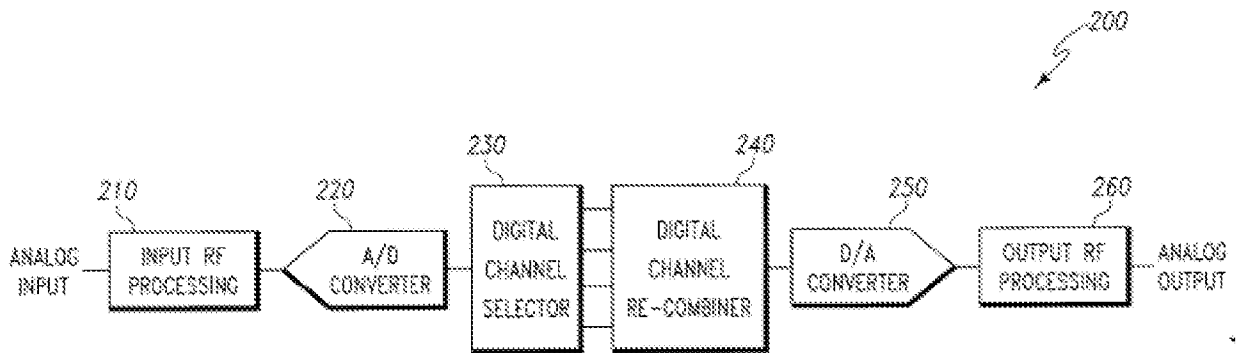


Fig. 2

Reproduced Fig. 2 of McNeely

This is because, as explained above, McNeely is not concerned with tuning the desired channels so that they are ready for demodulation. Rather, McNeely is concerned with reducing the bandwidth of the analog signal travelling from the satellite dishes into the home, so it is narrow enough to transmit across a single coaxial cable. Once inside the home, the signal is transmitted to tuner devices (*e.g.*, set-top boxes). (*Id.* at 19:25–28). But McNeely does not teach anything about the architecture of these set-top boxes. (*See id.* at 8:3–7).

The Examiner asserts that “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of McNeely and Pugel and utilize Pugel’s demodulator *to process a digital datastream of McNeely*.” (OA at 5). This assertion ignores the actual teachings of *McNeely*, which confirm that there is no “digital datastream of McNeely;” instead *McNeely* outputs an analog data stream.

However, the OA does not establish a rational basis for combining the teachings of these two references. As an initial matter, McNeely relates to an FTM that explicitly does not perform

tuning. (McNeely at 7:17–21). Therefore, it is unclear why a person of ordinary skill in the art would be motivated to combine McNeely’s teachings with Pugel, which relates to a “multichannel *digital cable tuner*.” (Pugel at Title). Notably, the Applicant for both McNeely and Pugel is Thompson Licensing, yet there is no incorporation of McNeely’s satellite FTM into the later filed Pugel.

Secondly, because McNeely’s FTM does not perform tuning, it is unclear how a person of skill in the art could expect to modify McNeely so that it outputs a digital signal directly to a demodulator, as allegedly taught by Pugel. This would skip the tuning step altogether. Moreover, it would go against the entire purpose of McNeely, which is to transmit a signal into the home on a single coaxial (*i.e.*, analog) cable. The OA does not address how a person skilled in the art would be motivated to look past that issue in combining McNeely with Pugel.

Therefore, the Examiner has not shown that it would be obvious to combine McNeely with Pugel’s alleged teaching of “output[ting] said selected plurality of television channels to a demodulator as a digital datastream.”

Therefore, the combination of McNeely and Pugel fails to teach or suggest all features recited in independent claims 1 and 11 for at least the reasons above. A person of ordinary skill in the art would not have combined McNeely and Pugel. Even if the combination were proper, it still would not teach the claimed wideband receiver system and method. Therefore, claims 1 and 11 are allowable over the cited art.

References Relied Upon in Second Rejection***Pugel***

Pugel is described above with respect to the first rejection.

Gomez

U.S. Patent No. 8,224,274 (“Gomez”) relates to a scalable architecture for a satellite channel switch. (Gomez at Title). More specifically, Gomez “relates to processing one or more input channels to a frequency translation module through a scalable switch architecture.” (*Id.* at 1:17–20). Gomez explains that “[a] frequency translation module (FTM) enables a user to selectively switch the signals received from each satellite antenna and deliver these signals to an IRD located within a household.” (*Id.* at 1:38–41). Gomez states there is a need for “a method or apparatus for implementing a scalable switch architecture for a FTM that minimizes circuit area and power consumption.” (*Id.* at 1:55–57). Accordingly, Gomez discloses “digital frequency converters and filters, which are compact in modern integrated circuit technology and consume less power than their analog counterparts, may be used to implement a scalable FTM architecture.” (*Id.* at 1:61–65).

Response to Second Rejection under 35 U.S.C. § 103

Claims 1 and 11 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Pugel in view of Gomez.

The OA Fails to Allege a Rational Basis to Modify Pugel Based on Gomez’s Alleged Teaching of “A Mixer Module”

Independent claim 1 recites “a mixer module configured to downconvert a plurality of frequencies that comprises a plurality of desired television channels and a plurality of undesired television channels.” Independent claim 11 similarly recites “downconverting, by a mixer module of said wideband receiver system, a plurality of frequencies that comprises a plurality of

desired television channels and a plurality of undesired television channels.” The Examiner acknowledges that Pugel “does not explicitly disclose that the downconverting is performed by a mixer module of the wideband receiver system.” (OA at 6). The Examiner asserts that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Pugel and Gomez and utilize Gomez’s teaching about employing a mixer to perform down-conversion in order to efficiently processing [*sic*] inputted signals.” (OA at 7). However, the OA does not establish a rational basis for combining these two references.

As an initial matter, the OA does not explain why a person skilled in the art would initially look to modify Pugel in view of Gomez. Pugel relates to a “multichannel digital cable tuner.” (Pugel, Title). Specifically, Pugel aims to “permit[] substantially simultaneous reception of multiple digital cable channels *within a single digital receiver circuit* suitable for use with conventional cable delivery systems and at a reasonable cost.” (*Id.* at Abstract). Accordingly, Pugel’s “single digital receiver circuit” includes both a tuner and demodulators. (Pugel, Fig. 1). In contrast, Gomez relates to channel switching in a satellite FTM. (Gomez at 1:15–57). Although Gomez discloses that its FTM may contain one or more tuners (*Id.* at 1:41), Gomez teaches that its FTM is separate from the receivers, which Gomez refers to as integrated receiver decoder(s) [IRD], and which Gomez confirms are located within the home (“IRD located within a household”). (*Id.* at 1:38-41). Gomez does not concern itself with the architecture or features of the receiver, instead describing functionality that exists elsewhere in the signal delivery system. And in fact, Gomez goes against the very idea of Pugel, which is directed to a single digital receiver circuit that performs both tuning and demodulation. As such, there is no basis to look to Gomez to modify Pugel.

Next, the Examiner appears to specifically rely on “mixer 301” in Gomez as allegedly “downconvert[ing] the desired channel in RF signal.” (OA at 6 (citing Gomez at 4:6-19)). However, there are a number of problems with this reading of Gomez.

First, the claim language requires “downconverting, by a mixer module of said wideband receiver system, a plurality of frequencies that comprises a plurality of desired television channels and a plurality of undesired television channels.” The relied upon mixer 301 of Gomez downconverts **only** the desired channel(s), as the down-conversion happens **after** the tuning to the desired frequency has occurred:

Mixer 301 receives RF input signal 101 from amplifier 300 and also receives a local oscillator (LO) signal from PLL 304. For direct conversion, the frequency of PLL 304 is tuned to the frequency of the desired channel in RF input signal 101 so that it is down-converted to baseband, for further processing. For example, if the desired channel in RF input signal 101 is at 100 MHz, then PLL 304 is tuned to 100 MHz, so that mixer 301 down-converts the desired channel in RF signal 101 to DC.

(Gomez at 4:10–19 (emphasis added)). There is simply no basis to modify any teaching of Pugel in view of Gomez’s specific form of down-conversion, without relying on the ’362 Patent as a roadmap.

The OA does not explain why a person of ordinary skill in the art would be motivated to combine Pugel with Gomez to achieve the claim language. If anything, the combination of Pugel and Gomez would lead the person skilled in the art **away** from the claim language by directing them to downconvert only the desired channels.

Second, the Examiner relies on Pugel’s disclosure of downconverting a digital signal. (Pugel at Cl. 18; OA at 5). However, Gomez does not teach the use of a mixer to perform digital downconversion. Rather, Gomez teaches that mixer 301 is an **analog** mixer. This is evident because mixer 301 receives an RF input signal (4:10-12) and because Figure 3 of Gomez does not disclose any digitization of the RF signal. (*Id.* at Fig. 3, 4:4-46). Gomez also characterizes mixers

generally as an example of an “analog component.” (*Id.* at 1:47-49). And indeed, Gomez elsewhere discloses mixers that explicitly convert an analog signal (*e.g. id.* at Abstract, 2:11-13, 9:23-25, 10:54-56). While Gomez does disclose that “Mixer 1201 receives digital data” and that “Mixer 1205 up-converts the frequency of the digital signal,” Gomez does not indicate that either of these two mixers performs **down**-converting. (*Id.* at 7:66, 8:46-47). The OA does not explain why a person skilled in the art would find it obvious to modify Pugel based on Gomez to arrive at the claim language, when Gomez does not teach the use of a mixer to perform the digital downconversion that occurs in Pugel.

Third, Gomez actually teaches that there are **disadvantages** with using analog components such as mixers, and one of the stated goals of Gomez is to minimize the number of such analog components that are used:

Conventional approaches to the design of tuners employ analog components, such as fixed-frequency filters, mixers, and local oscillators. Consequently, FTMs require extensive hardware, including at least one oscillator and one mixer for each tuner, making the module costly and too large for some applications. Furthermore, as the channel capacity of a FTM grows, the module consumes more power due to the increase in analog components. What is needed is a method or apparatus for implementing a scalable switch architecture for a FTM that minimizes circuit area and power consumption.

(Gomez at 1:47-57). In this regard, contrary to the OA, Gomez actually suggests against the proposed combination that the OA advances. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention). The OA does not explain why a person skilled in the art, apprised of this language, would be motivated to introduce mixers into Pugel’s multichannel digital cable tuner.

Therefore, the Examiner has not shown that it would be obvious to combine Pugel with Gomez’s alleged teaching of “a tuner which selects and downconverts a desired or selected channel

from a RF input signal” (OA at 6), or that the proposed combination would render obvious this claim element. A person of ordinary skill in the art would not have combined Pugel and Gomez as the OA suggests. Therefore, claims 1 and 11 are allowable over the cited art.

Conclusion

Thus, withdrawal of the rejections under 35 U.S.C. 103 are respectfully requested. These remarks are believed to address all of the rejections in the instant Office Action. Applicant respectfully requests that the rejections be withdrawn and that a Notice of Allowance be granted. The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application. Should any fee be required in this response, please charge the fee due to Deposit Account 60-2239.

Respectfully submitted,

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