UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, DC

Before the Honorable MaryJoan McNamara
Administrative Law Judge

In the Matter of **CERTAIN WIRELESS FRONT-END MODULES AND DEVICES CONTAINING THE SAME**	**Investigation No. 337-TA-1413**

RESPONDENTS' OPENING CLAIM CONSTRUCTION BRIEF

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CXM-0007	The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition (2000)
CXM-0008	*Jain,* Thermal Characteristics of Multi-Die, Three-Dimensional Integrated Circuits with Unequally Sized Die (2010)

Pursuant to the Procedural Schedule (Order No. 10) and Ground Rule 7.2 (Order No. 2), Respondents Kangxi Communications Technologies (Shanghai) Co., Ltd., Grand Chip Labs, Inc., Ruijie Networks Co., Ltd., D-Link Corporation, and D-Link Systems, Inc, submit the following opening claim construction brief in support of Kangxi Communications Technologies (Shanghai) Co., Ltd. and Grand Chip Labs' ("KCT" or "Respondents") proposed constructions. For the reasons set forth below, the Court should adopt Respondents' proposed constructions.

I. OVERVIEW OF THE ASSERTED PATENTS

The patents-in-suit concern two different components or circuits found in many radio-frequency (RF) wireless devices (*e.g.,* wi-fi routers, laptops, cell phones): (1) a power amplifier ('101 and '563 Patents); and (2) an RF switch ('579 Patent).[1] *See* '101 Patent 1:16-17 ("invention relates to electronic systems, and in particular, to radio frequency (RF) electronics"); '579 Patent 1:20-22 ("relates to the field of electronics, and more particularly, to radio-frequency switches."). Ricketts Decl. ¶26.

Both components are typically used in connection with the device's antenna. Antennas transmit and receive RF signals. Significantly, most of these antennas undertake only one function – transmit or receive – at a time. During transmit periods, the antenna and its supporting circuitry broadcast an outbound data-encoded signal to the world.[2] During receive

[1] A copy of U.S. Patent No. 8,717,101 (the "'101 Patent") was marked as JXM-0001. A copy of U.S. Patent No. 9,917,563 (the "'563 Patent") was marked as JXM-0002. A copy of U.S. Patent No. 9,450,579 (the "'579 Patent") was marked as JXM-0003.

[2] RF signals are alternating current ("AC") signals, in which a single waveform (*i.e.,* ∿) is referred to as a "cycle" and the number of cycles per second is called the "frequency." This frequency is measured in "Hertz" (Hz) where 1Hz = 1 cycle/second. The RF signals also have an "amplitude" which is the height of each signal peak. An RF signal itself can be thought of as a high-frequency carrier frequency (*e.g.,* 2.5 Gigahertz) modulated or encoded with data. The RF carrier is modulated (*e.g.,* the frequency or amplitude is changed) to "carry" the information/data of interest to the device. That process is outside the scope of this case. The patents-in-suit concern the routing and/or amplification of the RF signals, but are agnostic about the format or information those RF signals happen to carry.

periods, the antenna and its supporting circuitry cease broadcasting, and instead "listen" for and pick up inbound data-encoded RF signals, in from the air. The antenna does one thing at a time. The antenna and its supporting electronics must therefore toggle between these two modes – transmitting mode and receiving mode – many hundreds or even thousands of times per second. Ricketts Decl. ¶¶27-28.

A. The Power Amplifier

As the name suggests, the power amplifier (PA) takes the outbound RF signal generated by the underlying device (*i.e.,* by the Wi-Fi router, laptop, or cell phone) and amplifies the signal to an amplitude sufficient to drive the antenna. Ricketts Decl. ¶29; *see also, e.g.,* '101 Patent 1:19-22 ("RF power amplifiers can be used to boost the power of a RF signal having a relatively low power. Thereafter, the boosted RF signal can be used for a variety of purposes, included driving the antenna of a transmitter.")

Most devices turn the PA "on" when it is needed (*i.e*., when the system and antenna are in transmit mode). When on, the PA is amplifying a system-generated RF signal and sending it out via the antenna. Most devices then turn the PA "off", rendering it dormant, when it is not needed (*i.e*., when the system and antenna are in receive mode). The PA is turned on and off as the system toggles between transmit mode and receive mode, hundreds or thousands of times per second. Ricketts Decl. ¶30.

The primary – in many cases, only – component in the PA is a core transistor, traditionally a bipolar junction transistor ("BJT"). When deployed in a PA, a transistor can be thought of as a device that, when properly turned on and placed in an operational state ("enabled"), takes in a small signal, and increases it to generate an amplified version of the input signal. It is an amplifier. Ricketts Decl. ¶31.

The on/off switching of the PA is accomplished by turning on and off the PA's "bias current" ("I_{BIAS}").[3] The PA is supplied with a DC offset or bias current, I_{BIAS}, that takes the underlying transistor from a non-operational state ("off") to an operational state ("on"). Once enabled, and thus biased to turn on, the signal (*e.g.,* outbound RF signal) can be fed into the PA for amplification. Ricketts Decl. ¶32; *see generally* '101 Patent 4:12-19.

B. The Power Amplifier Biasing Patents

At the time of the invention of the '101 and '563 Patents, enablement – *i.e.*, the turning on of the PA – was commonly accomplished through a simple on/off signal.[4] When the system wanted the PA on, it generated a fixed, flat enable signal. An ancillary "biasing circuit" (*a/k/a* a "bias block"), adjacent to the PA, read/noticed the fixed, flat enable signal and – in response – generated a corresponding fixed, flat bias current (I_{BIAS}),[5] which it then fed to the PA. The PA turned on. The system was in transmit mode, transmitting. At some later time, when the system wanted the PA off, the enable signal was flipped to zero. The bias block accordingly stopped delivering I_{BIAS}. The PA turned off. The system toggled to receive mode. The PA sat idle, waiting for the next "on" enable signal. Ricketts Decl. ¶¶33-34.

There was a problem. One of the natural – and problematic – features of these conventional transistor-based RF power amplifiers is that they do not achieve full amplification effectiveness ("gain") instantaneously when turned on. Specifically:

> [S]hortly after a power amplifier is enabled, absent compensation [,] the current of a primary biasing circuit can come up slow due to thermal effects, and the power amplifier's gain can be low.

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[3] Current is measured in amperes and abbreviated "I." Voltages are measured in volts and abbreviated "V."

[4] Not always, but that is a matter for another day as part of KCT's prior art invalidity defense.

[5] Current is commonly referenced with the capital letter "I", hence I_{BIAS}. Ricketts Decl. ¶32 n.3.

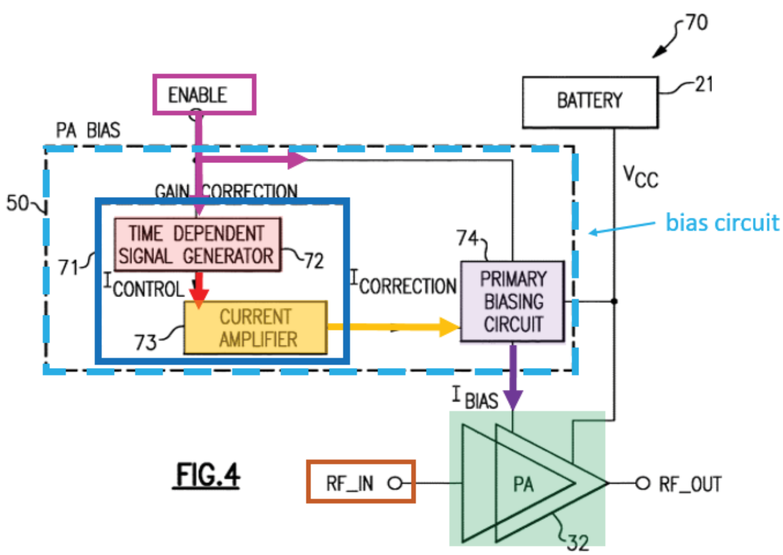
’101 Patent 4:32-35; *see also id*. at 8:42-45 (“a variation in gain of the power amplifier [] can occur shortly after the power amplifier is enabled.”). Ricketts Decl. ¶35.

That is, during the first several microseconds (“µS”) after being turned on (*i.e*., after the enabling I_{BIAS} is supplied), the amplification gain of the transistor/amplifier starts out low before rising. It takes time (*e.g.,* 5-50 µS, depending on the PA) for the gain to reach its steady-state. During this ramp-up period, the power amplifier is amplifying the subject RF signal at a gain/amplification level less than the ultimate steady state. *See, e.g*., ’101 Patent 4:28-42. Ricketts Decl. ¶36.

As a result, in its natural state, the power amplifier under-amplifies the RF signal for several microseconds while it warms up – potentially introducing distortion, noise, and non-linearity in the signal sent to the antenna. This can be a problem, as new industry standards require one to transmit data quickly after switching to transmit mode. Ricketts Decl. ¶37; *see also* ’101 Patent 2:28-33 (accordingly, the patent asserted “a need for improving power amplifier biasing.”).

The inventors’ alleged solution was to “shape” the PA’s I_{BIAS} current, changing it over time while “on” (*i.e.,* rendering it not fixed/flat) to account for – and counteract – the natural shape of the gain response of the PA during start-up. Specifically, the inventors’ solution was to boost the enabling I_{BIAS} current for a short time after enablement, forcibly boosting the gain of the PA while its own natural gain response climbed up to a steady-state level. By briefly over-biasing the PA, artificially pushing up the gain during the warm-up period, the net effect would be a near-flat gain and output over time. The initially-*high*-then-steady shape of the I_{BIAS} would inversely match (roughly) and counteract the initially-*low*-then-steady shape of the PA’s natural gain response. The two shapes would cancel each other. The resulting goal was “a substantially flat gain response versus time." '101 Patent 4:38-39. "Correcting for gain variation in the power amplifier can improve the power amplifier's performance." *Id*. at 4:39-41.[6] Ricketts Decl. ¶38.

In order to shape the bias current, the inventors developed the notion of a "correction current" ($I_{CORRECTION}$) that would combine with, and thus add shape to, the fixed, flat bias current that would otherwise conventionally emerge from the bias circuitry. Figure 4 showed the invention:



Ricketts Decl. ¶39.

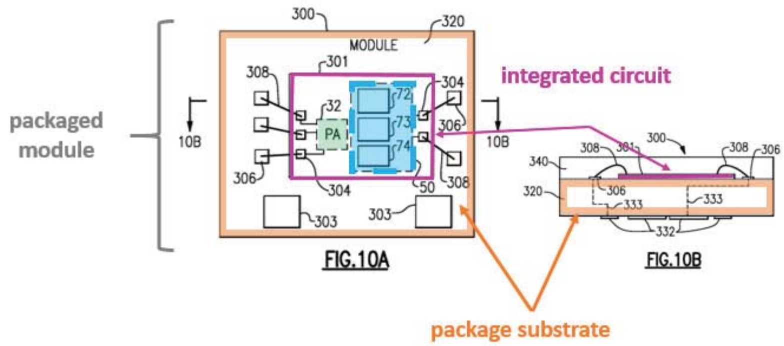
The bias circuit (50) consists of a conventional primary bias circuit (74) driven by a conventional, unmodified enable signal, plus a supplemental "gain correction circuit" (71) that generates the supplemental $I_{CORRECTION}$ to add shape to the I_{BIAS} that emerges from the primary bias circuit (74). That $I_{CORRECTION}$ is generated within the gain correction circuit by using a "time dependent signal generator" (72) to generate a current signal having a small version of the desired shape ($I_{CONTROL}$), and then scaling up that shape to an appropriate amplitude using a

[6] One metric of improved gain flatness is the PA's dynamic error vector magnitude (EVM). That particular metric is not at issue in the instant dispute.

current amplifier (73). In sum, in operation, the enable signal (pink arrow) is activated at startup, switching from off to on. The time dependent signal generator, in response, takes that flat "on" signal and generates a shaped control current (red arrow) that is received by current amplifier (gold). The current amplifier (gold) scales up the control current into a correction current (gold arrow). The primary biasing circuit (purple) receives the shaped correction current and correspondingly adjusts the magnitude of the bias current (purple arrow) so as to compensate for a variation in gain of the power amplifier during startup. The short-term "boost" in bias current helps overcome the PA's low gain during startup. Ricketts Decl. ¶40.

Fig. 5 shows a more specific embodiment of the general structure set forth in Fig. 4. The inventors use a resistor-capacitor circuit (82) to generate the time-dependent signal (*i.e.,* $I_{CONTROL}$) shaped with an initial boost before settling into a steady state. Amplifier 83, comprised of a "current mirror" configuration of transistors, scales up the $I_{CONTROL}$ into a larger version, $I_{CORRECTION}$. That $I_{CORRECTION}$, in turn, combines with the base current generated in primary biasing circuit (84) to generate the shaped I_{BIAS}. Ricketts Decl. ¶41.

Notably, the inventors sought to co-locate their new "shaping"/corrective PA bias block on the same semiconductor "die" as the PA. A **die,** also called a "chip", is a small block of semiconducting material on which a given functional circuit is fabricated. Dies are commonly made of silicon or gallium arsenide. One or more dies, in turn, can be mounted on a common package substrate, with tiny jumper "bond' wires connecting points on the die to pins on the ultimate package. Ricketts Decl. ¶42. An image from the patent illustrates the die and package:

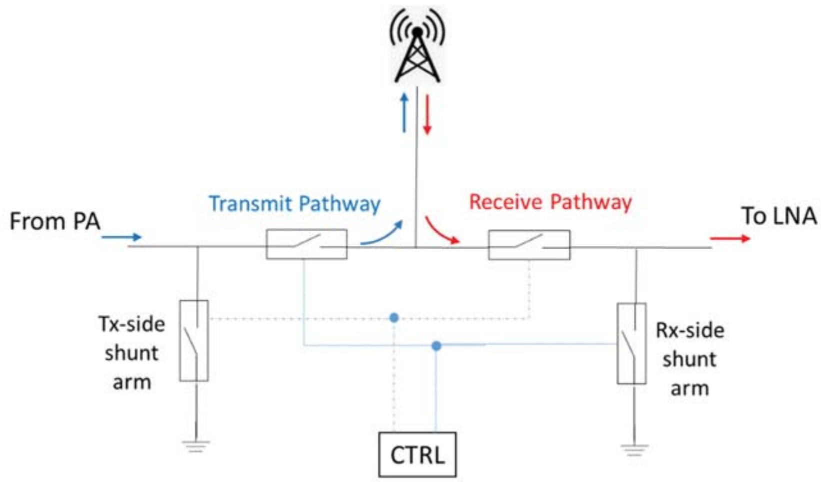


’101 Patent at Figs. 10A & 10B (annotations added). The identified “IC or die 301” (pink) hosts the claimed electronic components of (i) the bias circuit 50 (blue) — *e.g.,* the time-dependent signal generator 72, current amplifier 73, primary biasing circuit 74 — integrated on-die with (ii) the power amplifier 32 (green). That IC (pink) is then placed upon the package substrate 320 (brown).

C. The RF Switch

One of the other components in many wireless devices, as noted above, is the RF switch. The RF switch is a distinct functional block responsible for “switching” the antenna between transmitting and receiving RF signals. Fayed Decl. ¶26. It sits close to the antenna. In transmit mode, while the receive side sits idle (off), the RF switch receives the amplified, outbound signal from the PA and routes it to the antenna. In receive mode, while the transmit side sits idle (off), the RF switch receives an inbound RF signal from the antenna and routes it to the Low Noise Amplifier (LNA). Fayed Decl. ¶¶26-28.

Below is a simplified functional diagram of a typical RF switch:

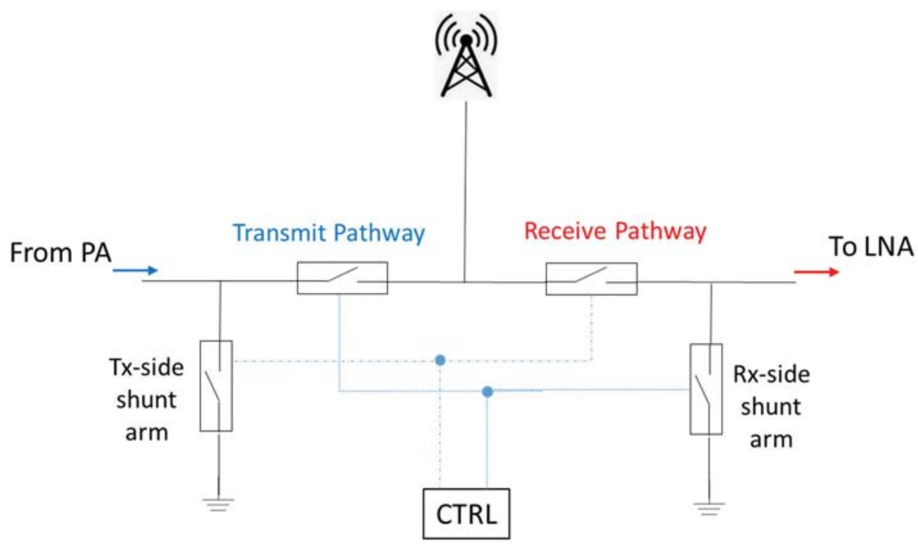


Essentially, the switch is a 2-way traffic light. It permits "traffic" (RF signal) to flow along the right path, in the right direction, at the right time, ideally with as little impact on the signal as possible. Fayed Decl. ¶28.

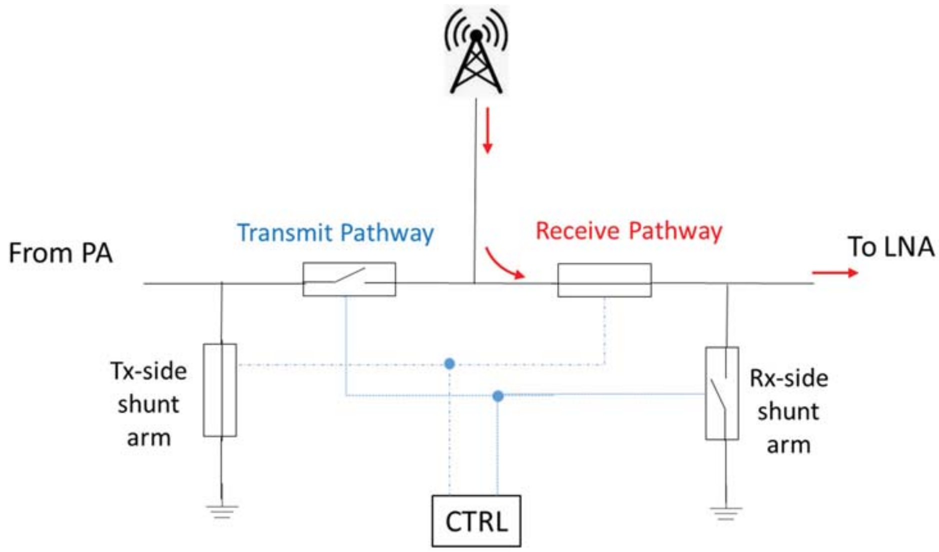
The switch circuit accomplishes this with transistors configured as switch circuits, which are depicted in the above diagram as . Both the "Transmit Pathway" and the "Receive Pathway" contains one or more of these transistors operating as switch circuits. When the transistors of a particular pathway are turned "ON," this "closes" (or connects) the path and allows signals to pass through. When the transistors are turned "OFF," this "opens" (or disconnects) the path and prevents signals from passing. To prevent the antenna from transmitting and receiving RF signals at the same time, when one pathway is connected (because its transistors are turned "ON") the other will be disconnected (because its transistors are turned "OFF"). Fayed Decl. ¶¶30-33.

The turning "ON" and "OFF" of the transistors is accomplished by another functional block known as the controller (depicted above as CTRL). The controller controls when one set of transistors is turned ON and the other is turned OFF. Fayed Decl. ¶¶33-34.

Transistors, like other electrical circuits, are not expected to operate perfectly. When the controller turns a given transistor "OFF" , the transistor looks/acts like an open switch, *i.e.,* no connection, but some unwanted signal can still "leak" through the transistor. This can cause interference or even damage components. One solution to this is to use "shunt arms." Shunt arms, shown in the diagram below, are branch pathways that lead to an electrical "ground" (*i.e.,* a 0-volt connection point in the device). Fayed Decl. ¶¶35-36.



The shunt arms reroute the unwanted signal to ground, preventing them from interfering with the rest of the device. Thus, for example, when the RF switch is in receive mode, the controller will turn OFF the transistors in the "Transmit Pathway" to block any signals from reaching the antenna and turn ON the Shunt Arm on the Transmit side ("TX-side Shunt Arm") to allow these signals to go to ground. This example is depicted below. Fayed Decl. ¶¶37-42.

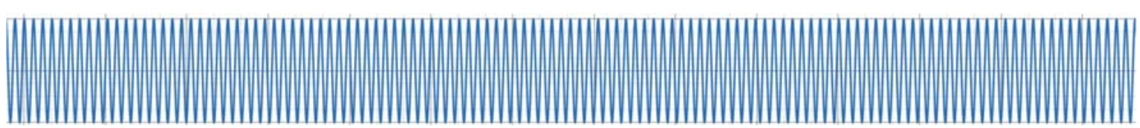


Despite the efforts of the shunt arm, other signals can interfere with the desired RF signal being passed along the pathway. Fayed Decl. ¶45.

When two RF signals interact with each other, the results can be dramatic and difficult to account for. The resulting, combined signal will typically have a different frequency as well as a differences in things in like amplitude. Fayed Decl. ¶45.

For example, the two figures below show a desired RF signal A at a frequency of f1 and an unwanted RF signal at a much lower frequency of f2. Fayed Decl. ¶46.

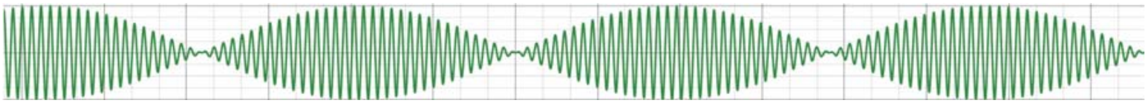
Desired RF signal A at frequency f_1:



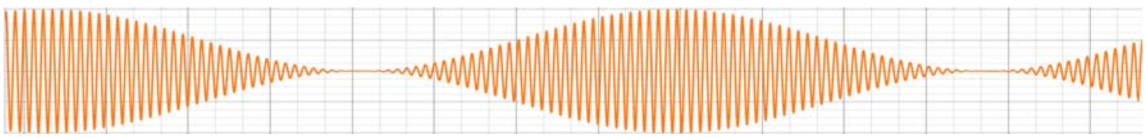
Unwanted RF signal B at frequency f_2:

When these two signals join together there are two immediate effects: "mixing" and "superposition." Fayed Decl. ¶46-47.

First the signals "mix." This means the signals are multiplied by each other resulting in a very different signal altogether:



The effect of this unwanted signal does not end here. This newly "mixed" signal in green is then "superpositioned", or added to, our original desired signal in blue above. This results in the following signal in orange:



The resulting "mixed" signal in green and "superimposed" signal in orange present an issue when trying to decode the desired frequency. Fayed Decl. ¶¶46-47.

So, the problem becomes: how to minimize or block the unwanted signal to avoid the resulting mixed and superimposed signals. One technique is the shunt arms discussed above that attempt to deliver those signals to ground. Another is to increase the linearity of the circuit's components. Yet another is by using a filter. Fayed Decl. ¶¶52-55.

A fundamental building-block component of many filters is a component called a "capacitor". Capacitors have a frequency-dependent "impedance." Essentially this means that as the frequency of an RF signal flowing through a capacitor goes up, the capacitor's opposition to that signal (*i.e.,* impedance) goes down. Conversely, as the frequency of the signal goes down, the capacitor's impedance goes up. Fayed Decl. ¶¶56-59.

Placing a capacitor between a source of an RF signal (*e.g.*, a PA) and its target load (*e.g.*, an antenna) can preferentially inhibited the flow of current – depending on the frequency. At 0 Hz, the inhibition is total, a complete block. At very-high Hz, the inhibition approaches zero, a complete pass. In between these two ends of the spectrum, this single-capacitor passive high-pass filter provides some attenuation, *i.e.*, some, but not all, of the RF signal passes through the capacitor. Fayed Decl. ¶¶60-63.

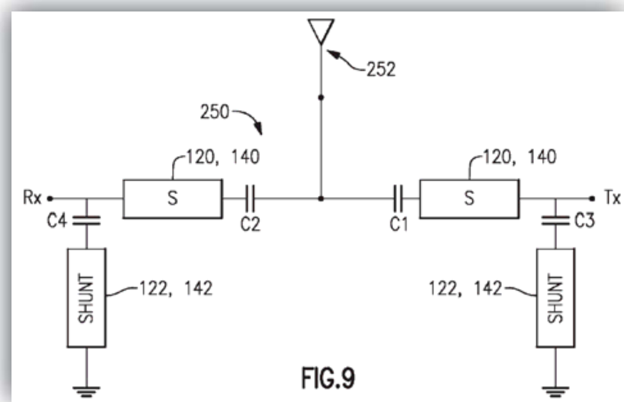
In sum, when a single-capacitor filter is present, some unwanted signals may be attenuated – depending on the frequency – and the resulting "mixed" signal is therefore also reduced.

D. The RF Switch Patent

The '579 Patent is directed to the interference issue described above. The specific problem is "the susceptibility of a [RF switch] system to interference" from unwanted signals.[7]

The '579 Patent's identified an alleged solution to this "interference susceptibility" problem involved including 1) a "shunt arm" in each side of the RF switch (transmit path or receive path); and 2) low-frequency-blocking capacitors.

The particular arrangement of these shunt arms and capacitors is illustrated in the exemplary embodiment shown in Fig. 9 below:



[7] The patent identifies this problem as particularly at issue for wireless devices operating in a "multi-band and/or multi-mode environment." This refers to wireless devices transmitting and receiving RF signals at different frequency ranges (as opposed to just one frequency range).

The ’579 Patent points to the four capacitors in the figure above (*i.e.,* C1, C2, C3, and C4) as blocking or reducing interference from low-frequency “jammer” signals:

> With the foregoing capacitors, a low-frequency jammer signal can be blocked or reduced from mixing with any ON or OFF paths …. [T]his technique can provide improved [distortion] performance by preventing a low-frequency blocker signal from mixing with a fundamental frequency signal.”

’579 Patent 9:49-51, 10:1-3.

The claims of the patent provide more specificity on where this blocking and/or reducing occurs. Claim 7 of the ’579 Patent requires “inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch *using the first capacitor [C1]*” ’579 Patent Claim 7 (emphasis added).[8]

Thus the ’579 Patent’s solution for the interference issue it identifies is to use a single, specifically identified capacitor to “inhibit” “low-frequency” blocker signals.

II. LEGAL PRINCIPLES

Claim terms are generally given their ordinary meaning but that “ordinary meaning” is not as to a layperson but rather “a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp*., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*). The words used in the claims must be examined “through the viewing glass of a person skilled in the art.” *Ferguson Beauregard/Logic Controls, Div. of Dover Res., Inc. v. Mega systems, LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003) (“Words often have different meanings to different people and in different contexts”) (cited in *Philips*, 415 F.3d at 1313). “In many cases that give rise to

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[8] In responding to a rejection by the patent examiner, the applicant amended the claim which would eventually become Claim 7 to include the requirement that the inhibiting occur with the first capacitor. In argument, the applicant also specifically identified C1 in the above Fig. 9 as being the “1st Capacitor” discussed in the claims. ‘579 Pat. File History (JXM-006) at 4-4-2016 Amendment, pp. 8-10 (“For at least the reasons discussed above with respect to claim 1, the Applicant submits that the cited references fail to disclose or render obvious the features of independent claim 9).

litigation . . . determining the ordinary and customary meaning of the claim requires examination of terms that have a particular meaning in a field of art." *Philips*, 415 F.3d at 1314.

The Court looks first to the intrinsic evidence – the claim language, the specification, and the prosecution history – to determine the meaning of the claim terms. *Id*. at 1314-17. The Court may also consider extrinsic evidence where necessary to understand "the background science or the meaning of a term in the relevant art during the relevant time period." *Teva Pharms. USA, Inc. v. Sandoz, Inc*., 135 S. Ct. 831, 838, 841 (2015). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court, but such extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

Claims are invalid for indefiniteness when the "claims read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Courts have explicitly considered the indefiniteness of "terms of degree." A term of degree is one which "necessarily calls for a comparison against some baseline." *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1395 (Fed. Cir. 2016). These terms of degree are "problematic if their baseline is unclear" and "will fail for indefiniteness unless they 'provide objective boundaries for those of skill in the art.'" *Id.* at 1396 (quoting *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370-71 (Fed. Cir. 2014)).

III. DISPUTED CLAIM TERMS

A. Group 1 – The ’101 Patent and ’563 Patent

The first two disputed terms involve the same dispute, namely the meaning of the similar terms “*configured to amplify*” (’101 Claims 1, 2,10,11,21, 22) and “*amplifying*” (’101 Claims 17, 18, and 20) in the same or highly similar claim element contexts. We address each in turn.

1. “configured to amplify” - The ’101 Patent

Claim Term	Patent and Claims	Complainants’ Proposed Construction	Respondents’ Proposed Construction	Staff’s Proposed Construction
“a current amplifier *configured to amplify* the control current to generate a correction current”	’101 Patent, claims 1, 2, 10, 11, 21, 22	Plain meaning, which is “a current amplifier **configured to achieve a target gain** of a control current to generate a correction current”	Plain meaning, such as “a current amplifier **configured to increase** the control current to generate a correction current”	Plain meaning, such as “a current amplifier **configured to increase** the control current to generate a correction current”

The primary dispute with respect to this claim limitation centers on whether “amplify” should be given its common, ordinary meaning. KCT (and Staff) propose that the term means what it says, *i.e.,* its everyday meaning: *to increase* (green bold above). Skyworks, however, contends that the claim merely requires being configured *to achieve a target gain* (red bold above), apparently in an effort to capture amplifiers configured to amplify and amplifiers configured not to amplify. The Court should reject Skyworks invitation to re-draft the claim and read words out of existence.

We begin with the claim language. Claim 1 is representative and recites: “a current amplifier *configured to amplify* the control current to generate a correction current.” ’101 Claim 1 (emphasis added).

This claim language is simple and means what it says. Amplify is a word used in everyday parlance to mean increase, as in "the megaphone amplifies the speaker's voice." Amplification makes something bigger, louder, greater. Thus, amplify means exactly what a layperson would understand it in everyday usage — to amplify something is simply to make it louder, make it bigger, make it stronger, *etc.* Unsurprisingly, engineers use the word in the same way. Ricketts Decl. ¶48; RXM-0001 p. 12 (technical dictionary defining "*amplification*" as "the *increase* in signal level, amplitude or magnitude"). This is one of those cases where "the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Phillips,* 415 F.3d at 1314.

Nothing in the asserted claims suggests that "amplifying" should be given something other than its plain and ordinary meaning. For example, the claims do **not** recite being "configured to adjust", "configured to retransmit", "configured to attenuate", *etc.* Instead, the claims use much more specific language, readily understood as requiring an amplifier that is configured to amplify (*i.e.*, increase) the control current to generate the correction current. Departing from this plain meaning under the guise of claim construction would be improper. *Helmsderfer v. Bobrick Washroom Equip.*, Inc., 527 F.3d 1379, 1383-1384 (Fed. Cir. 2008) ("[c]ourts cannot rewrite claim language.").

The specification confirms the plain meaning in the claims, in that it is consistent with the current amplifier actually increasing $I_{CONTROL}$, *i.e.,* plain meaning. The only instances in which the specification quantifies the level of amplification that would be suitable recite a relatively large "amplification factor" of making the correction current "5" to "50" times larger than the control current. *See, e.g.,* '101 Patent 11:39-42 (disclosing "configured to amplify" by describing amplification by a "factor ranging" from 5 to 50); 13:19-23 (disclosing the method in which the control current "is amplified" and describing the "current amplifier amplifies" by a "factor ranging between about 5 to about 50."). Thus, all of the numerical examples in the patent are consistent with amplification meaning increasing.

The specification also refers to amplification in the context of the PA. There, the specification refers to the PA's function being to "boost", *i.e.*, increase, the power of an input RF signal so that it has the much larger power necessary for transmission from the antenna. '101 Patent 1:19-22 ("RF power amplifiers can be used to boost the power of a RF signal."); *see also* Fig. 1 (showing the PA increasing the amplitude of the RF signal). While this is referring to the amplification imparted by the PA, it is still relevant to the current amplifier's amplification of the present dispute because the claim uses the same phrase ("configured to amplify") in both contexts. Compare '101 Claim 1 ("a power amplifier *configured to amplify* a radio frequency (RF) signal") with *id.* ("a current amplifier *configured to amplify* the control current) (emphasis added). The consistency in the phrasing suggests the same meaning. *Epcon Gas Sys., Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1030-31 (Fed. Cir. 2002) ("word or phrase used consistently throughout a claim should be interpreted consistently."). The specification's description of the PA's amplification as "boosting" (*i.e., increasing*) provides additional support for the plain meaning of the "configured to amplify" claim term.

Other portions of the specification support the plain meaning. The inventors developed (and then claimed) a multi-step process of generating a bias signal for a power amplifier. One portion of the circuit generates a miniature version of the requisite shape ($I_{CONTROL}$) — then another scales up that current/shape to generate $I_{CORRECTION}$ — then more bias circuitry forms a bias signal (I_{BIAS}) for the PA. *See* '101 Patent 8:35-63. The patent describes making all of that circuitry small enough to be integrated on the same die as the power amplifier. *Id.* at 8:50-52 (same "die").[9] The extra step of starting small before scaling up $I_{CONTROL}$ was so that small components could be used to shape $I_{CONTROL}$. This is because, without an amplifier, one would have needed to shape a larger current (large enough to drive the PA), but shaping a large current requires large shaping components (for example, a capacitor), making it harder (perhaps impossible) to integrate all the components on a single die. Thus, amplifying in the ordinary sense, *i.e.*, increasing the size of $I_{CONTROL}$, was central to the patent. Ricketts Decl. ¶56. Per the inventors:

> Including both the current amplifier and the time-dependent signal generator can permit the power amplifier bias block to be included on-die with the power amplifier. For example, *by amplifying the control current generated by the time-dependent signal generator, the magnitude of the components of the time-dependent signal generator can be reduced to a size suitable for on-chip integration*. In certain implementations, the time-dependent signal generator can include a resistor-capacitor (RC) network, and the current amplifier can be used to amplify the control current so as to reduce a magnitude of the resistor and/or capacitor needed to generate a suitable correction current, thereby permitting the time-dependent signal generator to be integrated on-chip with the power amplifier.

'101 Patent 8:50-63 (emphasis added). The inventors made the point again and again:

> By including the current amplifier 73 to *amplify* the control current $I_{CONTROL}$ generated by the time-dependent signal generator 72, the *magnitude of the components of the time-dependent signal generator 72 can be reduced.*

Id. at 9:65-10:1 (emphasis added).

> *[T]he current amplifier 73 can be used to amplify the control current* $I_{CONTROL}$ *so as to reduce a size of a component* of the time-

[9] A "die" in this context is the same thing as a "chip", and both refer to a piece of semiconductor fabricated with tightly integrated circuitry. That is why the specification discloses integrated circuit 301 by referring to it as "IC" 301 or "die" 301. '101 Patent 13:54-55 ("IC or die 301"); *see also* Section III.A.4 (discussing extrinsic evidence)

> dependent signal generator 72 needed to generate a correction current with correct time constant, thereby permitting the time-dependent signal generator to be integrated on-chip with the power amplifier 32.

Id. at 10:2-7 (emphasis added); *see also id.* at 10:62-64 (accord), 10:64-11:1 (accord), 11:1-6 (accord), 13:23-27 (accord), 14:7-13 (accord).

Thus, the specification consistently and repetitively explained that the purpose and advantage of amplifying the control current was that you could then start with a small current, which could be shaped using small components. But all of that only makes sense because amplifying means increasing, and thus all of these repeated examples are using the term consistently according to its plain meaning. In sum, the specification consistently and repeatedly uses amplify in its plain and ordinary meaning in the sense of increasing (making bigger, boosting *etc.*).[10]

The prosecution history confirms the plain meaning (increasing) is correct in so much as there is no clear and unambiguous statement that would amount to a disclaimer of ordinary meaning. *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010). Nor could the prosecution be used to *broaden* claims as drastically as Skyworks is attempting to do here. *Biogen, Inc. v. Berlex Labs.*, 318 F.3d 1132, 1140 (Fed. Cir. 2003) ("[r]epresentations

[10] Terms used consistently throughout a specification carry the meaning used. *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008); *Nystrom v. Trex Co.*, 424 F.3d 1136, 1144 (Fed. Cir. 2005) (construing term because "[t]hroughout the written description, [patentee] consistently used the term 'board' to describe wood decking material cut from a log."); *Watts v. XL Sys.*, 232 F.3d 877, 882 (Fed. Cir. 2000). To the extent that Skyworks argues that increasing the control current is only required in a preferred embodiment of the specification, that is a misleading argument. First, even if that were correct (it is not, every embody increases the control current) that would still do nothing to justify *broadening* the claims by eviscerating the specific "configured to amplify" claim language. The case law is the other way around. *Straight Path IP Group, Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1361 (Fed. Cir. 2015); *GE v. ITC*, 685 F.3d 1034, 1037 (Fed. Cir. 2012) ("[A] possibly broader disclosure accompanied by an explicit narrow claim shows the inventor's selection of the narrow claim scope.") (citing 35 U.S.C. § 112 ¶ 2); *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562 (Fed. Cir. 1991) (stating that a patentee cannot use the specification to avoid specific limitations of his claims); *Raylon LLC v. Complus Data Innovations*, Nos. 6:09-355, -356, -357, 2011 U.S. Dist. LEXIS 30034, *11-13, *19-20 (E.D. Tex. Mar. 23, 2011) (rejecting plaintiff's attempt to use the specification to read out an express claim limitation).

during prosecution cannot enlarge the content of the specification"); *cf. Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562 (Fed. Cir. 1991) (patentee cannot use the specification to avoid specific limitations of claims); *Raylon LLC v. Complus Data Innovations*, Nos. 6:09-355, -356, -357, 2011 U.S. Dist. LEXIS 30034, *11-13, *19-20 (E.D. Tex. Mar. 23, 2011) (rejecting plaintiff's attempt to use the specification to read out an express claim limitation).

Finally, the extrinsic evidence supports KCT and Staff's reading of the term. Dr. Ricketts opines, based on his review of the claims and specification discussed above, and as an expert and at least a POSA in this field, that a POSA would have understood the term "configured to amplify" as being "configured to increase", its ordinary meaning. Ricketts Decl. ¶¶44-83. He corroborates his opinion by the following definitions from technical dictionaries pertinent to the field of the patent, which he views as entirely consistent with the intrinsic evidence discussed above:

> "**Amplification** The increase in signal level, amplitude or magnitude." RXM-0001 p. 13 (technical dictionary);
>
> "**Attenuate** To reduce the amplitude of an action or signal. The opposite of amplification." RXM-0001 p. 22 (technical dictionary)

Ricketts Decl. ¶¶66-69. In sum, the intrinsic and extrinsic evidence squarely supports the plain meaning of the term: "a current amplifier configured to increase the control current to generate a correction current."

By contrast, Skyworks's proposal not only abandons the plain meaning of the claim language, it broadens the claim (substituting the phrase "configured to amplify" with a much broader concept of "configured to achieve a target gain") to the point of effectively removing the "amplify" limitation from the claim.

Skyworks proposes to introduce the word "gain", but gain is just a numeric value that describes the ratio of an output to the input: $Gain = \frac{Output}{Input}$. Ricketts Decl. ¶71. Every type of scaling operation on an input signal (attenuation, no change, amplification) can be described numerically by a gain ratio. Gain can be any numerical value less than 1 (attenuation), equal to 1 (matching, *i.e.,* no amplification or attenuation, sometimes called "unity gain"), or larger than 1 (*i.e.,* amplification). Ricketts Decl. ¶71.

Skyworks's proposal would capture all three scenarios – essentially rewriting the claim to cover current amplifiers configured to amplify and amplifiers configured to not amplify. A current amplifier with a gain of 1 would not change the input signal. This is known as matching, or "unity gain" — and lacks the claimed "configured to amplify the control current." A current amplifier with a gain of less than one would reduce or shrink the input signal. This is attenuation—the opposite of the claimed amplification. Ricketts Decl. ¶¶72-74; (citing RXM-0001, p. 22 ("Attenuate To reduce the amplitude of an action or signal. The opposite of amplification."). Skyworks proposed construction would nonetheless purport to capture this scenario. Ricketts Decl. ¶74.

Thus, on its face, Skyworks's proposal would eviscerate the claim requirement of being configured to amplify, producing a claim that covers any relationship between input and output signals, *even the opposite of the claimed relationship (amplification).* This violates multiple cannons of construction. First, Courts do not rewrite claims. *Helmsderfer*, 527 F.3d at 1383-1384 (rejecting patentee's proposed construction because it would have rewritten the claim term "partially" to capture the broader concept of "totally," contrary to the rule that "[c]ourts cannot rewrite claim language.") Second, Courts do not render claim language meaningless. *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1115 (Fed. Cir. 2002) ("An alternative construction would render the first monitoring term meaningless. That construction is therefore improper; this court will not rewrite claims.”). The “any-gain” nature of the construction would impermissibly render the “configured to amplify” claim terms meaningless and superfluous. Any current amplifier would meet the limitation, however configured. Ricketts Decl. ¶¶75-76.

Even if the illogic of Skyworks’s amplify-or-not proposal were not enough to doom the proposal (it is), the construction is also impossible to square with the specification. Nowhere does the specification use the term “amplify” to mean a lack of amplification. While the specification in one instance describes the current mirror embodiment having “any suitable gain”, that does nothing to redefine the word amplification to include the lack of amplification. *See, e.g.,* ’101 Patent 11:39-42 (disclosing “configured to amplify” by describing amplifying by a “factor ranging” from 5 to 50), 13:19-23 (disclosing the method in which the control current “is amplified” and describing the “current amplifier amplifies” by a “factor ranging between about 5 to about 50.”). Indeed, Skyworks’s amplify-or-not construction flies in the face of the specification’s repeated explanation that the whole point of amplifying the control current is to achieve size reduction of the time-dependent signal generator to allow its integration with the PA. *See supra* ’101 Patent 8:50-63, 9:65-10:1, 10:2-7, 10:62-64, 10:64-11:1, 11:1-6, 13:23-27, and 14:7-13 (discussed above).[11] There is no such size reduction and no such integration on-die with the PA if there is no amplification (gain greater than 1). Ricketts Decl. ¶76.

Finally, Skyworks appears to resort to extrinsic evidence directed to a “unity gain amplifier” in support of its construction. *See*, *e.g.*, CXM-3 to CXM-6. But the notion of a unity

[11] Worse, ’101 Claim 1 uses the “configured to amplify” phrase in a second claim element, namely “*a power amplifier **configured to amplify** a radio frequency (RF) signal*”. ’101 Claim 1.[11] Thus, the same damage that Skyworks’s proposal would do to the amplifying required by the disputed claim element, would also be done to the power amplifier element. *Epcon Gas Sys., Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1030-31 (Fed. Cir. 2002) (“word or phrase used consistently throughout a claim should be interpreted consistently.”) So, the proposal would redraft and render superfluous the “configured to amplify” claim language not once, but twice.

gain amplifier does nothing to support its construction in the context of the instant claims and specification. First, while a "unity gain amplifier" is an amplifier, it is not an amplifier that is "configured to amplify" a signal. Instead, it is specifically configured *not* to amplify. In other words, even if Skyworks points to some extrinsic evidence[12] that shows an amplifier that could hypothetically be configured to operate to not amplify (unity gain) or even to attenuate, that amplifier is not then "configured to amplify." The dispute lies in the way the amplifier is configured, *i.e.,* "configured to amplify." Second, the notion of a unity gain amplifier is inconsistent with the specification. A "unity gain amplifier" would not increase the size of the control current and thus, would do nothing to reduce the size of the components of the time-dependent signal generator, and thus do nothing to achieve size changes for making things "integrated on-chip", flying in the face the "amplification" explained over and over in the specification. As discussed above, there are at least eight instances of the specification explaining the reason for amplifying the control current. Third, resort to extrinsic evidence concerning "unity gain" does nothing to justify the full scope of Skyworks's proposed construction, which extends to devices configured to attenuate, *i.e.,* the antithesis of the claimed configuration. The Court should easily reject the proposed construction because it purports to permit the absence, and even the antithesis of amplification. That cannot be correct. Ricketts Decl. ¶¶78-83.

[12] While certain prior art that KCT applies to show the invalidity of the '101 Patent claims does not expressly describe amplification, KCT only advances that prior art under (a) the theory that it would have been obvious to implement that prior art with amplification, or (b) in the alternative, under Skyworks's claim construction position that all that is needed to show amplification is to show a gain, such as unity gain. *See 01 Communique Lab'y, Inc. v. Citrix Sys., Inc.*, 889 F.3d 735, 742 (Fed. Cir. 2018) (holding that an accused infringer can argue in the alternative that if a claim term "must be broadly interpreted to read on an accused device, then this same broad construction will read on the prior art.").

2. "amplifying" - The '101 Patent

Claim Term	Patent and Claims	Complainants' Proposed Construction	Respondents' Proposed Construction	Staff's Proposed Construction
"*amplifying* the control current using a current mirror of a current amplifier to generate a correction current"	'101 Patent, claims 17, 18, 20	Plain meaning, which is "**achieving a target gain** of a control current, using a current mirror of a current amplifier, to generate a correction current"	Plain meaning, such as "**increasing** the control current using a current mirror of a current amplifier to generate a correction current"	Plain meaning, such as "**increasing** the control current using a current mirror of a current amplifier to generate a correction current"

The primary dispute with respect to this claim limitation, "amplifying the control current using a current mirror of a current amplifier to generate a correction current" centers on whether "amplifying" should be given its common, ordinary meaning. KCT (and Staff) proposes that the term means what it says, *i.e.,* its everyday meaning: *increasing* (green bold above). Skyworks, however, contends that the claim merely requires being *to achieve a target gain* (red bold above), whether amplifying or not, apparently in an effort to capture systems in which there is no actual increase/amplification.

KCT's proposal is correct, and Skyworks improper, for the same reasons and evidence briefed above. *Supra* § III.A.1. For the same reasons discussed above, a claim directed to the positive step of "amplifying" cannot be satisfied by pointing to a total lack of any amplifying step or action. The Court should easily reject Skyworks's proposal on this record. Ricketts Decl. ¶¶84-85;.

3. "current mirror" - The '101 and '563 Patents

Claim Term	Patent and Claims	Complainants' Proposed Construction	Respondents' Proposed Construction	Staff's Proposed Construction

"current mirror"	'101 Patent, claims 1, 2, 10, 11, 17, 18, 20, 21, 22 '563 Patent, claim 17[13]	Plain meaning, which is "one or more circuits configured to mirror a current, which can be configured to achieve a target gain, having at least two transistors with their base or gate terminals tied together"	Plain meaning, such as "one or more circuits configured to mirror a current, which can be configured to achieve a target gain"	Plain meaning, such as "one or more circuits configured to mirror a current, which can be configured to achieve a target gain"

The primary dispute between the parties with respect to the term, "current mirror," is whether the class of electronic circuits called 'current mirrors' should be limited to just a particular two-transistor embodiment from the specification. KCT contends it should not. The term normally encompasses much more than the two-transistors-arranged-just-so that Skyworks proposes. Nothing in the claims, specification, or the prosecution history would limit the term to only (part) of the particular example shown (without comment or fanfare) in the preferred embodiment. The parties propose parallel constructions, except that Skyworks's proposal goes on to add the extra verbiage and limitation shown in red font above. The Court should reject Skyworks's extra verbiage and limitation.

As its name suggests, a current mirror is a circuit that "replicates" (in the sense of "reproduces", "reflects", "duplicates" *etc.*)——*i.e.,* "mirrors"—an input current as its output current. Ricketts Decl. ¶¶90-92; (RXM-0004 (*Grebene*) 170 (the reference current is

[13] "Current mirror" appears in Claim 17 of the '563 Patent, which was inadvertently omitted from the Join Claim Construction Chart (Nov. 17, 2024). As the '101 and '563 Patents are related patents that share a common specification, the term "current mirror" should be construed the same way in the two patents. *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1293 (Fed. Cir. 2005).

"reproduced or reflected" and "because of this property [they are] known as *current mirror* circuits."); RXM-0005 (*Gilbert*) 239 ("an output node ... into which a replication" of "the input current flows in the same direction"); RXM-0007 (Gray) 251 ("[T]he input current is reflected to the output, leading to the name *current mirror*."); RXM-0006 (*Harrison*) 70 ("*current mirrors* (aka current reflectors), where an input current is mirrored at the output, in either a matched 1:1 or other ratio."), and 71 ("reference current, I_{REF}, will be mirrored (duplicated)...").

This hallmark and defining aspect of a current mirror is therefore captured in the undisputed portion of the parties' proposed constructions (*i.e.,* without the extra verbiage proposed by Skyworks), because that portion requires a circuit being "configured to mirror a current." It is also uncontested that current mirrors may be configured at the design stage to achieve a target gain (*i.e.,* the input current is not only replicated, but can be scaled too). Ricketts Decl. ¶¶93-94;

The dispute, then, is whether the plain meaning excludes current mirrors that lack the details in *Skyworks's* extra verbiage (in red font). It does not.

We begin with the claim language. Representative Claim 1 of the '101 Patent identifies a current mirror as being part of an amplifier, but says/requires nothing more:

> 1. A power amplifier system comprising:
>
> a power amplifier configured to amplify a radio frequency (RF) signal; and
>
> a bias block for biasing the power amplifier, the bias block including . . . a current amplifier . . . the current amplifier including a current mirror.

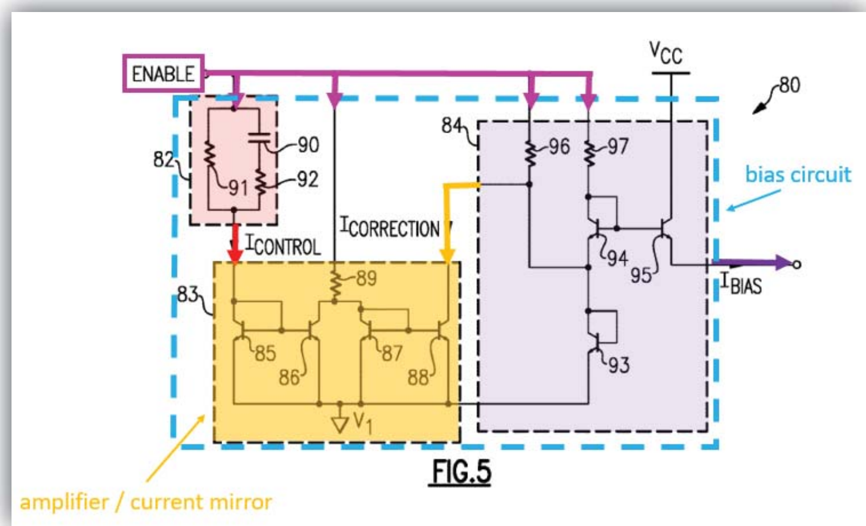
'101 Patent Claim 1. The text of the claim does not manufacture a new or specialized meaning of a current mirror, nor narrow it to just one type of mirror. The "current mirror" is tacked on the end of the claim, as a disembodied part of the current amplifier, without positively requiring the current mirror do anything. Ricketts Decl. ¶97.

Nor is the current mirror critical to the claims of the ’101 Patent. *See* ’101 Claims 12, 14 and 24 (independent claims directed to the same invention, but without recitation of a current mirror, like Fig. 4). Tellingly, the ’101 Patent does have more specific dependent claims that provide transistor level requirements for various embodiments of a current mirror. For example, Claim 6 depends from Claim 1 and specifies “wherein the current mirror includes a first bipolar transistor and a second bipolar transistor” having their terminals connected in a particular manner. *See* ’101 Claim 6; *see also* Claim 7 (further defining two additional transistors and additional connection requirements). Thus, the claims suggest that the “current mirror” terms, where they appear at all, are directed to the generic notion of a current mirror as understood by a POSITA at the time of the invention, and not the particulars of any one embodiment or instance. Ricketts Decl. ¶¶97-98.

The specification says little about what a current mirror is. This is not surprising because, as will be explained further below, current mirrors were extremely well-known and pervasive components in the art, and patents are not required to provide a treatise of what is already general knowledge.[14]

The specification shows an example of a four-transistor current mirror (Fig. 5, block 83):

[14] Current mirrors were commonplace and a POSITA was well versed in their multiple and various structures, from single-transistor mirrors, to complicated, multi-transistor designs. Ricketts Decl. ¶104. A POSITA understood how to use and include current mirrors in analog circuit designs, including RF power amplifiers and their biasing circuits. Ricketts Decl. ¶104. Their behavior and benefits were predictable and well documented. Ricketts Decl. ¶104. They were pervasive in the literature. Ricketts Decl. ¶104



’101 Patent Fig. 5 (annotated).

Importantly, nothing in the specification gives any significance to the particular form of the mirror used, nor provides any contextual guidance that some type of mirror was important to any aspect of the invention or any embodiment. The specification just describes “current mirror 83” from the Figure 5 embodiment, including the four transistors (85-88) and their interconnections. ’101 Patent 11:7-27. Nothing in the specification provides clear or manifest statements that any particular current mirror configuration was required. Indeed, the generic disclosure of the invention does not even include it. *See* ’101 Patent, Fig. 4 (describing only a generic amplifier, and omitting the example of a current mirror). Ricketts Decl. ¶100.

What few statements the specification makes preserve the breadth of the term. “In other implementations, the current mirror 83 can be configured in other ways.” ’101 Patent 11:36-38. The specification also points out the term includes combinations of cascaded current mirrors: “As used herein, the term current mirror can refer to current amplification circuits including a plurality of current mirrors combined (*e.g.*, cascaded) to achieve a target gain.” ’101 Patent 11:42-45; Ricketts Decl. ¶101.

Under these circumstances, it is improper to import limitations from, or aspects of, the circuit 83 into the claims. *See SuperguideCorp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004); *SciMed Life Sys. v. Advanced Cardiovascular Sys.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001); *JVW Enters.*, 424 F.3d at 1335.

Likewise, there is nothing about the prosecution history that establishes a clear and unambiguous disavowal of claim scope justifying the extra verbiage in Skyworks's proposal. For example, in the prosecution history of the '101 Patent the examiner merely indicated, without explanation, that multiple dependent claims (some of which required current mirrors) would be allowable if rewritten in independent form. JXM-0004 ('101 Prosecution History, Office Action, Aug. 2, 2013) at pp. 2-4. Neither the office action, nor the response articulated what was meant by "current mirror", nor why that was different from any particular piece of prior art. *Id.*; JXM-0004 ('101 Prosecution History, Response to Office Action, October 31, 2013) (expressly stating that no disclaimer or disavowal was intended). Similarly, the prosecution history of the '563 Patent (a child via a string of continuations to the earlier filed '101 Patent), involved a claim amendment, but no articulation of what was meant by "current mirror", nor why that was different from any particular piece of prior art. *See* JXM-0005 ('563 Prosecution History, Office Action, Feb. 27, 2017); JXM-0005 ('563 Prosecution History, Response, May 17, 2017). The prosecution history lacks the "clear and unambiguous disavowal of claim scope" that would be required to support the importation of the extra verbiage proposed by Skyworks. *Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325 (Fed. Cir. 2003) ("[W]e have thus consistently rejected prosecution statements too vague or ambiguous to qualify as a disavowal of claim scope."). Ricketts Decl. ¶104

Given the foregoing intrinsic record, the Court should readily reject the unduly narrowing extra verbiage that Skyworks tacks on at the end of its proposal because that extra verbiage is decidedly *not* the plain and ordinary meaning of this term. Nothing about the plain and ordinary meaning of "current mirrors" is limited to any one configuration or arrangement. Ricketts Decl. ¶¶103-109.

To the extent the Court requires more, ample extrinsic evidence illustrates the breadth of the term, "current mirror," and the impropriety of excluding so much of that breadth. The definitional requirement of a current mirror is that it replicates a current at its input to generate a current at its output. Current mirrors, however, achieve that in a variety of structures, from single-transistor mirrors, to advanced mirrors with complicated interconnections. Ricketts Decl. ¶106.

Skyworks extra verbiage would exclude structures that are art-recognized current mirrors.[15] For example, it was well known to use a single transistor to take a current source as an input current, and then replicate (*mirror*) it to an output terminal of the transistor as, *e.g.*, a current sink. Thus, a single transistor could be connected to function as – and was labelled – a current mirror. For example, a world-famous circuit designer, Barrie Gilbert,[16] provides a

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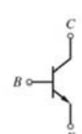
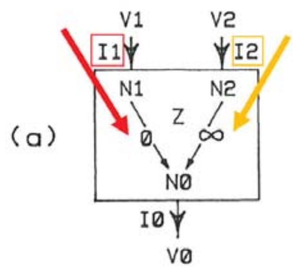
[15] Skyworks's proposed construction refers to "bases" and "gates". The "base" is the middle terminal of a first major class of transistors, namely a bipolar junction transistor (BJT), which has three terminals, a base (B), a collector (C) and an emitter (E):

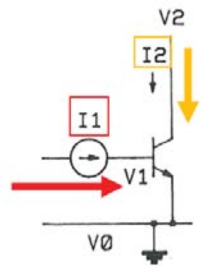


Ricketts Decl. ¶107; (RXM-0007(*Gray*) p. 92). The "gate" in Skyworks's construction is the middle terminal of a second major class of transistors, namely a field effect transistor (FET), which has three terminals: "source", "gate" and "drain."

[16] Barrie Gilbert was one of the pre-eminent industry leaders in analog circuit design. Ricketts Decl. ¶111; (quoting *Gilbert Biography* ("Barrie was likely the most famous analog circuit designer in the world."). Barrie Gilbert was featured, for example, on "the cover of the Fall 2007 IEEE Solid-State Circuits Society News issue and had virtually

section on “One-transistor Mirrors” in his treatise on current mirrors. RXM-0005 (*Gilbert*) 242. The treatise describes how to connect a single BJT transistor as a current mirror:





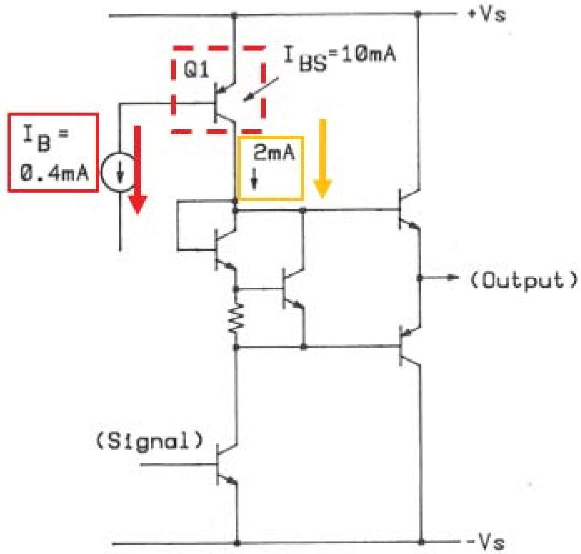
***Gilbert* Fig. 6.1a (annotated)** ***Gilbert* Fig. 6.2a (annotated)**

Gilbert explained that “[i]n the simplest possible scenario, a single BJT can be used as a mirror.”[17] RXM-0005 (*Gilbert*) 242 (section titled “One-transistor Mirrors”); Ricketts Decl. ¶¶110-113.

Similarly, in the following example, *Gilbert* shows and describes a single transistor (Q1) as a “current mirror”:

the entire issue devoted to him.” Ricketts Decl. ¶111; (quoting *Gilbert Biography* and showing IEEE issue cover page titled “The Gears of Genius: Barrie Gilbert and Analog Circuits”).

[17] Notably, not every transistor is connected and configured in a circuit as a current mirror. Ricketts Decl. ¶115.



Gilbert, Fig. 6.4 (annotated). Specifically, *Gilbert* described the transistor Q1 in the above figure as a "simple open-base PNP current mirror" used to bias the amplifier. RXM-0005 (*Gilbert*) 248. Ricketts Decl. ¶116.

It was also known that single-transistor designs could implement or replace two-transistor current mirrors. Ricketts Decl. ¶117; . For example, *Grebene* shows how to implement the two-transistor current mirror on the left below (Fig. 4.14a), by using a single-transistor current mirror ("Q12") shown on the right (Fig. 4.14b), calling them both a "current mirror":

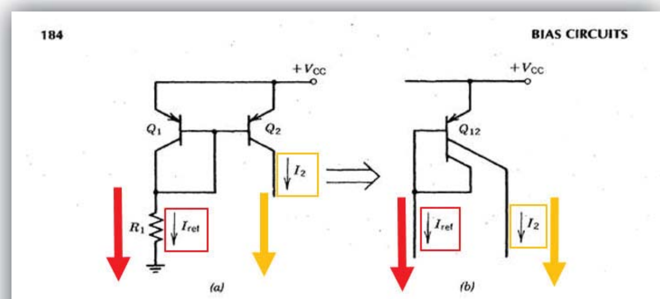


FIGURE 4.14. Basic *pnp* current mirror; (*a*) Circuit diagram; (*b*) actual implementation using split-collector lateral *pnp* transistor.

RXM-0004 (*Grebene*) 184, Fig. 4.14 (annotated); *see also id.* Fig. 4.15. Notably, the two-transistor mirror on the left (Q_1 and Q_2 in Fig. 4.14a) has all of the extra verbiage of Skyworks's construction. One cannot say one is a current mirror and one is not, when they are both called current mirrors in the art, and they implement the identical mirroring behavior. Ricketts Decl. ¶¶117-118;. *Gilbert* likewise described the same type of single-transistor structure as a "current mirror":

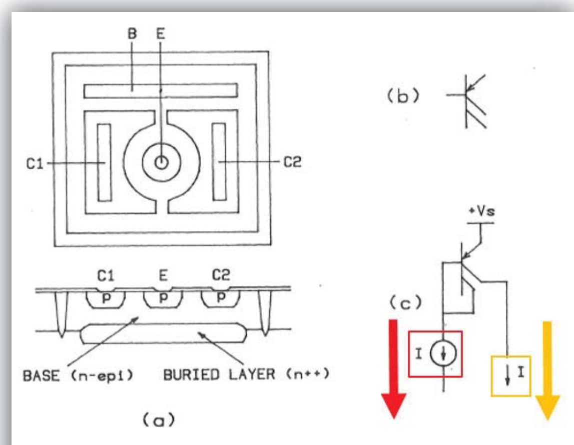
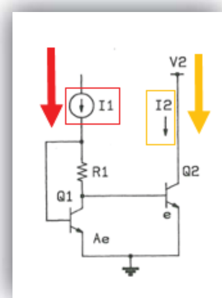
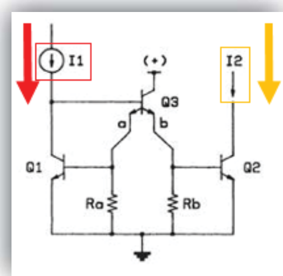


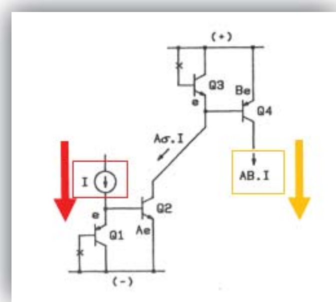
Figure 6.6 Split-collector lateral PNP: (a) plan view; (b) symbol; (c) connections to realize a unity-gain current mirror.

RXM-0005 (*Gilbert*) 250-51, Fig. 6.6 (annotated). *Gilbert* described the transistor's fabrication and operation, and how it could be configured to achieve various gains. *Id.* at 251-252 (describing implementations of the single-transistor "current mirror" to configure it to achieve a gain of 1, 2 or 3, as well as non-integer ratios). Ricketts Decl. ¶119-120. *Skyworks's* extra verbiage cannot be reconciled with these single-transistor mirrors, and thus, cannot be correct.

Furthermore, current mirrors need not have their bases (or "gates" in the case of FET transistors) tied together as required by *Skyworks's* proposal. For example, none of the following "current mirrors" have their bases tied together. Ricketts Decl. ¶¶121-124.







Gilbert, 261, Fig. 6.12b | *Id.* at 276-77, Fig. 6.25b | *Id.* at 292-94, Fig. 6.42c

All of these circuits are current mirrors, but *Skyworks's* extra verbiage would exclude them. This evidence squarely demonstrates that it cannot be said that the plain and ordinary meaning of a current mirror necessitates or requires any of the extra verbiage in *Skyworks's* proposed construction — that is extraneous baggage that is unduly narrowing. Ricketts Decl. ¶125. Skyworks does not point to any lexicography or disclaimer in support of the narrowing verbiage it seeks to tack onto the end of its construction. *E.g.*, *Thorner v. Sony Computer Entertainment Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012); *JVW Enters. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1335 (Fed. Cir. 2005).

Skyworks instead appears to rely on extrinsic evidence. For example, Skyworks appears to cite *Gray* in support of its construction (*See* CXM-0001 (*Gray*)[18], but *Gray* supports KCT's construction. For example, *Gray* describes the definitional aspect of current mirrors being that they *reflect* (in the sense of replicate) their input currents to their output currents, *i.e., "mirror"* them, while optionally also providing scaling (*i.e.,* they can be configured to amplify, but they always at least replicate). *See, e.g., Gray,* p. 251 ("Ideally, the output current is equal to the input current multiplied by a desired current gain. If the gain is unity, the input current is reflected to the output, leading to the name *current mirror*."). *Gray*, like *Gilbert*, describes the

[18] This is the same textbook as RXM-0007, but with different pages)

general form of a current mirror as three node terminals, wherein the current at the input node is replicated (*i.e., mirrored*) at the output node, with a common node that is connected to a positive or negative voltage source that has both currents flowing through it:

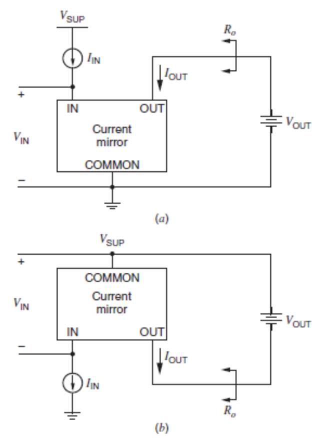


Figure 4.1 Current-mirror block diagrams referenced to (*a*) ground and (*b*) the positive supply.

Gray, p. 252. Nothing about *Gray* would require the extra verbiage of two transistors with their bases (or gates) connected together as suggested by Skyworks's proposal. Instead, the general current mirror forms shown in *Gray* Fig. 4.1 (a) and (b), demonstrate why the extra verbiage is unduly narrower than the plain and ordinary meaning. Ricketts Decl. ¶126.

4. "integrated circuit" - The '563 Patent

Claim Term	Patent and Claims	Complainants' Proposed Construction	Respondents' Proposed Construction	Staff's Proposed Construction
"integrated circuit"	'563 Patent, claims 14, 15, 17, 20	Plain meaning, which is "a circuit made up of multiple interconnected electronic components integrated on one or more dies"	Plain meaning, which is "a circuit made up of multiple interconnected electronic components integrated on a die"	Plain meaning, such as "a circuit made up of multiple interconnected electronic components integrated on one or more dies"

The primary dispute with respect to the term "integrated circuit" is whether the term is essentially synonymous with "die," such that the various components set forth in the claim (the PA and bias circuit) must be co-located on one die. KCT contends it is. Skyworks, in contrast, contends the components listed in the claim may be spread out across multiple dies as long as those multiple dies are placed within the same package. Ricketts Decl. ¶128.

As an initial matter, the term integrated circuit (IC) refers to a device having components (*e.g.,* resistors, capacitors, diodes and transistors) integrated on a small piece of semiconductor material, called a chip or die.[19] All three terms — IC, die and chip — are interchangeable.[20] This is the plain and ordinary meaning in the context of the claims and specification of this patent.

We turn then to the claim. The claim recites:

> 14. A packaged module comprising:
> a package substrate; and
> an integrated circuit attached to the package substrate and including
>   a power amplifier . . . and
>   a bias circuit . . . including
>   a gain correction circuit . . . and
>   a primary biasing circuit . . . .

Claim 14 (indentations added to show structural hierarchy).

As can be seen above, the claim is directed to a packaged module that has within it a subcomponent that the claim refers to as an "integrated circuit." Likewise, the "integrated circuit" is claimed as an element that is distinct from the "package substrate." In this framework,

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[19] Ricketts Decl. ¶129 (citing RXM-0001 p. 169 ("Integrated Circuit (IC)" defined as "A device in which components such as resistors, capacitors, diodes, and transistors are formed on the surface of a single piece of semiconductor."); RXM-0003 p. 356 ("integrated circuit" as "many transistors, resistors, capacitors, etc., fabricated and connected together to make a circuit on one monolithic slab of semiconductor material."); RXM-0008 p. 61).

[20] RXM-0002, p. 125 (defining "die" as simply "chip"), p. 70 ("chip" as a "*Syn.* die. A small piece of a single crystal of semiconductor material containing either a single component or device or an integrated circuit").

neither the module nor the substrate is the integrated circuit. These are three different things having three different meanings. *Bd. of Regents of the Univ. of Texas Sys. v. BENQ Am. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) ("Different claim terms are presumed to have different meanings."). Ricketts Decl. ¶131.

The claim thus has a specific structural hierarchy. The integrated circuit is identified as a singular noun introduced by "an."[21] It is one thing. It is the semiconductor chip containing the claimed electronic components. It is attached to the package substrate, but the text makes clear that the various components of the invention all must reside within the IC itself, not just vaguely within the module. *See AbTox Inc. v. Exitron Corp.*, 122 F.3d 1019, 1024 (Fed. Cir. 1997) (construing "a chamber" to mean "a single chamber" because "[t]he claim does not place the sterilization zone vaguely within "a chamber," but within "said chamber."). Notably, too, the claim was *not* drafted as a "module including [the various components]." If the drafters had intended to cover devices in which the components could be spread out across multiple dies while still in the same *packaged module*, they could have done so. Instead, the claim language itself says the various components of the invention all must reside within the *integrated circuit*, not just attached to the same package substrate or just sharing the same packaged module in which the integrated circuit sits. Ricketts Decl. ¶132.

In analogous circumstances, the Federal Circuit recently confirmed the point:

> As we stated in *Varma*, "[f]or a dog owner to have 'a dog that rolls over and fetches sticks,' it does not suffice that he have two dogs, each able to perform just one of the tasks." Here, it does not suffice to have multiple microprocessors, each able to perform just one of

[21] While the general rule is that "a" or "an" means "one or more," that question "depends heavily on the context of its use." *TiVo, Inc. v. Echostar Commc'ns. Corp.*, 516 F.3d 1290, 1303 (Fed. Cir. 2008) (construing "a MPEG stream" to mean a "single" MPEG stream.)

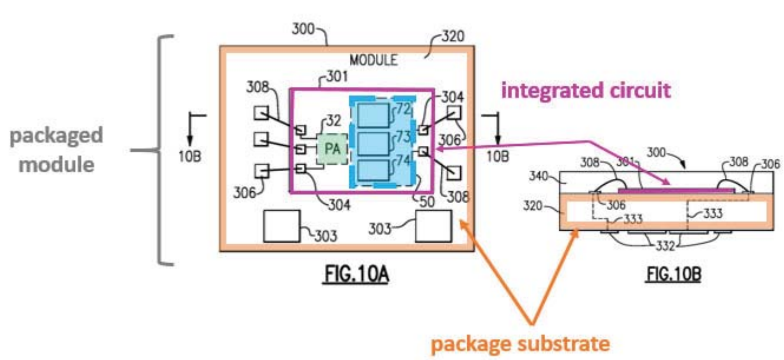
> the recited functions; the claim language requires at least one microprocessor capable of performing each of the recited functions.

Salazar v. AT&T Mobility LLC, 64 F.4th 1311, 1318 (Fed. Cir. 2023), *cert. denied*, 144 S. Ct. 422 (2023) (quoting *In re Varma*, 816 F.3d 1352, at 1363 (Fed. Cir. 2016)). So too, here, the claim language requires at least one integrated circuit having both the PA and the bias circuit. It does not suffice to have two integrated circuits, where one of them has the PA and another has the bias circuit. Instead, the claim is directed to having those two items integrated on-die, *i.e.*, in a single integrated circuit.

The specification confirms what the claim suggests. For starters, the inventors use the term "IC" and "die' interchangeably:

> The packaged power amplifier module 300 includes an *IC or die 301*, surface mount components 303, wirebonds 308, a package substrate 320, and encapsulation 340.

'563 Patent 14:15-17 (emphasis added). That is, item 301 can be described as an "IC or die;" the two terms are interchangeable. An IC is a die, and vice versa. The IC is a subcomponent, distinct from the packaged module and package substrate. The "IC" is not the module. The images reinforce the point:



Id. at Figs. 10A and 10B (annotated). The identified "IC or die 301" (pink) hosts the claimed electronic components of (i) the bias circuit 50 (blue) — *e.g.,* the time-dependent signal generator 72, current amplifier 73, primary biasing circuit 74 — integrated on-die with the power amplifier 32 (green). That IC (pink) is then placed upon the package substrate 320 (brown). The image depicts a single die, reinforcing the textual label: IC or die.[22] Ricketts Decl. ¶133.

To be clear, the module shown in Figs 10A and 10B could, of course, have additional ICs added to the same package substrate outside of die 301. After all, a POSITA understood the module of the '563 Patent would, in practical deployments, be implemented as part of a small "front end module" with additional integrated circuits directed to other functions, such as the antenna's switch (see '579 Patent) or the impedance matching circuitry. *See, e.g.*, '563 Patent Fig. 3B, 8:6-12 (describing the switch and matching circuitry). And the '563 Patent references the possibility of additional dies, plural, when it refers generically to "packaging substrate 320 and the components and *die(s)* disposed thereon." '563 Patent 15:1-2. But nowhere does the specification describe an embodiment where the PA and bias circuits are on two dies. Nor does the specification ever suggest that multiple dies would collectively constitute an "integrated circuit" inside a packaged module. In fact, a POSA recognizes the reference to extra dies (*i.e.*, integrated circuits) as just being a Multichip Module (MCM) format common for front end modules, where each "chip" (aka die) of semiconductor in the MCM is a discrete IC.[23] Ricketts Decl. ¶¶136-137.

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[22] Although figures 10A and 10B show wire bonds 308 between die 301 and the package substrate 320, the specification contemplates direct electrical connection between the die and the package substrate. '563 Patent 15:3-8 (referring to "flip-chip" bonding). In flip chip bonding, the electrical bumps are formed on the top of an IC/die/chip itself, which is then flipped over and electrically and mechanically secured to the substrate, obviating the need for wire bonds. *See, e.g.,* RXM-0018 (*Diels*) Fig. 2, pp. 384, 386 (showing the flip chip technique for mounting two ICs/dies to a package substrate in the context of an RF front end module). Ricketts Decl. ¶134-135.

[23] *See, e.g.*, MCM definition (RXM-0001 215); and MCM example in *Diels* (RXM-0018), Fig. 2, pp. 384-386 discussed in the extrinsic evidence section below.

More broadly, the specification's entire description of the integration in the invention is consistent with the term "integrated circuit" being used in its ordinary sense as the circuitry integrated on a small piece of semiconductor (*i.e.*, a "chip" or "die"). As noted above, the inventors developed and claimed a multi-step process of generating a bias signal for a power amplifier and amplifying an RF input signal. One portion of the circuit generates a miniature version of the requisite shape ($I_{CONTROL}$) — then takes the extra step of scaling up that current/shape to generate $I_{CORRECTION}$ — then more bias circuitry forms a bias signal (I_{BIAS}) for the PA. The extra step of scaling up $I_{CONTROL}$ to make $I_{CORRECTION}$, and the whole notion of having two currents, makes little sense in the claim unless and until the reader grasps that the whole system is intended to fit on the PA die. As the inventors explained:

> Including both the current amplifier and the time-dependent signal generator can permit the power amplifier *bias block to be included on-die with the power amplifier*. For example, by amplifying the control current generated by the time-dependent signal generator, *the magnitude of the components of the time-dependent signal generator can be reduced to a size suitable for on-chip integration.* In certain implementations, the time-dependent signal generator can include a resistor-capacitor (RC) network, and the current amplifier can be used to amplify the control current so as to reduce a magnitude of the resistor and/or capacitor needed to generate a suitable correction current, *thereby permitting the time-dependent signal generator to be integrated on-chip with the power amplifier.*

'563 Patent 9:1-14 (emphasis added). The inventors make this same point again and again. In column 10:

> By including the current amplifier 73 to amplify the control current $I_{CONTROL}$ generated by the time-dependent signal generator 72, the magnitude of the components of the time-dependent signal generator 72 can be reduced. . . . *thereby permitting the time-dependent signal generator to be integrated on-chip with the power amplifier 32.*

Id. at 10:19- 28 (emphasis added). In column 11:

> To aid in reducing the area of the RC network 82, the current mirror 83 can be used to *amplify the control current* $I_{CONTROL}$ to generate the correction current $I_{CORRECTION}$. Thus, the amplifier 83 can be used to obtain a correction current $I_{CORRECTION}$ of a suitable magnitude, while *reducing the size* of the components *of the RC network* 82 relative to a scheme omitting a current amplifier. *By amplifying the control current* $I_{CONTROL}$ in this manner, the power amplifier *bias block 80 can be integrated on-chip with a power amplifier* without having to use a relatively large resistor, which may not provide enough current variation to provide suitable gain compensation.

Id. at 11:19-30 (emphasis added). In column 14:

> Using the current amplifier 73 to amplify the control current from the time-dependent signal generator 72 can reduce a magnitude of the resistor and/or capacitor needed to generate a suitable correction current*, thereby permitting the time-dependent signal generator 72 to be integrated on-chip with the power amplifier 32***,** as shown in FIG. 10A.

Id. at 14:36-41 (emphasis added). Ricketts Decl. ¶¶138-139.

The unmistakable conclusion from the specification is that forming an integrated circuit having both the bias circuit and power amplifier was significant, and that significance shows up in the structural hierarchy that appears in claim 14 of the ’563 Patent. Indeed, using the multistep process of generating $I_{CONTROL}$ and $I_{CORRECTION}$ for the purpose of getting everything integrated on-die with the PA was an intentional and emphasized feature of the invention, not a minor, inadvertent detail. It is rare in patent law to come across a specification that emphasizes a point so clearly and repetitively. The proper construction should align to it. Indeed, “[t]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Phillips,* 415 F.3d at 1315. KCT submits that its proposed construction is broad and fair; it is the “construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention” and thus is “in the end, the correct construction.” *Id.* at 1316. Ricketts Decl. ¶140.

The claims and specification are also squarely in line with common vernacular at the time of the invention as to how the words "integrated chip", "IC", "chip", and "die", were used in the art, separate and apart from the specification. The extrinsic evidence, when considered carefully in view of the specification and claims, presents a crystal clear picture of "integrated circuit" meaning "single die." Ricketts Decl. ¶141.

First, just like the specification, the word "chip" is commonly considered a synonym for "die" and both are commonly referred to as an "integrated circuit" (or described as containing an integrated circuit):

- RXM-0002, p. 70 (technical dictionary defining "*chip*" as a *"[Synonym] die*. A small *piece of* a single crystal of *semiconductor material containing* either a single component or device or *an integrated circuit***"),** p. 125 (defining "*die*" as simply "*chip*");
- RXM-0001 p. 169 (technical dictionary defining "*Integrated Circuit (IC)*" as "*A device in which components* such as resistors, capacitors, diodes, and transistors *are formed on* the surface of *a single piece of semiconductor.*");
- RXM-0003 p. 356 (technical dictionary defining "*integrated circuit*" as "many transistors, resistors, capacitors, *etc.*, fabricated and connected together to make *a circuit on one monolithic slab of semiconductor material.*");
- RXM-0008 p. 61 (treatise describing: "*lntegrated circuits (ICs)*, which have largely replaced circuits constructed from discrete transistors, *are* themselves merely *arrays of transistors and other components built from a single chip of semiconductor material*.");
- RXM-0009 (*Sherz*) p. 213, Fig. 6.1 (treatise explaining "*An integrated circuit (IC) is a miniaturized circuit* that contains a number of resistors, capacitors, diodes, and transistors stuffed together *on a single chip of silicon* no bigger than your fingernail. The number of resistors, capacitors, diodes, and transistors within an IC may vary from just a few to hundreds of thousands in number. The trick to cramming everything into such a small package is *to make all the components out of tiny n-type and p-type silicon structures that get imbedded into the silicon chip during the production phase*.").

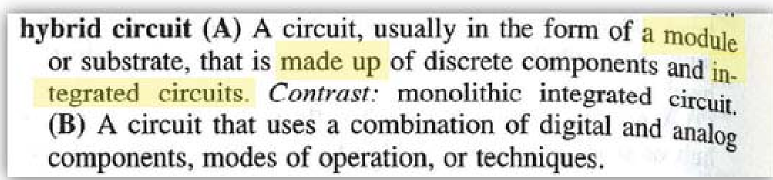
Ricketts Decl. ¶142. Just like the '563 Patent, all of this evidence treats "die", "chip", and IC as synonyms. Consistent with the evidence above, the specification treats the slab 301 shown in Figs. 10A and 10B as a single die, referring to it as a "die" and "IC" 301, having the bias circuit integrated with the PA. Furthermore, the only times that the specification uses the term "integrated" are the multiple instances that it refers to integration of the bias circuit on-die and on-chip with the PA. Thus, the extrinsic evidence above is on all fours with the plain and ordinary meaning of the integration touted over and over again in the specification, and clearly claimed in the '563 Patent. Ricketts Decl. ¶143.

Skyworks's construction is improper. Skyworks's proposal would undo the structural hierarchy of the claim, and nullify the inventors' much-touted achievement in the specification of being able to integrate two circuits (the bias circuit and the PA) "on" the same die/chip. Skyworks does so by pointing to far afield examples of extrinsic evidence. This is exactly why *Phillips* cautions so heavily against the use of inconsistent extrinsic evidence marshalled for the purpose of litigation. Ricketts Decl. ¶144.

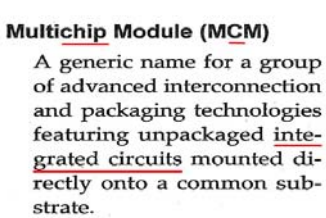
For example, Skyworks cites to the notion of a "3D IC", using an isolated IEEE paper (CXM-0008) to presumably show an instance of a "3D IC" that has multiple dies. But the '563 Patent is *silent* about such structures, and nothing in the paper suggests that it is in any way applicable to the power amplifiers of the '563 Patent. Nor can CXM-0008 be squared with the intrinsic evidence. The integration that is disclosed and touted so clearly and repeatedly in the specification is the integration of the bias circuit "on" the same die/chip as the PA— that is totally at odds with vaguely burying the two circuits separately among the stack of dies described in CXM-0008. Nor is the CXM-0008 article an authoritative source of terminology. For example, the *Reddy* dictionary (RXM-0001) describes the same 3D structure as a "Chip-on-Chip (COC)" process "in which unpackaged integrated circuits are mounted on top of each other.

Each die is very thin . . . forming a 3D cube" — *i.e.,* one IC is one die, regardless if they are stacked with other ICs/dies. RXM-0001 56. Ricketts Decl. ¶145.

Skyworks also cites to several papers concerning "hybrid circuits." Skyworks appears to contend that there exists extrinsic evidence in which a "hybrid circuit" is supposedly an integrated circuit, and, thus, will presumably argue that the extrinsic evidence should lead the Court to conclude that the '563 Patent was about an integrated circuit having a PA on one die, and a bias circuit on another. But among its citations, it cites the IEEE's "Authoritative Dictionary of IEEE Standards Terms" (excerpts at CXM-0007), which does not support that proposition. Tellingly, in the definition of "hybrid circuit" (reproduced below), the IEEE dictionary refers to the hybrid circuit having multiple "integrated circuits" (plural) within it (not an *integrated circuit* having multiple dies:

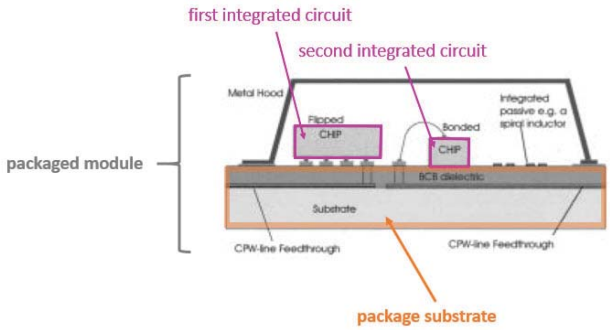

hybrid circuit (A) A circuit, usually in the form of a module or substrate, that is made up of discrete components and integrated circuits. *Contrast:* monolithic integrated circuit. **(B)** A circuit that uses a combination of digital and analog components, modes of operation, or techniques.

CXM-0007 (IEEE Dictionary (2000)), p. 526. Indeed, the notion of the "hybrid circuit" when considered against the structure of the instant claim and specification undermines Skyworks's apparent contention. The definition above, and the notion of a hybrid circuit, is akin to a "multi-***chip*** module" or "MCM", a module having ICs/chips, as subcomponents:


Multichip Module (MCM)
A generic name for a group of advanced interconnection and packaging technologies featuring unpackaged integrated circuits mounted directly onto a common substrate.

RXM-0001 215.

RXM-0018 (*Diels*) shows such an MCM's individual "chips" attached to the substrate and refers to each as an "integrated circuit":



RXM-0018 (*Diels*) Fig. 2 (annotated, reproduced in part). "At the same time, the MCM substrate is a carrier for the *integrated circuits* that are mounted on this substrate preferably with a flip-chip technique." RXM-0018 pp. 384, 386. Ricketts Decl. ¶146-147.

However, for Skyworks's "hybrid circuit" extrinsic argument to work, Skyworks needs the hybrid circuit as a whole to be the "integrated circuit" such that it could point to something having two dies. But, like MCMs (RXM-0001 p. 215, and *Diels* (RXM-0018), the hybrid circuit is the "module" as a whole (like the "packaged module" of the claim), which instead has little ICs inside it. *See* CXM-0007 p. 526. Thus, the hybrid circuit module extrinsic evidence is a red herring, as it says nothing about an individual IC inside a module being anything other than just one "die." Ricketts Decl. ¶147.

More importantly, Skyworks cites CXM-0007 for its definitions of "integrated circuit", which definitions are consistent with the context of the '563 Patent, treating chips and ICs as synonyms:

integrated circuit (IC) (solid state) A combination of interconnected circuit elements inseparably associated on or within a continuous substrate. *Note:* To further define the nature of an integrated circuit, additional modifiers may be prefixed. Examples are: 1) dielectric-isolated monolithic integrated circuit, 2) beamlead monolithic integrated circuit, 3) silicon-chip tantalum thin-film hybrid integrated circuit. *See also:* chip. (ED) 274-1966w, [46], 1005-1998
(2) (A) A combination of connected circuit elements (such as transistors, diodes, resistors, and capacitors) inseparably associated on or within a continuous substrate. **(B)** A solid-state circuit consisting of interconnected active and passive semiconductor devices diffused into a single silicon chip. *Synonyms:* chip; microcircuit. *See also:* monolithic integrated circuit; very-high-speed integrated circuit.
(ED/C) [46], 610.10-1994

CXM-0007 (IEEE Dictionary), p. 570; Ricketts Decl. ¶148.

Skyworks's definitions cross-reference "chip", and while Skyworks did not include that definition in its exhibit, we include it as instructive:

chip **(1) (mechanical recording)** The material removed from the recording medium by the recording stylus while cutting the groove. (SP) [32]
(2) (nonlinear, active, and nonreciprocal waveguide components) (semiconductor) A small unpackaged functional element made by subdividing a wafer of semiconductor material. Sometimes referred to as a "die."
(MTT) 457-1982w
(3) A small piece of silicon or other semiconductive material on which circuits can be placed. (C) 610.10-1994w
(4) A small unpackaged functional element made by subdividing a wafer of semiconductor material. Sometimes referred to as a die. Also used as a modifier to indicate an operation that applies to the entire chip as in chip enable or chip clear. *Synonym:* integrated circuit. (ED) 1005-1998

Rickets Decl. ¶149 (reproducing page 570 of the CXM-0007 (IEEE Dictionary)).

These definitions from Skyworks's own dictionary are on all fours with Dr. Ricketts' opinion and the evidence discussed above that that '563 Patent treats IC, die, and chip as synonyms. Ricketts Decl. ¶150.

Thus, all of this extrinsic evidence comes full circle to the intrinsic evidence. Clearly under plain and ordinary meaning, a "die" is a "chip" is an "integrated circuit." The claim structure of the instant claim has a specific hierarchy, in which the claimed PA and the claimed bias circuit are specifically on the same integrated circuit, one subcomponent within a larger packaged module. That is clearly directed to the specification's touted achievement, repeated over and over again, of the ability to integrate the PA and bias circuit "on-die" and "on-chip", *i.e.*, the inventors believed it important that they made the bias circuit small enough to be on the same integrated circuit. Ricketts Decl. ¶151.

B. Group 2 – The '579 Patent

Both disputed terms of the '579 Patent, "inhibiting" and "low frequency," are indefinite.

The Court in *Nautilus* warns that it is insufficient in an indefiniteness analysis "that a court can ascribe *some* meaning to a patent's claims[.]" *Nautilus, Inc.*, 572 U.S. at 911 (emphasis in original); *see also id.* at n.8 (citing to case law finding indefiniteness where a claim may have several meanings).

1. "inhibiting"

Claim Term	Patent and Claim	Complainants' Proposed Construction	Respondents' Proposed Construction	Staff's Proposed Construction
"inhibiting"	'579 patent, claim 7	Plain meaning, which is "suppressing or reducing" This term is not indefinite	Indefinite	Plain meaning, which is "suppressing or reducing" This term is not indefinite

The primary dispute with respect to the term, "inhibiting," is whether it is indefinite. For the reasons set forth below, "inhibiting" does not square with the rest of the claims. The fit is poor enough to cross the boundary from merely poor drafting to indefiniteness.

We begin with the claim language. The "inhibiting" limitation is the verb for the larger phrase: "inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor." '579 Patent, Claim 7. The direct object – *i.e.,* the thing to be inhibited – is a "low frequency blocker signal[]." That low-frequency blocker signal must be inhibited "from mixing" with other signals (fundamental frequency signals, a/k/a the desired, data-encoded RF signals). The first capacitor does the inhibiting.

The verb "inhibit" generally refers to the act of blocking, or preventing. *See, e.g.,* RXM-0017 at 227 ("inhibit: To prevent an action"), RXM-0011 at 522 (definition of "inhibit," "to prevent a specific event from occurring (*e.g.*, alarm inhibit)"), RXM-0010 (accord); *see also* RXM-0014 ("inhibiting signal" "A signal that prevents the occurrence of an event"); RXM-0001 at 164 ("inhibitor circuit" "A circuit in which the application of one signal prevents (inhibits) the transfer through the circuit of another signal").

Reading "inhibiting" to mean "preventing" would therefore make sense, logically and grammatically. The claimed capacitor would prevent a signal "from mixing" with another signal.

Unfortunately, the specification alters the plain meaning of the term by adding the concept of "reducing." "With the foregoing capacitors [in Fig. 9], a low-frequency jammer signal can be blocked *or reduced* from mixing with any ON or OFF paths. This can lead to improvement in IMD performance, especially for low-frequency blocker signals." '579 Patent, 9:49-53 (emphasis added).[24]

Defining "inhibiting" to also encompass reducing – as opposed to just blocking/preventing – creates problems in the claim text. The claim does not require inhibiting

[24] Adding to the ambiguity, the specification elsewhere inconsistently describes the invention as improving "IMD performance by *preventing* a low-frequency blocker signal from mixing with a fundamental frequency." *Id.*, 10:1-4 (emphasis added). Although not fatal on its own, the specification's inability to tell a consistent story as to what "inhibiting" means is telling.

"the amount of mixing" or "the degree of mixing." It requires inhibiting "from mixing." That is, the claim uses "mixing" as a binary condition, *i.e.*, whether it exists or not.

To "reduce" a low frequency blocker signal "from mixing" is nonsensical, both to a lay person and to a POSITA. One can prevent two things "from mixing." But merely reducing two things "from mixing" is not merely clumsy drafting, it leaves open the question of whether any mixing is permitted in the first place. [25]

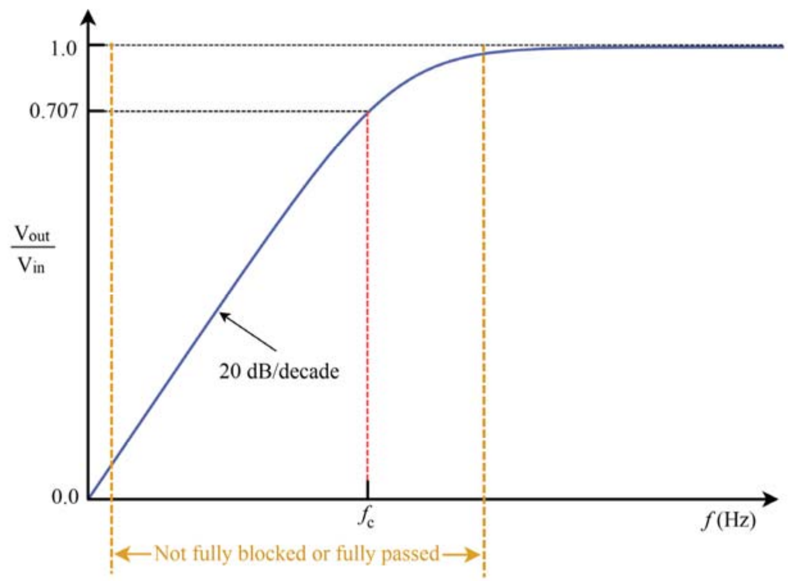
Put simply, preventing and reducing are two different concepts that are neither reconciled nor reconcilable in a single word ("inhibiting") in this claim. Skyworks's proposed wordsmithing, "suppressing or reducing," cannot somehow fix the logical flaw in the claims.

Even if the word "inhibit" could encompass/accommodate reduction (it cannot), the term also suffers an unusual and fatal term-of-degree problem.

Capacitors, when deployed in series with a circuit, reduce signal amplitudes (also referred to as attenuation) to varying degrees depending on frequency. A given capacitor's impedance depends upon the frequency of the electrical current, *i.e.*, the frequency of the signal. Fayed Decl., ¶82. Impedance can be generally understood as the potential to oppose electrical current. *Id*. The result is that when arranged as in the claim, the capacitor's reduction of amplitude – the inhibition, per the claim – varies by frequency. The lower the frequency, the more attenuation of the signal. Fayed Decl., ¶¶83, 85.

[25] The patentee could have drafted the claim to capture the concept of prevention *and* reduction. It would have meant swapping "mixing" with "low frequency blocker signal" as the object of the verb, *i.e.*, "inhibiting the mixing of a low frequency blocker signal…." But that is not what the claim says. More to the point, such a redrafting exercise changes the verb's object in the phrase; from "low frequency blocker signal" to "mixing." That is not merely cleaning up poor drafting, it fundamentally changes the claim.

At either extreme, the capacitor's behavior is clear. At a frequency of 0 Hz, the capacitor can generally be thought of as blocking the current entirely. Conversely, past a certain point, the frequency is high enough that the same capacitor can generally be thought of as no longer attenuating the signal. Fayed Decl., ¶¶83-84. These two ranges are illustrated in the below plot, with essentially "fully blocked" being the range to the left of the left-most orange dotted line and essentially "fully passed" being the range to the right of the right-most orange dotted line:



Fayed Decl., ¶85. The claim term is indefinite, however, because there is a large, vague, middle between those two extremes. There is no objective basis to say at what point within this middle range of frequencies the capacitor no longer "inhibit[s]" the signals. Put differently, there is no objective metric for a POSITA to judge how much attenuation is required to meet the "inhibiting" limitation. Fayed Decl., ¶¶86-93.

Neither the claims nor the specification provide any guidance. The specification's reference to "inhibiting" resulting in "improved IMD performance" does not help. '579 Patent, 9:63-10:3. "Improved" – like "reduce" – is a general term of degree. Fayed Decl., ¶91. Improvements can be small or large. *Id*. Thus, referring to the "inhibiting" as resulting in "improved IMD performance" does not advance a POSITA's understanding of the metes and bounds of "inhibiting." *Id*.

The ambiguity surrounding "inhibiting" goes beyond the normal, tolerable ambiguity surrounding a term of degree. In *Berkheimer v. HP Inc.,* the Court considered whether the meaning of "minimum redundancy" of system archives was reasonably clear. 881 F.3d 1360, 1363 (Fed. Cir. 2018). The only example included in the specification was an archive with no redundancy. *Id.* However, the claim language was not so limited, and the specification used "inconsistent" terminology when describing the claim term including "eliminating redundancy" and "reducing redundancies." *Id.* at 1363-64. Since the specification allowed that there may be *some* redundancy, the term was indefinite because the specification provided no objective boundaries to explain *how much* redundancy is too much. *Id.* at 1364.

Also instructive is the decision in *Sci. Applications Int'l Corp. v. United States*, 154 Fed. Cl. 594 (2021). There, the Court considered patent claims for night vision googles which required the goggles to "register" combined images from a field of view and a weapon's cite as opposed to duplicating the images on a display. *Id.* at 509. The dispute was whether the terms "registering" and "in registration with" were sufficiently definite. *Id.* at 634. The parties agreed that the claims did not require perfect registration and the Court found the concept "is understood on a continuum." *Id.* Notwithstanding, the Court found no objective criteria to guide a POSITA in understanding where on this continuum the claims' scope lay. The patents-at-issue contained both high-level examples and a definition, but the Court found these inadequate to "inform a POSITA of the invention's metes and bounds with reasonable certainty." *Id.* at 635.

Herein lies the issue with '579 Patent claim 7. If "inhibiting" is expanded to mean blocking *or reducing*, then the term devolves into an unbounded continuum of possible attenuation levels, with no objective criteria to judge where "inhibiting" begins or ends. Per *Sci. Applications* though, a term cannot depend only on "the perspective of a particular application or user" and "the needs and precision required by the particular use in which the user is engaged." *Id.* Such is the case though with "inhibiting," as used in claim 7.

For at least the above reasons, the claim term "inhibiting" fails to provide reasonable certainty as to how much inhibiting is required (and how much passing, if any, is allowed). Accordingly, due to the absence of an objective metric to resolve the ambiguity regarding whether the use of any particular capacitor is (or is not) "inhibiting" a "low frequency blocker signal", as claimed, '579 Patent claim 7 is indefinite.

2. "low frequency"

Claim Term	Patent and Claim	Complainants' Proposed Construction	Respondents' Proposed Construction	Staff's Proposed Construction
"low frequency"	'579 patent, claim 7	Plain meaning, which is "below the lower edge of the band containing the fundamental frequency" This term is not indefinite	Indefinite	Plain meaning, which is "below the lower edge of the band containing the fundamental frequency" This term is not indefinite

The primary dispute with respect to the term, "low-frequency," is whether it is indefinite. While "low frequency" is a term that was used in RF communications literature as having fixed boundaries, claim 7 uses it as a term of degree. As such, the claims, specification, and prosecution history must provide objective and workable parameters that a POSITA can use to determine the scope of "low-frequency", *e.g.*, which blocker signal frequencies are "low-frequency", and which are not. *See Sci. Applications*, 154 Fed. Cl. at 637. The '579 Patent does not. For the reasons set forth below, a POSITA cannot ascertain the metes and bounds of the claim with any reasonable certainty.

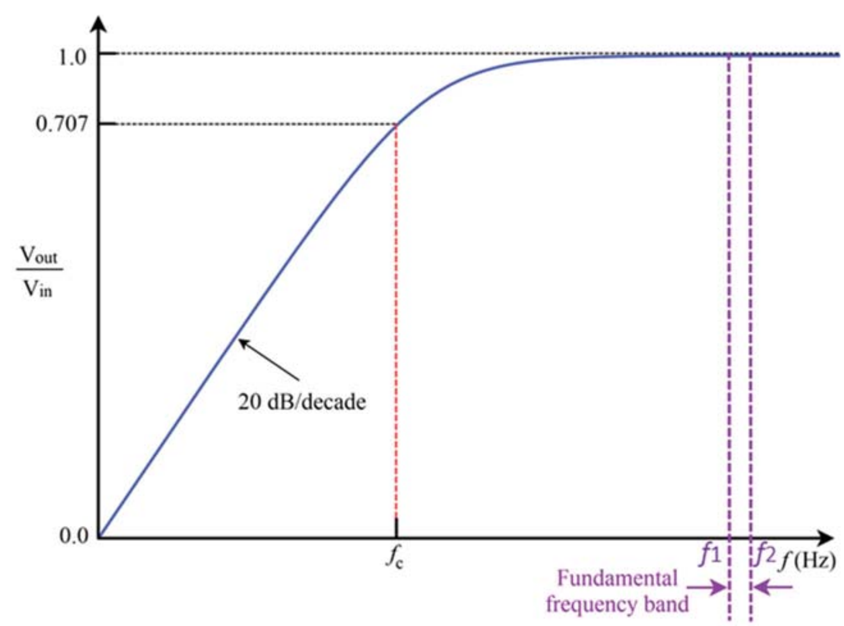
We again begin with the claim language. The term "low-frequency", as used in claim 7 of the '579 Patent, is an adjectival modifier identifying a property of the object of the "inhibiting … using the first capacitor" verb, *i.e.*, a "low-frequency blocker signal", in the larger claim phrase: "inhibiting a *low-frequency* blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor. '579 Patent, Claim 7.

Claim 7 contrasts the respective frequency of "a low-frequency blocker signal" with that of "a fundamental frequency signal." The claim not only requires that these frequencies be different from each other, but it also requires that, using a capacitor, the "low-frequency" signal must be inhibited "from mixing" with the "fundamental frequency" signal. '579 Patent, Claim 7. Accordingly, a POSITA understood that the frequency of the blocker signal must be low enough, relative to the fundamental frequency signal, in order for a capacitor to be usable to "inhibit[]" these signals "from mixing" with each other. Fayed Decl., ¶¶101-105.

The claim language does not provide any meaningful guidance. The words, "blocker signal," does not provide any guideposts since blocker signals come in a range of frequencies, from low to high. Fayed Decl., ¶99. And any given frequency can be "inhibit[ed]" by a capacitor, including those within the fundamental frequency band. Fayed Decl., ¶¶82-85, ¶88.

The specification likewise provides no guideposts, merely parroting the language of claim 7. *See* Abstract, 1:37-40, 1:55-57, 2:2-4, 2:15-17, 2:36-38, 3:7-10, 9:39-41, 9:49-53, 9:67-10:3. The Patent also uses the word "low" in the context of "lower IMD", "ultra-low levels of IMD", and in referring to the well-known "low-noise amplifier (LNA)" component of a wireless device. '579 Patent, 9:15-21, 11:62-64. None of these portions of the specification provide any additional guidance. Fayed Decl., ¶96.

The specification does describe one example of "two or more signals mixing together", where the "[m]ixing of such signals" generates new signal components, including at the frequency sum and the frequency difference of these signals. '579 Patent, 6:24-36, 6:43-53; Fayed Decl., ¶97. The specification does not refer to any of these signals as being a "low-frequency blocker signal", but instead states that the "two signals have fundamental frequencies f_1 and f_2 (f_2>f_1) that are relatively close to each other in frequency space." '579 Patent, 6:24-41. This detail – that f_1 and f_2 are close – suggests this portion of the specification is not addressing the first-capacitor solution. The specification states that "[d]ecreased switching device insertion loss [is] desirable to enable improved RF signal transmission" at a "fundamental frequency." '579 Patent, 5:57-6:6, 6:25-27. An RF switch designer would therefore have to select capacitors with a very low impedance (far right of the frequency response curve) at this fundamental frequency.



Id.; Fayed Decl., ¶¶97-99, 101.

This selected capacitor would likewise achieve a virtually identical level of attenuation (*i.e.*, little to no attenuation) of the lower fundamental frequency f_1 signal (as annotated in purple in the plot above). *Id*.; '579 Patent, 6:24-41; Fayed Decl., ¶¶98, 101. Put simply, the system would not work. *Id*.; *compare* with '579 Patent, claim 7, 9:23-10:3, Figures 9, 10; Fayed Decl., ¶¶97-101. Any given first capacitor would inhibit f_1 and f_2 to essentially the same degree.

Further, the column 6 example also states that the mixing of the f_1 signal with the f_2 signal gives rise to a new noise signal that includes *higher* intermodulation distortion (IMD) frequency components that the Patent's described capacitor solution would not address (since the capacitor would necessarily pass them). '579 Patent, 6:24-41, 9:49-53, 9:59-10:3; Fayed Decl., ¶¶97-98, 78.

Finally, the column 6 example suggests that, relative to a signal having a "fundamental frequenc[y] … f_2", in the spectrum of frequencies between 0 Hz and the lower edge of the band containing this fundamental frequency, there are higher frequency blocker signals (those below, but closer to, the lower edge of this band) and lower frequency blocker signals (those below, but further from the lower edge of this band). *Id*.; Fayed Decl., ¶99.

Terms of degree, like "low-frequency blocker signal," are not inherently indefinite nor do they require mathematical precision in their definition. However, the claims "when read in light of the specification and prosecution history, must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). The fact that a POSITA must first determine the performance needed and then choose a capacitor size based on this performance creates a subjective element that a POSITA must import into the patent. *See Sci. Applications*, 154 Fed. Cl. at 637 ("Because registration depends on context, there are no inherent objective parameters that a POSITA can use to determine the scope of the term."); Fayed Decl., ¶¶92-93, 103.

Other Courts have similar found terms indefinite where they failed to provide these objective boundaries. In *Icon Health & Fitness, Inc. v. Polar Electro Oy*, the Federal Circuit considered a claim for an exercise system comprising "in-band" and "out-of-band" communications. 2016 U.S. App. LEXIS 14482, 656 Fed. App'x. 1008, 1010 (Fed. Cir. August 8, 2016). The defendant argued the terms were ambiguous "without some sort of reference to provide context." *Id.* at 1024. The defendant presented extrinsic references showing that the terms were relative and only had meaning in a given context with a defined reference. *Id.* at 1015. The Court agreed, finding that, since the meaning of the terms was a "moving target," it could not provide a basis for a POSITA to determine what communications were "in-band" vs. "out-of-band." The same is true here. The meaning of "low frequency" requires a tethering reference in the specification. Otherwise, as in *Icon Health*, it would allow the scope to vary "from day-to-day and from person-to-person[.]" *Id.* at 1016.

Cases which have held that similar terms are not indefinite also help illustrate the lack of objective boundaries here. In *United Access Techs., LLC v. AT & T Corp.*, the Court considered whether the term "high frequency," describing frequencies above the highest frequency of the telephone voice band, was indefinite. 2019 U.S. App. LEXIS 2304, 757 Fed. App'x. 960, 968-69 (Fed. Cir. Jan. 24, 2019). The Court found the term there definite, and meant a frequency of at least 0.25 MHz. *Id.* at 971. The key difference is that the specification-at-issue identified both a particular frequency for the voice band and examples of what *particular frequencies which would qualify* as "high frequency":

> The specification makes clear that the lower limit of the term "high frequency" is above the voice band*; the specification identifies the frequency level for the voice*

> *band as going up to .02 MHz* and the frequency level for the transmission of data, including control signals, *as being centered between 0.5 MHz and 20 MHz. See* '596 patent, Figs. 3a, 3b, and 3c. Dr. Jacobsen explained that the frequency band for a control signal centered at 0.5 MHz could range from 0.25 MHz to 0.75 MHz.

Id. at 969-70. The specification of the '579 Patent provides no such guidance. It instead makes the actual bounds of "low-frequency" POSITA and application-dependent. Fayed Decl., ¶¶96, 103, 72, 91-93. Such a term "fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Thus, the term "low frequency" is indefinite.

In short, the intrinsic record does not provide any objective and/or workable boundaries for a POSITA to use in determining the scope of "low-frequency" relative to the fundamental frequency. The claims and the specification barely even talk to each other. The low-frequency blocker signal remains a mystery. The claim is indefinite.

Skyworks's proposed construction ("below the lower edge of the band containing the fundamental frequency") cannot and does not save the claim.

For starters, many of Skyworks's alleged "low-frequency blocker signals" would have frequency values close to the "fundamental frequency." Fayed Decl., ¶¶101-102. As discussed above, the capacitor would impede both essentially equally, not merely the blocker signal. Fayed Decl., ¶88. This is problematic since the claimed system would only work for frequencies well below (to the left of) the target RF "pass" band. For example, a blocker signal frequency at the "cut-off frequency" (f_c) of the capacitor (annotated with a red dashed line above), the claimed solution would reduce the blocker signal to ~71% of its original amplitude and, accordingly, the amplitude of the "mixing" result signal, from multiplying the reduced blocker signal amplitude by the amplitude of the fundamental frequency signal, would be somewhat improved (compared to an RF switch without the claimed capacitor). Fayed Decl., ¶¶101, 103.

For a blocker signal at 1/10th of the "cut-off frequency" (f_c), the claimed solution would reduce the blocker to ~10% of its original amplitude and, accordingly, the amplitude of the "mixing" result signal, from multiplying the reduced blocker signal amplitude by the amplitude of the fundamental frequency signal, would be substantially improved (compared to an RF switch without the claimed capacitor). Fayed Decl., ¶104.

In short, Skyworks's proposal not only includes far too much bandwidth – *i.e.,* up to frequencies so close to the operating fundamental frequency as to render the claim unworkable – the math underlying the system demonstrates the lack of objective standards.

3. Indefiniteness Can Be Reserved for the Evidentiary Hearing.

"Inhibiting" and "low frequency" are sufficiently lacking in objective boundaries that their indefiniteness is apparent on the present record. Indeed, Courts often decide indefiniteness issues during the *Markman* process. But Courts need not, if a further evidentiary record is needed. For instance, where an indefiniteness dispute raises issues factual in nature, the question can be decided later, at trial. *See Bombardier Recreational Products Inc. v. Arctic Cat Inc.*, 785 Fed. Appx. 858, 867 (Fed. Cir. 2019) ("We have held that indefiniteness 'is amenable to resolution by the jury where the issues are factual in nature.'") (quoting *BJ Servs. Co. v. Halliburton Energy Servs., Inc.*, 338 F.3d 1368, 1372 (Fed. Cir. 2003)). Reserving indefiniteness for trial allows a fact finder to first address the underlying factual issues before addressing the question of indefiniteness. *Id.* In *Bombardier*, for example, the evidence presented was almost entirely extrinsic. *Id; see also BJ Services Co. v. Halliburton Energy Services, Inc.,* 338 F.3d 1368, 1372 (Fed. Cir. 2003) ("Like enablement, definiteness, too, is amenable to resolution by the jury where the issues are factual in nature.").

As discussed above, the claims and specification provide no meaningful guidance as to the meaning of either "inhibiting" or "low frequency." Nor do the claims. "Inhibiting" is defined, at best, inconsistently and "low frequency" is not defined at all. Per KCT's expert, Dr. Fayad, a POSITA would not understand either "inhibiting" or "low frequency" without first imparting their own subjective requirements into the claims. Skyworks, presumably, intends to present its own expert testimony to attempt to rebut Dr. Fayad's testimony. Such a scenario, *i.e.,* "warring expert testimony," could present underlying factual questions better saved for trial. *Bombardier*, 785 Fed. Appx. At 867 ("The evidence presented on these topics was almost exclusively extrinsic, *in large part encompassing warring expert testimony*.") (emphasis added); *see also Nomadix, Inc. v. Guest-Tek Interactive Entm't Ltd.*, 2020 WL 6821319, at 6 (C.D. Cal. Oct. 27, 2020) (declining to decide indefiniteness issues at the summary judgment stage where the parties relied heavily on *inter alia* expert testimony and the extrinsic evidence was conflicting as to whether a POSITA would understand a particular fact to be true). Additionally, many of the issues surrounding "inhibiting" and "low frequency" are largely practical. Seeing experts attempt to apply Skyworks's construction to actual circuits will help demonstrate its unworkability. Thus, the Court should wait until fact and expert presentations' have been completed to rule on indefiniteness. *See e.g, DuraSystems Barriers Inc. v. Van-Packer Co.*, 2021 WL 4037826, at 7 (C.D. Ill. Sept. 3, 2021) ("Given these raised stakes (along with the raised burden on indefiniteness), the Court sees little harm in waiting until it has a fuller picture of this case to make them."); *Uretek Holdings, Inc. v. YD W. Coast Homes, Inc.*, 2016 WL 3021880, at 3 (M.D. Fla. May 26, 2016) ("The Court agrees with those courts that have declined to rule on indefiniteness at the *Markman* stage, and finds that it would be more appropriate and logical to defer the full consideration of any potential indefiniteness challenge to the summary judgment stage, after all fact and expert discovery has been completed.").

IV. AGREED CLAIM TERMS

The parties have agreed to certain constructions in the Group I patents that concern how and why the correction current is generated..

A. Group I - The ’101 Patent - “time-dependent signal generator”

Claim Term	Agreed Construction
“time dependent signal generator configured to shape an enable signal of the power amplifier to generate a control current” / “shaping an enable signal using a time-dependent signal generator to generate the control current” (claims 1, 2, 10, 11, 17, 18, 20, 21, and 22)	Plain meaning, which is “a circuit configured to change an enable signal of the power amplifier to achieve a desired shape of a control current, where the control current changes based on time” / “changing an enable signal using a circuit to achieve a desired shape of a control current, where the control current changes based on time”

The parties’ agreed constructions correctly describe the “time-dependent signal generator” claim limitations, clarifying that the time-dependent signal generator is a circuit that changes a power amplifier enable signal to shape a control current over time.

As the text of the claims indicates, the time-dependent signal generator generates a control current that changes over time (ultimately with the goal of addressing the natural warm-up lag of the PA, described above and below), The specification corroborates this in its discussion of Figures 4 and 5. First, Figure 4 (below) discloses a schematic block diagram of the claimed system. It includes a power amplifier bias block 50, which in turn includes a “time-dependent signal generator 72” that “can be used to generate a control current $I_{CONTROL}$ when the enable signal ENABLE is transitioned from a disable state to an enable state.” ’101 Patent 8:64-66, 9:47-50. Figure 5 (also below) in turn discloses an exemplary resistor-capacitor circuit 82 that generates the time-dependent signal ($I_{CONTROL}$) shaped with an initial boost before setting into a steady state, and this RC circuit 82 operates as a time-dependent signal generator. ’101 Patent 10:18-25. The control current $I_{CONTROL}$ is shaped by the RC circuit 82 using the capacitor

90 and resistor 92 in RC circuit 82. ’101 Patent 10:37-47. The time-dependent signal generator thus generates a time-dependent signal in the form of control current $I_{CONTROL}$ that is adapted to change over time to address the low gain just after the power is enabled.

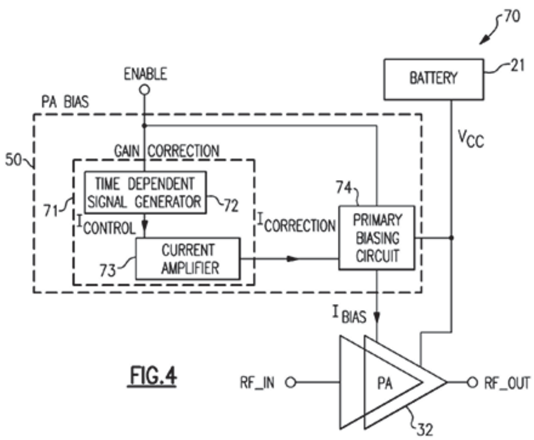


FIG.4

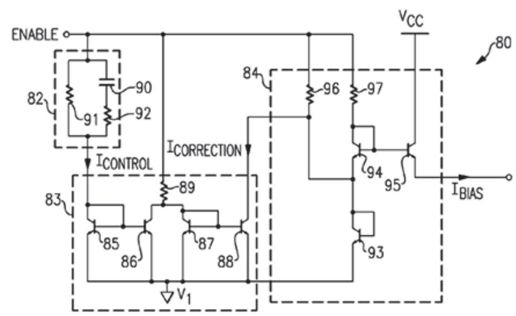


FIG.5

The parties’ agreed construction thus captures these concepts, namely a circuit that, in response to the activation of the enable signal, shapes the enable signal to generate a control current that changes based on time (e.g. an initial boost).

B. Group I – The ’563 Patent – “gain correction circuit”

Claim Term	Agreed Construction
“a gain correction circuit configured to generate a control current in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current” (claims 14, 15, 17, and 20)	Plain meaning, which is “a circuit for gain correction of the power amplifier configured to generate a control current in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current”

The parties’ agreed constructions correctly describe the “gain correction circuit” claim limitations, clarifying that the gain correction circuit must be directed to correcting a gain variation of the PA (e.g. the natural start-up/warm-up low gain phenomenon).

As the text of the claims make clear, the claimed system is directed to addressing biasing of the PA, to “correct” something about the PA’s gain. ‘563 Patent, claim 14. The asserted claims of the ’563 Patent all recite limitations relating to a “gain correction circuit” that, in response to the activation of a power amplifier enable signal, generates a control current and then mirrors that control current to generate a correction current. The ’563 Patent explains that “the power amplifier bias block 50 includes a gain correction block 71” which “includes a time-dependent signal generator . . .72 and a current amplifier 73.” ’563 Patent 9:32-35. The time-dependent signal generator, discussed above for the relevant limitation in the ’563 Patent thus generates a control current, and the current amplifier then amplifies that control current to generate a correction current $I_{CORRECTION}$, and this causes the power amplifier to have a substantially constant gain over time. ’101 Patent 9:47-64. The ’563 Patent explains, with reference to Figure 5, that a current mirror 83 amplifies the control current $I_{CONTROL}$ to generate a correction current $I_{CORRECTION}$, and this has the advantage of reducing the size of the components of the RC circuit 82. ’101 Patent 10:62-11:6. All of this is done to correct the low gain of the power amplifier just after startup. ’563 Patent 4:32-55.

The parties’ agreed construction correctly captures these concepts, namely it describes a circuit that corrects the gain of the power amplifier that generates a control current in response to the activation of the power amplifier enable signal, and then mirrors that control current to generate a correction current.

V. CONCLUSION

For the reasons set forth above, the Court should adopt Respondents’ proposed constructions.

Dated: December 23, 2024

Respectfully Submitted,

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Dated: December 23, 2024

CERTIFICATE OF SERVICE

I, D.B. "Brandy" Swanson, hereby certify that on December 23, 2024, the **RESPONDENTS' MARKMAN BRIEF (PUBLIC)** was served upon the following parties as indicated:

The Honorable Lisa R. Barton Secretary U.S. International Trade Commission 500 E Street, SW Washington, DC 20436	☐ **Via hand delivery** ☐ **Via courier (FedEx)** ☐ **Via facsimile** ☐ **Via first class mail** ☒ **Via EDIS**
The Honorable MaryJoan McNamara Administrative Law Judge U.S. International Trade Commission 500 E Street, SW Washington, DC 20436 Email: McNamara337@usitc.gov	☐ **Via hand delivery** ☐ **Via courier (FedEx)** ☐ **Via facsimile** ☐ **Via first class mail** ☒ **Via electronic mail**
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