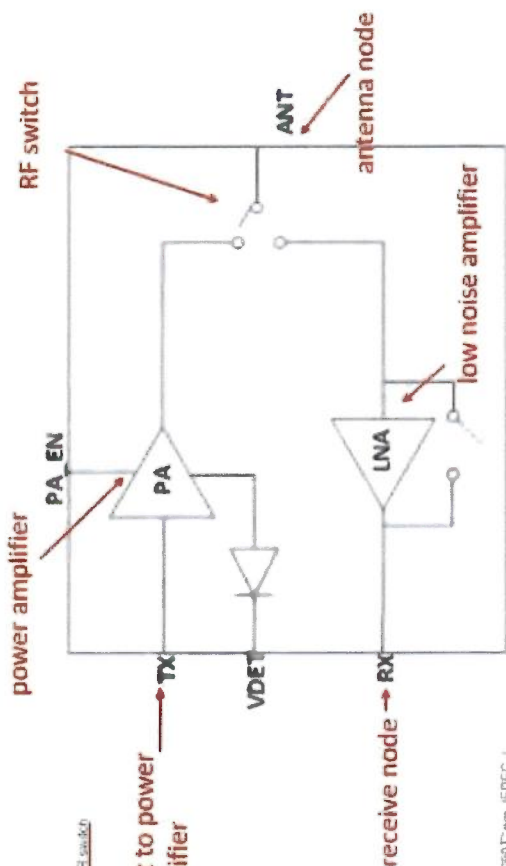
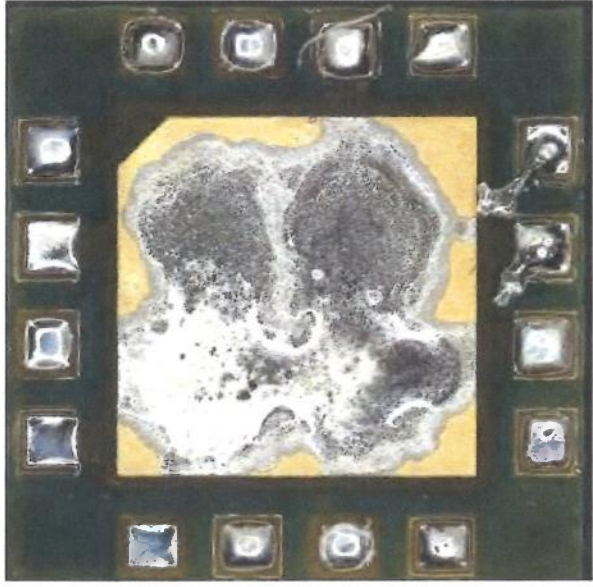


Claim	KCT8539S
	For example, the KCT8539S has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁴ The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated 302.11m 5GHz PA, LNA with broasis and 1-R switch</u> Fully-matched input and output Integrated power detector Transmit gain 30dB at 5V Receive gain 14dB at 5V Noise Figure 2.8dB at 5V Output power +17dBm @ 43dB DEVM HE160/MCS11 5V +20dBm @ 40dB DEVM HE160/MCS11 5V +21.5dBm @ 34dB DEVM VHT-BUMCS9 5V +22.5dBm @ 30dB DEVM HT20/MCS7 5V ESD protection circuitry on all I/Os Minimal external components required Small package: LGA-19L 3mmx3mmx0.85mm (MSL 3 260 C on JEDEC J-STD-020) RoHS and REACH Compliant 

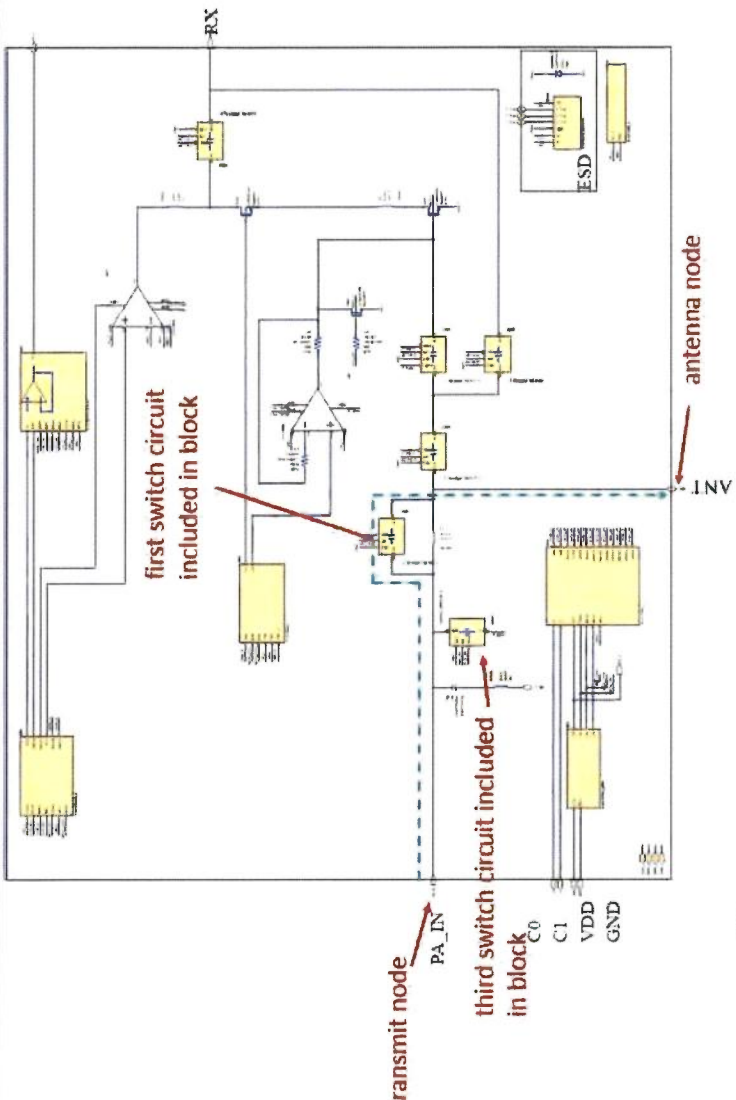
⁴ See <https://perma.cc/DA7F-4CED>.

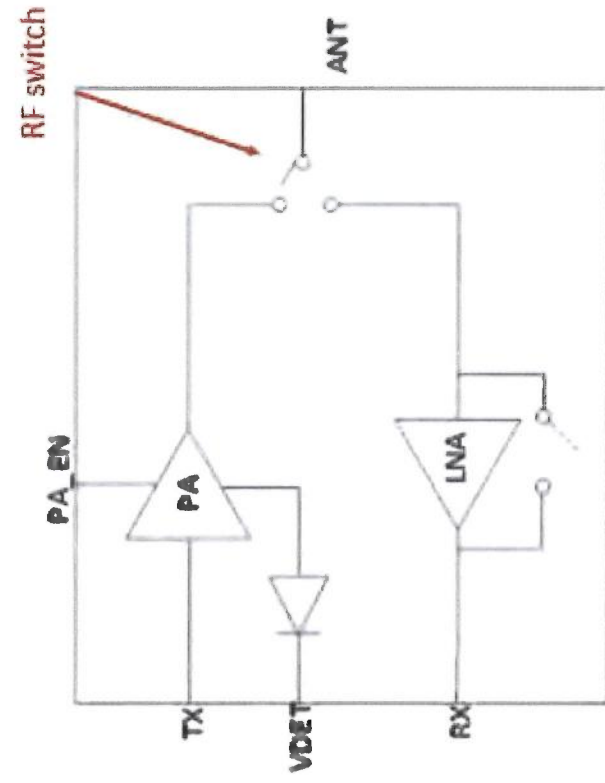
Claim	KCT8539S For example, the photos below show the exterior of the KCT8539S device die package, front (left) and back (right).
	  See, e.g. photo of the KCT8539S product, exterior of package, front (left) and back (right).
7[A] providing an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground. See <i>also</i>, claims 1[pre]-1[F], 7[pre].	The KCT8539S provides an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground. See <i>also</i>, claims 1[pre]-1[F], 7[pre].

Claim	KCT8539S
circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuitry between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground;	

Claim	KCT8539S
7[B] controlling an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state;	The KCT8539S controls an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state. For example, the KCT8539S has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁵ The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

⁵ See <https://perma.cc/DA7F-4CED>.

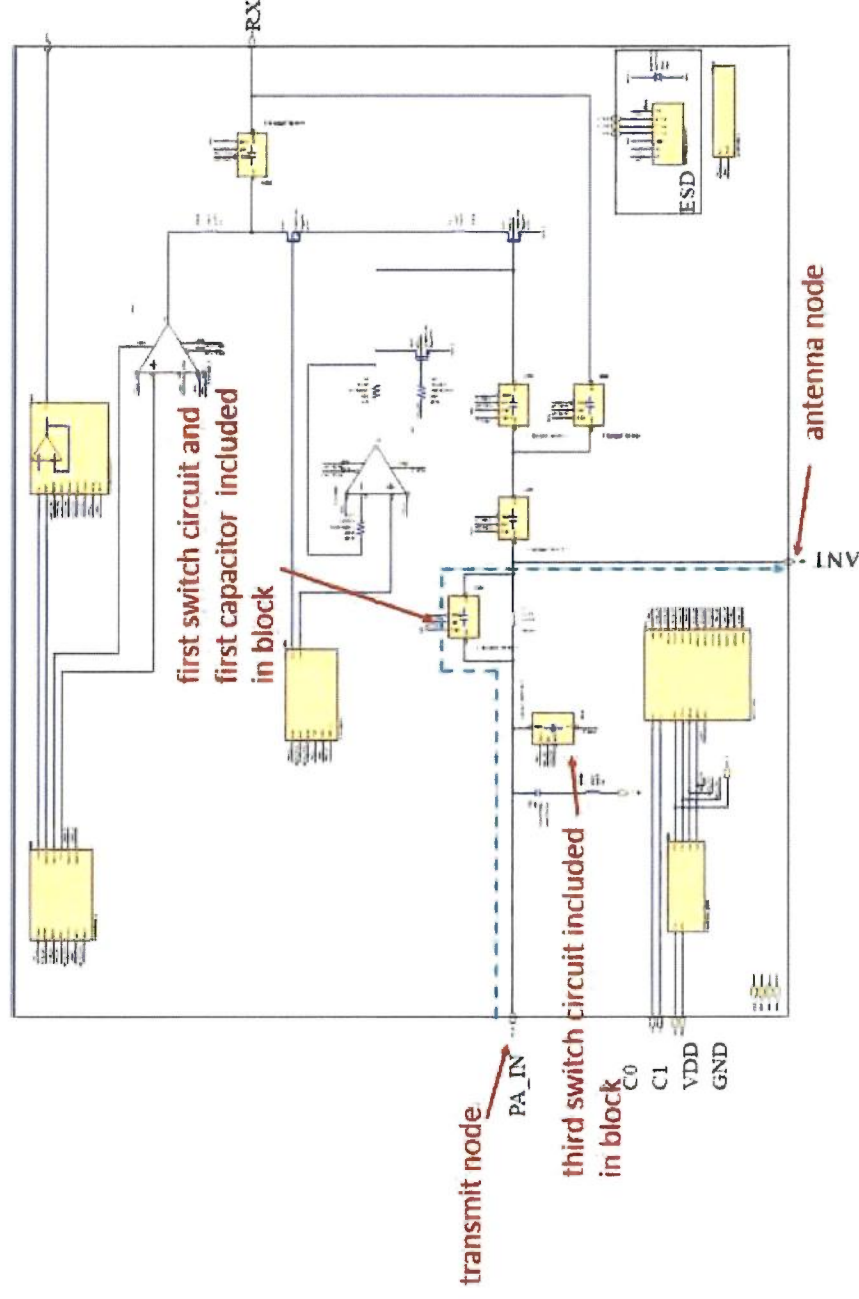
Claim	KCT8539S  transmit node first switch circuit included in block third switch circuit included in block antenna node PA_IN RX ESD C0 C1 VDD GND INV See, e.g., reverse engineered circuit schematic of the KCT8539S product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node. See also, claim 7 [pre]. 7[C] inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor.
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Claim a fundamental-frequency signal in the RF switch using the first capacitor.	KCT8539S For example, during use, the first capacitor inhibits a low frequency blocker signal from mixing with a fundamental frequency signal in the RF switch (indicated by the corresponding red arrow below).  See, e.g., KCT8539S simplified block diagram, https://perma.cc/DA7F-4CED. For example, in the KCT8539S, the positioning of the first capacitor (indicated by the corresponding red arrow pointing to the corresponding block below) between the antenna node (indicated by the corresponding red arrow below) and the first switch circuit (indicated by the corresponding arrow pointing to the corresponding block below) performs this function. The first capacitor filters the low frequency signal because the low frequency signal, in contrast to a high frequency signal, allows the capacitor time to charge. This charging process stops the low
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Claim

KCT8539S

frequency signal from continuing along the signal path during transmission (indicated by the green dashed line below).

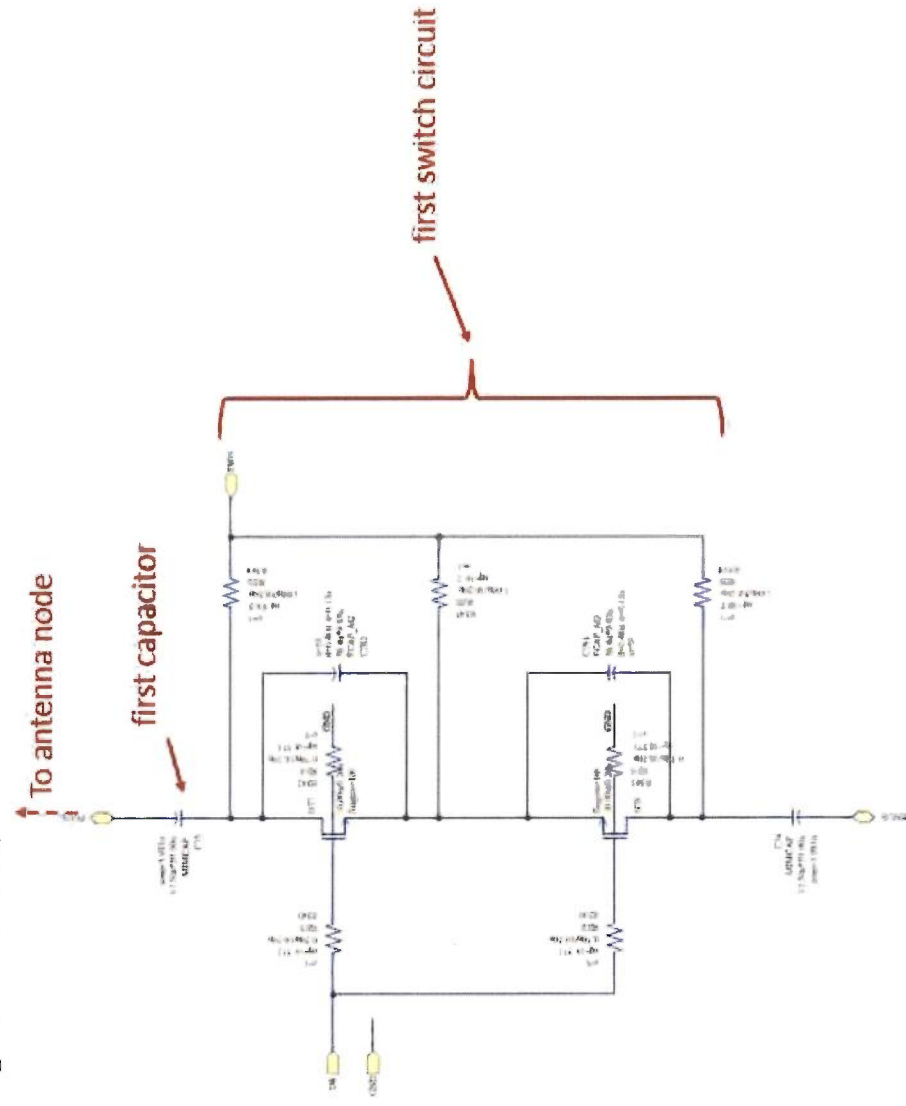


See, e.g., reverse engineered circuit schematic of the KCT8539S product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node.

Claim

KCT8539S

For example, in this expanded view of the block containing the first capacitor and first switch circuit, the first capacitor (indicated by the corresponding red arrow below) is between the antenna node (indicated by the corresponding red arrow below) and the first switch circuit (indicated by the corresponding arrow pointing to the corresponding red bracket below).



Claim	KCT8539S
	See, e.g., reverse engineered circuit schematic of the KCT8539S product showing the first switch circuit and first capacitor on the low noise amplifier die.

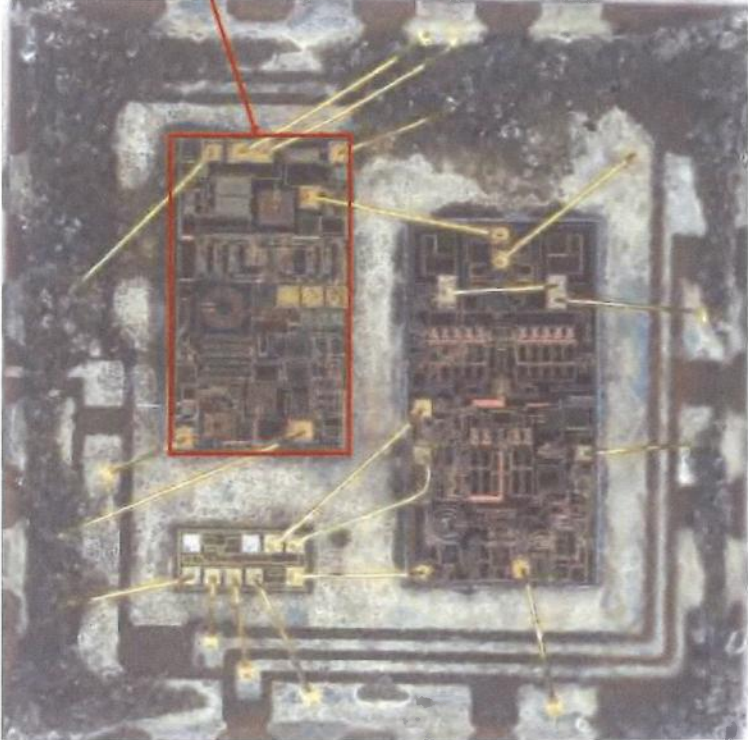
EXHIBIT 21

EXHIBIT 21
SKYWORKS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8547HE
U.S. Patent No. 9,450,579
Independent Claims 1 and 7

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claims 1 and 7 of U.S. Patent No. 9,450,579 (the "'579 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd.'s and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8547HE product. The disclosures in this claim chart directed to the KCT8547HE are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8547HE in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claims to corresponding components, aspects, and/or features of the KCT8547HE product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

The analysis set forth below is based only upon information from publicly available sources regarding the KCT8547HE product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8547HE product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claims or as other circumstances so merit.

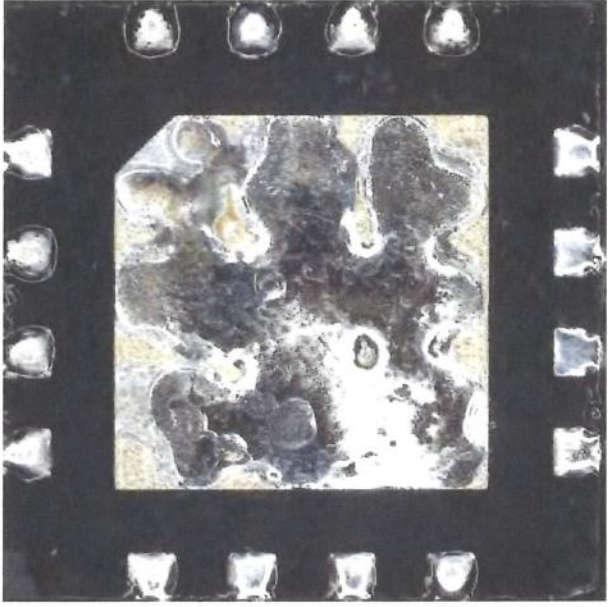
Claim	KCT8547HE
1[pre] A semiconductor die comprising:	To the extent that the preamble is limiting, the KCT8547HE comprises a semiconductor die. For example, the KCT8547HE has a semiconductor die, highlighted by the red box below.  semiconductor die See, e.g., photo of the KCT8547HE product identifying the semiconductor die.

Claim	KCT8547HE
	For example, the KCT8547HE product description below states that the KCT8547HE is an “RF Front-end Module” that is a “highly integrated RF Front-End Integrated Circuit incorporat[ing] key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”¹ KCT8547HE-1 5GHz Mid Power 802.11ax RF Front-end Module Introduction KCT8547HE-1 is a highly integrated RF Front-End Integrated Circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8547HE-1 integrates a high-efficiency high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and harmonic filters all in one device. KCT8547HE-1 has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8547HE-1 is assembled in a compact, low-profile 3x3x0.55mm 16-lead MIS package. KCT8547HE-1 is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8547HE product description, https://perma.cc/GV2Y-HD8A.

¹ See <https://perma.cc/GV2Y-HD8A>.

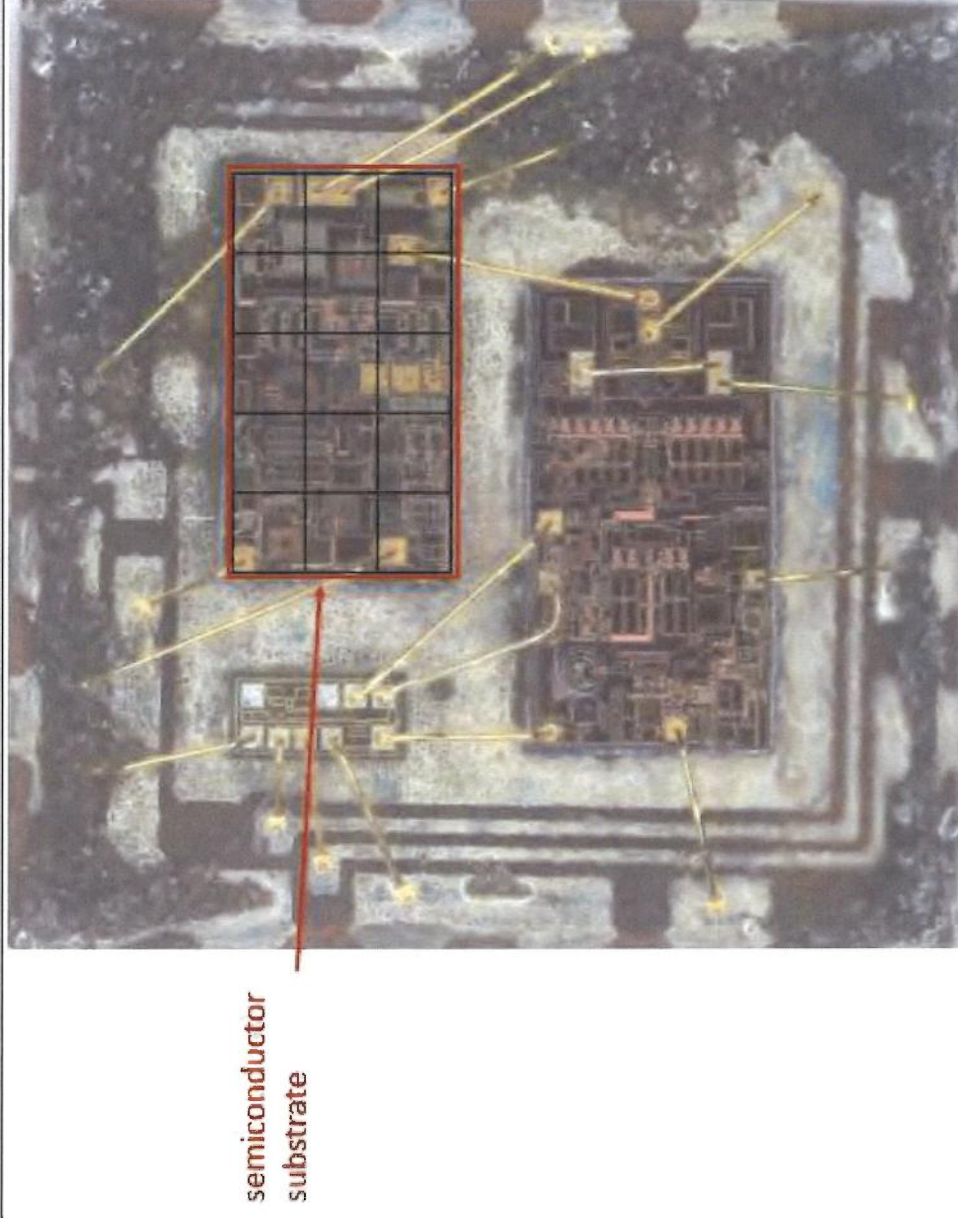
Claim	KCT8547HE For example, the KCT8547HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch</u> Fully-matched input and output Integrated power detector Transmit gain: 29dB at 5V Receive gain: 16dB at 5V Noise Figure: 1.6dB at 5V Output power: +17dBm @ -43dB EVM, MET60/MCS11, 5V +19dBm @ -40dB EVM, HE160/MCS11, 5V +20.5dBm @ -35dB EVM, VHT80/MCS9, 5V +21.5dBm @ -30dB EVM, HT20/MCS7, 5V Integrated 2.4GHz Notch Filter ESD protection circuitry on all pins Simplified external components required Small package: M1S-16L 3mm x 3mm x0.55mm MSL1, 260°C per JEDEC J-STD-020 RoHS and REACH compliant The diagram shows a block diagram of the KCT8547HE chip. It includes a PA (Power Amplifier) block, an LNA (Low Noise Amplifier) block, and an RF switch block. The PA block has an input labeled 'TX' and an output labeled 'ANT'. The LNA block has an input labeled 'RX' and an output labeled 'ANT'. The RF switch block is connected to the PA and LNA outputs. Red arrows point to the following components: 'input to power amplifier' (pointing to the TX input), 'power amplifier' (pointing to the PA block), 'RF switch' (pointing to the RF switch block), 'antenna node' (pointing to the ANT output), 'receive node' (pointing to the RX input), and 'low noise amplifier' (pointing to the LNA block). The chip also has pins labeled PA_EN, TX, VDET, RX, C0, and C1.
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² See <https://perma.cc/GV2Y-HD8A>.

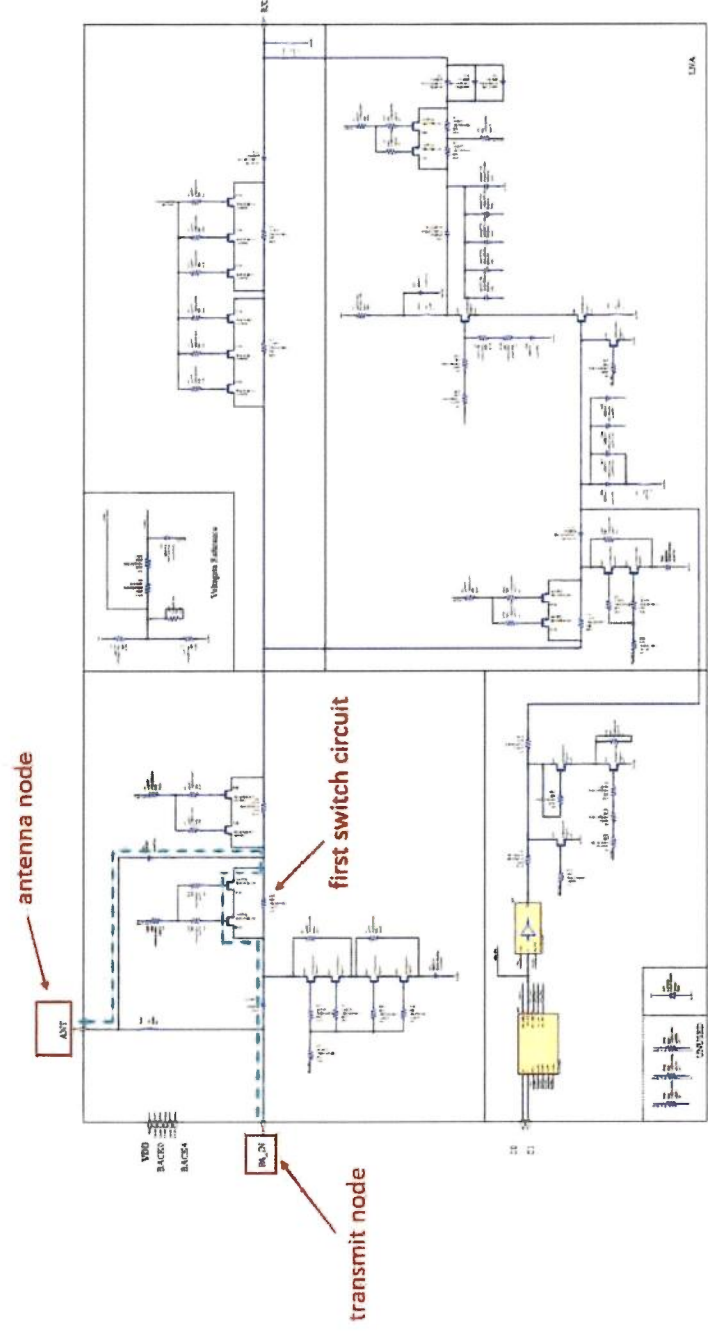
Claim	KCT8547HE
	See, e.g., KCT8547HE product description and simplified block diagram, https://perma.cc/CV2Y-HD8A. For example, the photos below show the exterior of the KCT8547HE device die package, front (left) and back (right).   See, e.g. photo of the KCT8547HE product, exterior of package, front (left) and back (right).
1[A] a semiconductor substrate;	The KCT8547HE comprises a semiconductor substrate. For example, a semiconductor substrate for the KCT8547HE (indicated by black grid lines below) is the material upon which the devices on the die are fabricated.

Claim

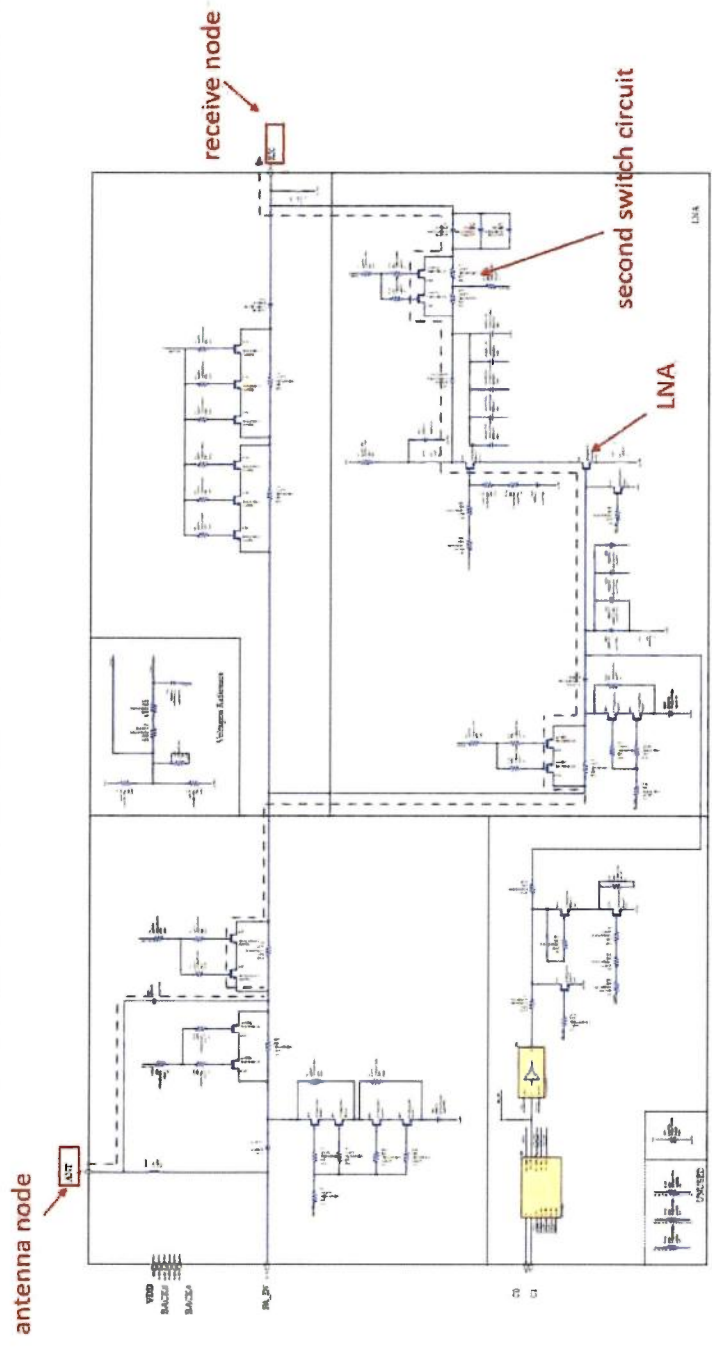
KCT8547HE

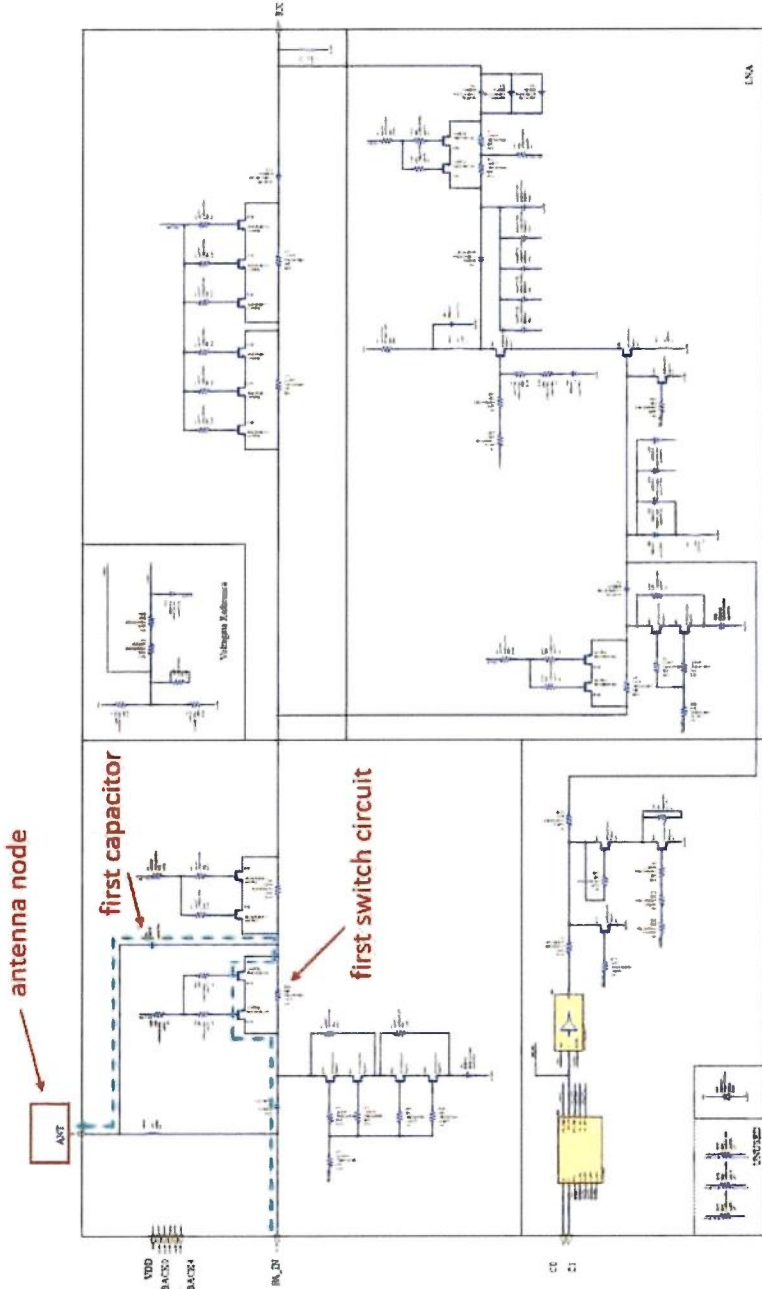


See, e.g., photo of the KCT8547HE product, annotated to show the location of the semiconductor substrate.

Claim	KCT8547HE
1[B] a first switch circuit formed on the semiconductor substrate connected between an antenna node and a transmit node;	The KCT8547HE comprises a first switch circuit formed on the semiconductor substrate connected between an antenna node and a transmit node. For example, in the KCT8547HE, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node (“ANT,” highlighted by the red box) and the transmit node (“PA IN,” highlighted by the red box). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the dashed green line below. The first switch circuit is formed on the semiconductor substrate.  The diagram illustrates the internal circuitry of the KCT8547HE. It features a first switch circuit (indicated by a red arrow) connecting the antenna node (ANT, in a red box) to the transmit node (PA_IN, in a red box). The circuit includes several transistors (M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, M20, M21, M22, M23, M24, M25, M26, M27, M28, M29, M30, M31, M32, M33, M34, M35, M36, M37, M38, M39, M40, M41, M42, M43, M44, M45, M46, M47, M48, M49, M50, M51, M52, M53, M54, M55, M56, M57, M58, M59, M60, M61, M62, M63, M64, M65, M66, M67, M68, M69, M70, M71, M72, M73, M74, M75, M76, M77, M78, M79, M80, M81, M82, M83, M84, M85, M86, M87, M88, M89, M90, M91, M92, M93, M94, M95, M96, M97, M98, M99, M100) and capacitors (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100). A voltage divider section is also shown. The signal path from the transmit node through the first switch circuit to the antenna node is highlighted by a dashed green line. The diagram is labeled with VDD, BACKG3, BACKG4, and a voltage divider section.

Claim	KCT8547HE
	See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, annotated to show the location of a first switch circuit, transmit node, and antenna node. See also, 1[pre]-1[A].
1[C] a second switch circuit formed on the semiconductor substrate and connected between the antenna node and a receive node;	The KCT8547HE comprises a second switch circuit formed on the semiconductor substrate and connected between the antenna node and a receive node. For example, in the KCT8547HE, the second switch circuit (indicated by the corresponding red arrow below) is connected between the antenna node ("ANT," highlighted by the red box) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. The second switch circuit is formed on the semiconductor substrate.

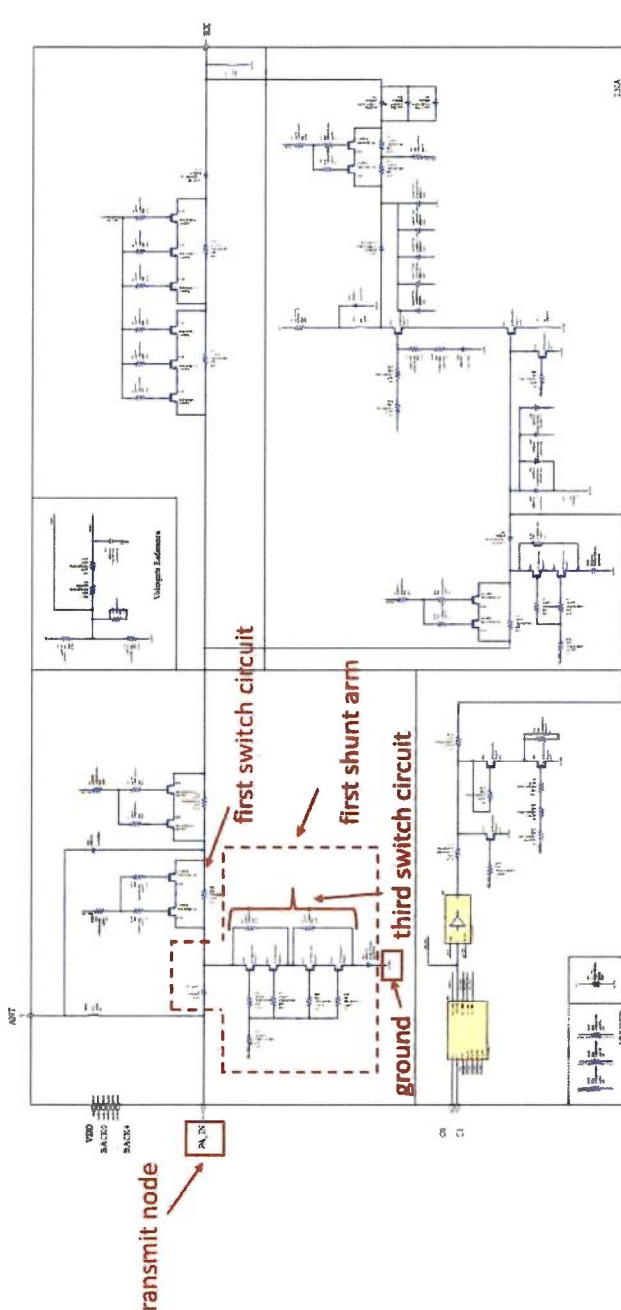
Claim	KCT8547HE
	 The schematic diagram illustrates the internal circuitry of the KCT8547HE. It features a central horizontal line representing a common signal path. On the left, a section labeled 'antenna node' includes a matching network with inductors and capacitors, connected to an external antenna symbol. On the right, a section labeled 'receive node' includes a low noise amplifier (LNA) and a second switch circuit. The LNA is depicted with a complex internal structure of transistors and capacitors. The second switch circuit is shown as a network of transistors and capacitors. The entire circuit is powered by a VDD supply and includes various biasing and matching components. A legend at the bottom right indicates that the yellow shaded area represents the 'CONNECTED' state.
1[D] a first capacitor formed on the semiconductor substrate and	See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier (LNA), and antenna node. See also, 1[pre]-1[A].
the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8547HE, the first capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the first switch circuit (indicated by the corresponding	The KCT8547HE comprises a first capacitor formed on the semiconductor substrate and connected in series with the first switch circuit between the first switch circuit and the antenna node.

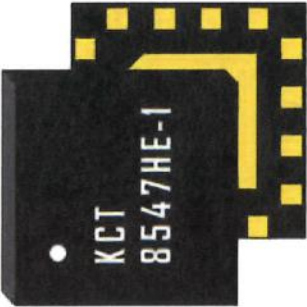
Claim	KCT8547HE
connected in series with the first switch circuit between the first switch circuit and the antenna node;	red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is located between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).  The diagram is a detailed circuit schematic for the KCT8547HE. It shows the internal components and their interconnections. Key elements include: ANT: Antenna node, represented by a small rectangle on the left. first capacitor: Indicated by a red arrow pointing to a capacitor symbol between the ANT and the first switch circuit. first switch circuit: Indicated by a red arrow pointing to a complex circuit of transistors and capacitors. ENA: Low noise amplifier die, shown as a large block on the right. Other components: Various capacitors, inductors, and transistors are shown throughout the circuit, with labels like VDD, BAKT3, BAKT4, and BAKT5.

See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node.

Claim	KCT8547HE
	See also, 1[A].
1[E] a second capacitor formed on the semiconductor substrate and connected in series with the second switch circuit between the second switch circuit and the antenna node;	The KCT8547HE comprises a second capacitor formed on the semiconductor substrate and connected in series with the second switch circuit between the second switch circuit and the antenna node. For example, in the KCT8547HE, the second capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT).

Claim	KCT8547HE
	The schematic diagram illustrates the internal circuitry of the KCT8547HE. It features a central horizontal line representing a common signal path. On the left, an 'antenna node' is indicated by a red arrow pointing to a small rectangular component. To the right of the antenna node, the circuit branches into several functional blocks. A 'receive node' is marked with a red arrow pointing to a specific junction. Further right, a 'second capacitor' is shown as a component in the signal path. Below the main signal line, a 'second switch circuit' is depicted, consisting of multiple transistors and capacitors. To the right of the switch circuit, a 'LNA' (Low Noise Amplifier) block is shown, also indicated by a red arrow. The diagram includes various electronic symbols for capacitors, inductors, and transistors, along with labels for different sections of the circuit.
1[F] a first shunt arm formed on the semiconductor substrate and connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground. For example, in the KCT8547HE, the first shunt arm (indicated by the dashed line box below) is formed on the semiconductor substrate and is connected to the first switch circuit (indicated by the corresponding red arrow	See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, annotated to show the second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna node. See also, 1[A].

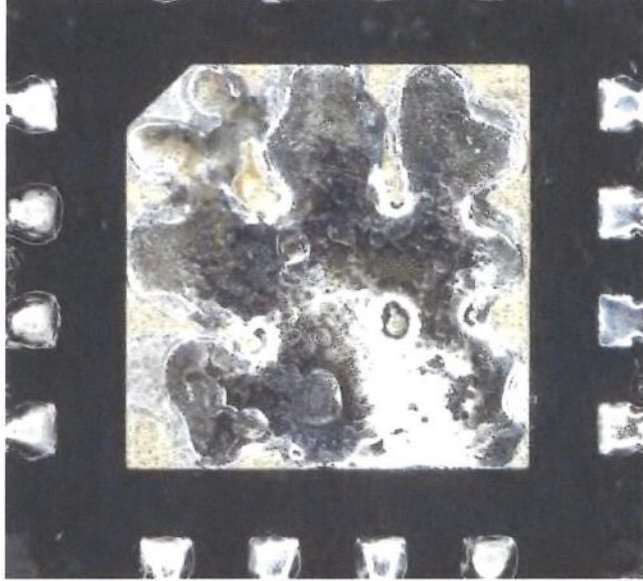
Claim connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.	KCT8547HE below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red bracket below) connected to ground (BACK3) (indicated by the corresponding red arrow below).  See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die identifying the transmit node, the first switch circuit, first shunt arm, third switch circuit, and ground. See also, 1[A].
7[pre]. A method for operating a radio-frequency	To the extent that the preamble of claim 7 is limiting, the KCT8547HE performs a method for operating a radio-frequency (RF) device, comprising the steps shown below and for claim elements 7[A]-7[C].

Claim	KCT8547HE
(RF) device, the method comprising:	For example, the KCT8547HE product description below states that the KCT8547HE is an “RF Front-end Module” that is a “highly integrated RF Front-End Integrated Circuit incorporat[ing] key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”³  KCT8547HE-1 5GHz Mid Power 802.11ax RF Front-end Module Introduction KCT8547HE-1 is a highly integrated RF Front-End Integrated Circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8547HE-1 integrates a high-efficiency high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and harmonic filters all in one device. KCT8547HE-1 has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8547HE-1 is assembled in a compact, low-profile 3x3x0.55mm 16-lead MIS package. KCT8547HE-1 is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8547HE product description, https://perma.cc/GV2Y-HD8A.

³ See <https://perma.cc/GV2Y-HD8A>.

Claim	KCT8547HE
	For example, the KCT8547HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁴ The KCT product description describes the switch as a transmit/receive “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch</u> Fully-matched input and output Integrated power detector Transmit gain: 29dB at 5V Receive gain: 16dB at 5V Noise Figure: 1.6dB at 5V Output power: +17dBm @ -43dB EVM, HE160/MCS11, 5V +19dBm @ -40dB EVM, HE160/MCS11, 5V +20.5dBm @ -35dB EVM, VHT80/MCS9, 5V +21.5dBm @ -30dB EVM, HT20/MCS7, 5V Integrated 2.4GHz Notch Filter ESD protection circuitry on all PINK Simplified external components required Small package: MSL-16L 3mm x 3mm x0.55mm MSLT 260°C per JEDEC J-STD-020 ROHS and REACH Compliant See, e.g., KCT8547HE product description and simplified block diagram, https://perma.cc/GV2Y-HD8A.

⁴ See <https://perma.cc/GV2Y-HD8A>.

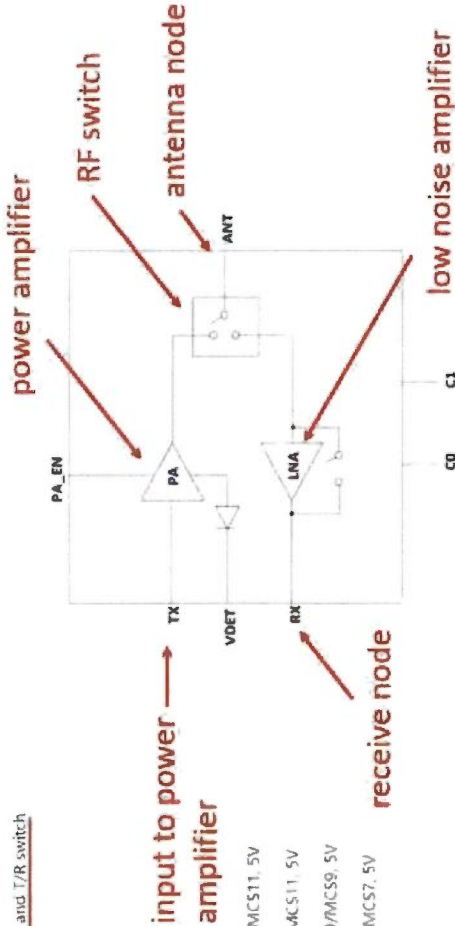
Claim	KCT8547HE
	For example, the photos below show the exterior of the KCT8547HE device die package, front (left) and back (right).   See, e.g. photo of the KCT8547HE product, exterior of package, front (left) and back (right).
7[A] providing an RF device including a first switch circuit connected between an antenna node and	The KCT8547HE provides an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.

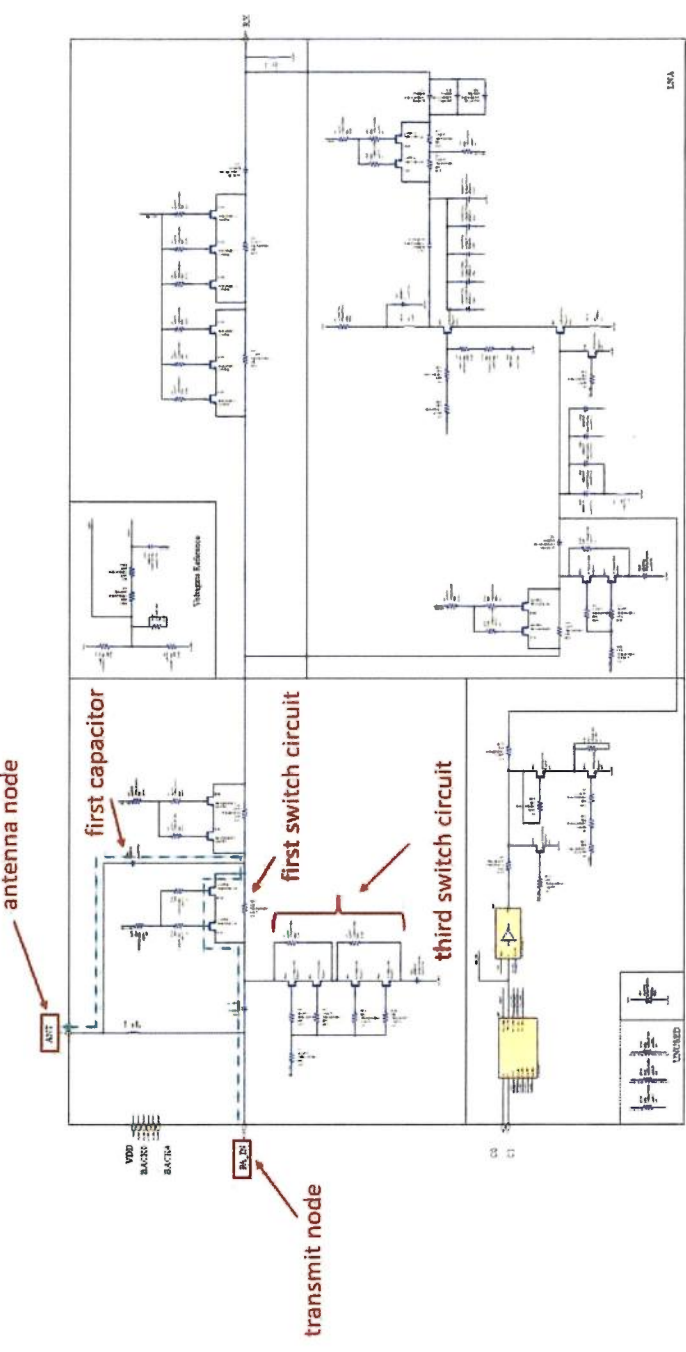
Claim	KCT8547HE
a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch	For example, the KCT8547HE is an RF device. The KCT8547HE product description below states that the KCT8547HE is an “RF Front-end Module” that is a “highly integrated RF Front-End Integrated Circuit incorporat[ing] key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”⁵ KCT8547HE-1 5GHz Mid Power 802.11ax RF Front-end Module Introduction KCT8547HE-1 is a highly integrated RF Front-End Integrated Circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8547HE-1 integrates a high-efficiency high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and harmonic filters all in one device. KCT8547HE-1 has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8547HE-1 is assembled in a compact, low-profile 3x3x0.55mm 16-lead MIS package. KCT8547HE-1 is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8547HE product description, https://perma.cc/GV2Y-HD8A.

⁵ See <https://perma.cc/GV2Y-HD8A>.

Claim	KCT8547HE
circuit connected to ground;	See <i>also</i> , claims 1 [pre]-1 [F], 7 [pre].
7[B] controlling an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state; and	The KCT8547HE controls an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state. For example, the KCT8547HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁶ The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

⁶ See <https://perma.cc/GV2Y-HD8A>.

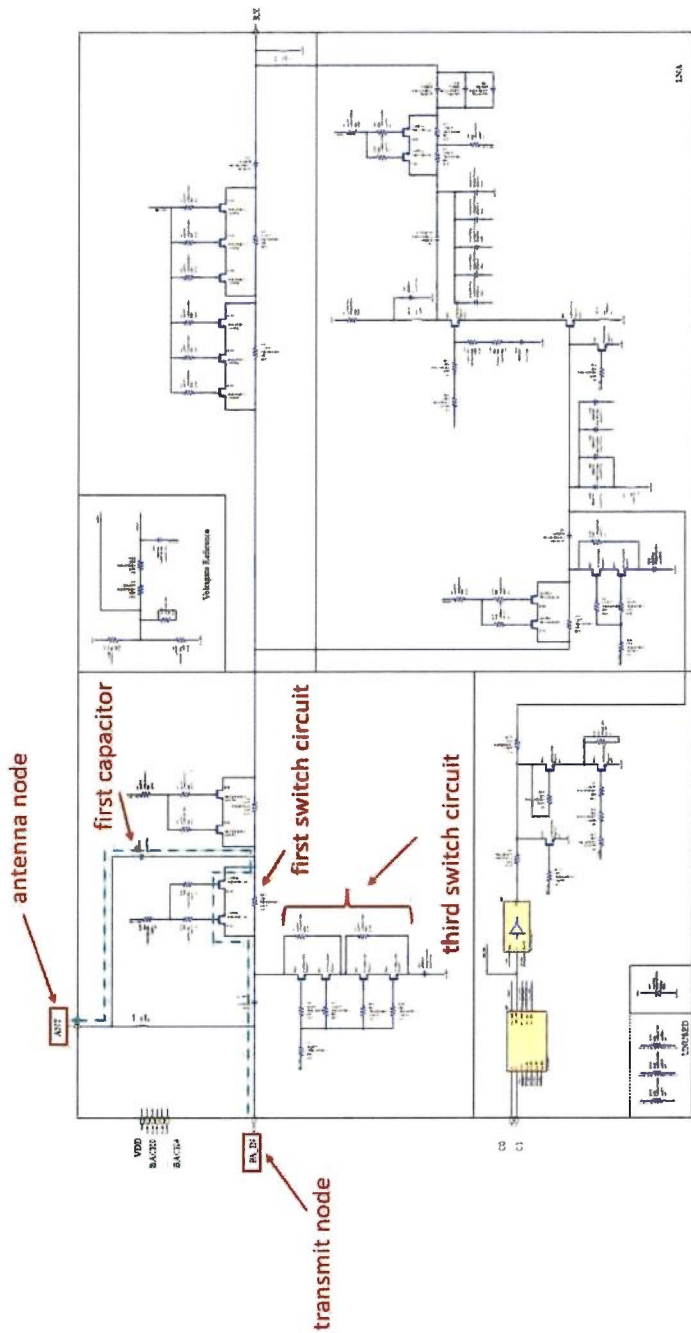
Claim	KCT8547HE Specifications <u>Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch</u> Fully-matched input and output Integrated power detector Transmit gain: 29dB at 5V Receive gain: 16dB at 5V Noise Figure: 1.6dB at 5V Output power: +17dBm @ -43dB EVM, HE160/MCS11, 5V +19dBm @ -40dB EVM, HE160/MCS11, 5V +20.5dBm @ -35dB EVM, VHT80/MCS9, 5V +21.5dBm @ -30dB EVM, HT20/MCS7, 5V Integrated 2.4GHz Notch Filter ESD protection circuitry on all pins Simplified external components required Small package: MIS-16L 3mm x 3mm x0.55mm MSL1 260°C per JEDEC J-STD-020 RoHS and REACH Compliant  See, e.g., KCT8547HE product description and simplified block diagram, https://perma.cc/GV2Y-HD8A. For example, during use, the RF switch of the KCT8547HE works by turning ON the first switch circuit (indicated by the corresponding red arrow below) while turning OFF the third switch circuit (indicated by the corresponding red arrow below) to allow a signal to pass through the first switch circuit. This allows the signal to be transmitted from the transmit node (indicated by the corresponding red arrow below) to the antenna node (indicated by the corresponding red arrow below) as shown by the path of the green dashed lines below.
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Claim	KCT8547HE
	 The diagram is a detailed circuit schematic of a low noise amplifier (LNA) die. It features several key components and nodes labeled with red arrows and text: antenna node: Located at the top left, connected to an antenna symbol. first capacitor: A capacitor component located below the antenna node. first switch circuit: A complex circuit of transistors and capacitors located below the first capacitor. third switch circuit: Another complex circuit of transistors and capacitors located to the right of the first switch circuit. transmit node: Located at the bottom left, connected to a transmit symbol. The schematic also includes various other components such as resistors, capacitors, and transistors, along with labels like 'VDD', 'BACK', 'BAC/PA', 'LNA', and 'UNTESTED'.
	See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node. See also, claim 7 [pre].
7[C] inhibiting a low-frequency blocker signal from mixing with a fundamental-frequency signal	The KCT8547HE inhibits a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor. For example, during use, the first capacitor inhibits a low frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch (indicated by the corresponding red arrow below).

Claim in the RF switch using the first capacitor.	KCT8547HE
See, e.g., KCT8547HE simplified block diagram, https://perma.cc/GV2Y-HD8A. For example, in the KCT8547HE, the positioning of the first capacitor (indicated by the corresponding red arrow below) between the antenna node (indicated by the corresponding red arrow below) and the first switch circuit performs this function. The first capacitor filters the low frequency signal because the low frequency signal, in contrast to a high frequency signal, allows the capacitor time to charge. This charging process stops the low frequency signal from continuing along the signal path during transmission (indicated by the green dashed line below).	

Claim

KCT8547HE



See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node.

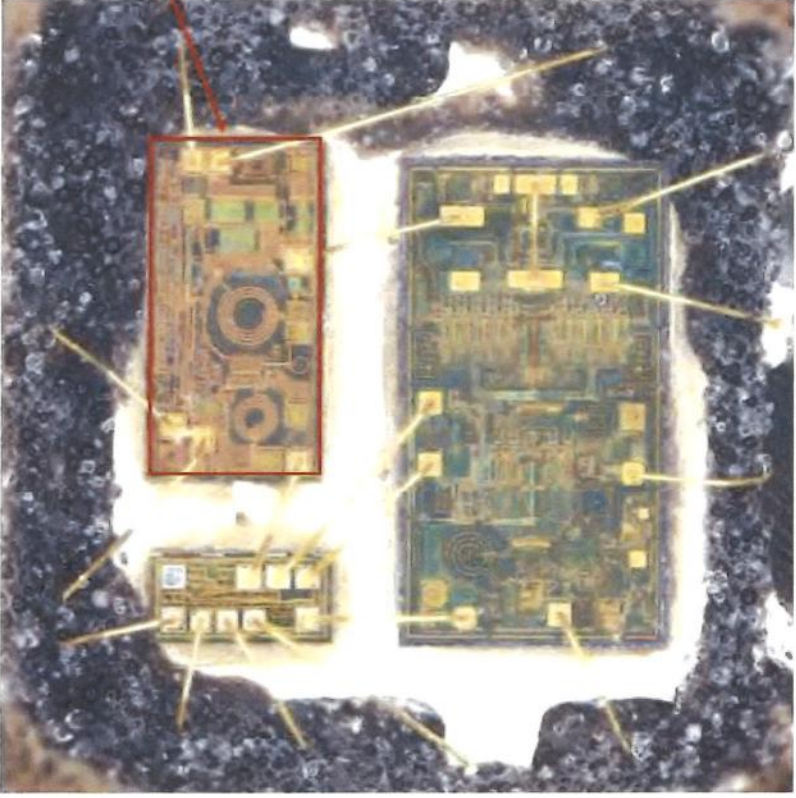
EXHIBIT 22

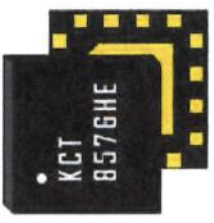
EXHIBIT 22
SKYWORCS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8576HE
U.S. Patent No. 9,450,579
Independent Claims 1 and 7

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claims 1 and 7 of U.S. Patent No. 9,450,579 (the "'579 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd's and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8576HE product. The disclosures in this claim chart directed to the KCT8576HE are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8576HE in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claims to corresponding components, aspects, and/or features of the KCT8576HE product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

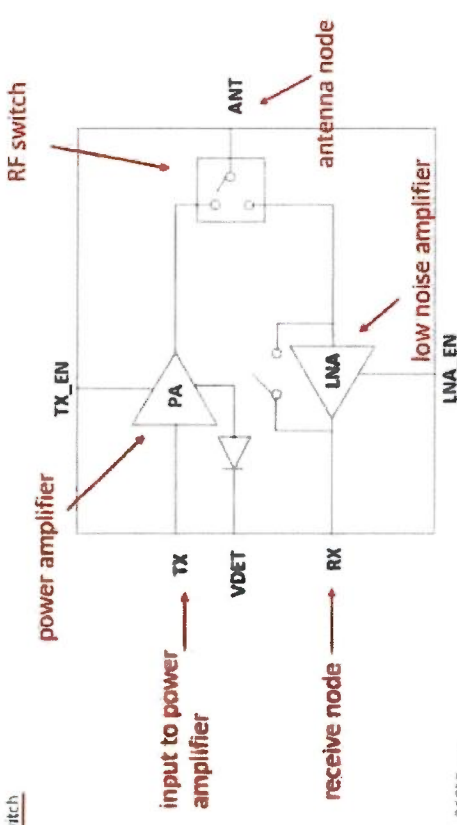
The analysis set forth below is based only upon information from publicly available sources regarding the KCT8576HE product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8576HE product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claims or as other circumstances so merit.

Claim	KCT8576HE
1 [pre] A semiconductor die comprising:	To the extent that the preamble of claim 1 is limiting, the KCT8576HE comprises a semiconductor die. For example, the KCT8576HE has a semiconductor die, highlighted by the red box below.  A micrograph showing a semiconductor die with a complex circuit pattern. A red rectangular box highlights a specific region on the left side of the die. A red line points from the text 'semiconductor die' to this highlighted region. Several yellow lines point to other features on the die. See, e.g., photo of the KCT8576HE product showing three dies identifying the semiconductor die.

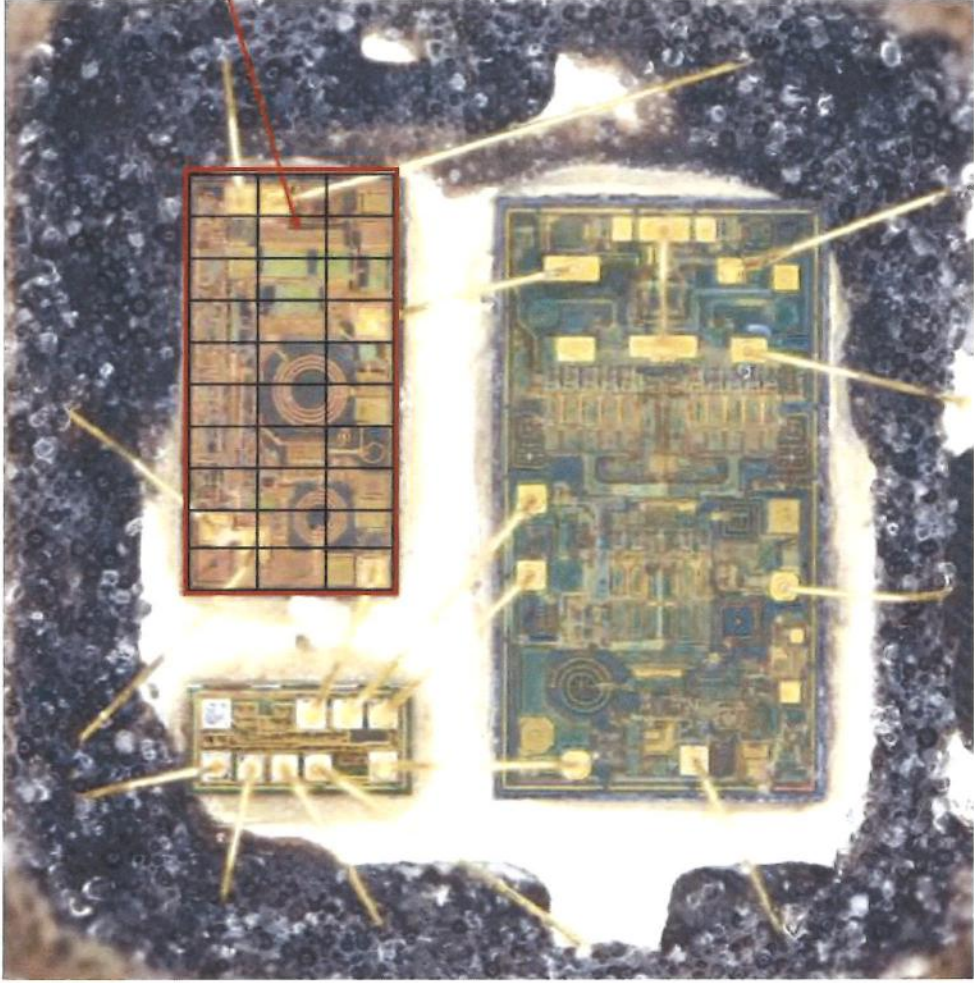
Claim	KCT8576HE
	For example, the KCT8576HE product description below states that the KCT8576HE is an “RF Front-end Module” that “incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”¹  KCT8576HE 5GHz Mid-High Power 802.11ax RF Front-end Module Introduction KCT8576HE is a highly integrated RF front-end integrated circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8576HE integrates a high-efficiency, high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network, LO rejection, and harmonic filters all in one device. KCT8576HE has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8576HE is assembled in a compact, low-profile 2.5x2.5x0.55mm 16-lead QFN package. KCT8576HE is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8576HE product description, https://perma.cc/N2ZN-83UW. For example, the KCT8576HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the

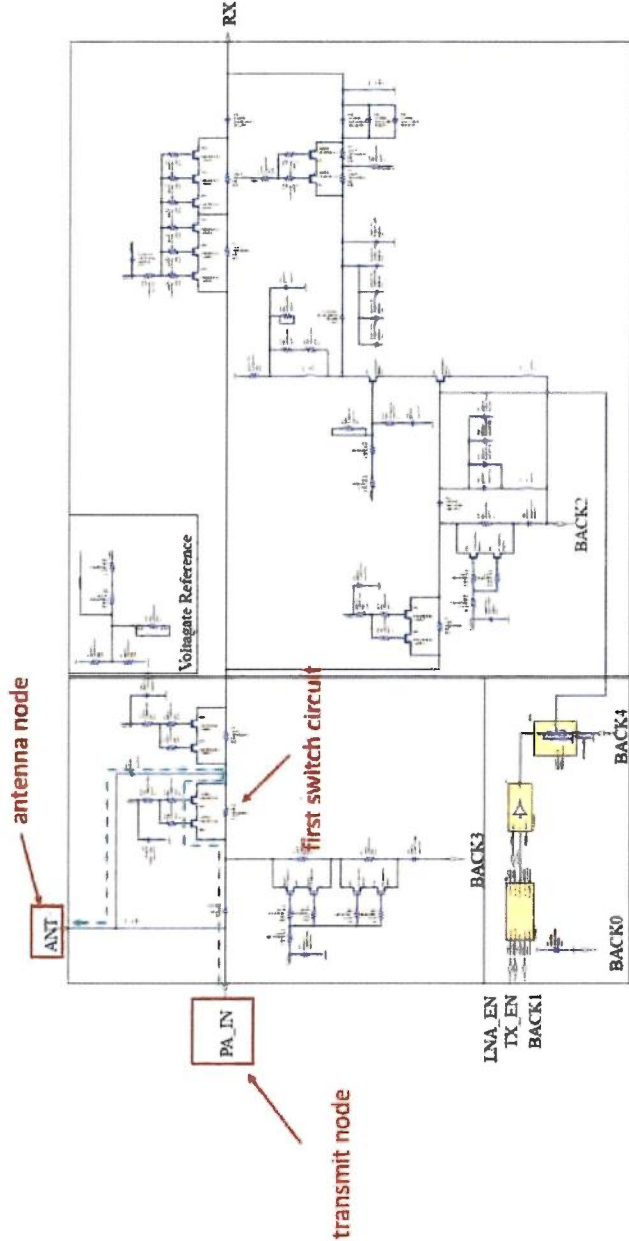
¹ See <https://perma.cc/N2ZN-83UW>.

² See <https://perma.cc/N2ZN-83UW>.

Claim	KCT8576HE
	corresponding red arrow below). Specifications <u>Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch</u> Integrated power detector Transmit gain: 30.5dB at 5V Receive gain: 15.5dB at 5V Noise Figure: 1.8dB at 5V Output power: +18dBm @ -43dB EVM, HE160/MCS11, 5V +21dBm @ -40dB EVM, HE160/MCS11, 5V +23dBm @ -35dB EVM, VHT80/MCS9, 5V +24dBm @ -30dB EVM, HT20/MCS7, 5V ESD protection circuitry on all pins Small package: QFN-16L, 2.5mm x 2.5mm x0.55mm (MSL3, 260°C per JEDEC J-STD-020) RoHS and REACH compliant 
	See, e.g., KCT8576HE product description and simplified block diagram, https://perma.cc/N2ZN-83UW. For example, the photos below show the exterior of the KCT8576HE device die package, front (left) and back (right).

Claim	KCT8576HE
	<i>See, e.g.</i> photos of the KCT8576HE product.
1[A] a semiconductor substrate;	The KCT8576HE comprises a semiconductor substrate. For example, a semiconductor substrate for the KCT8576HE (indicated by black grid lines below) is the material upon which the devices on the die are fabricated.

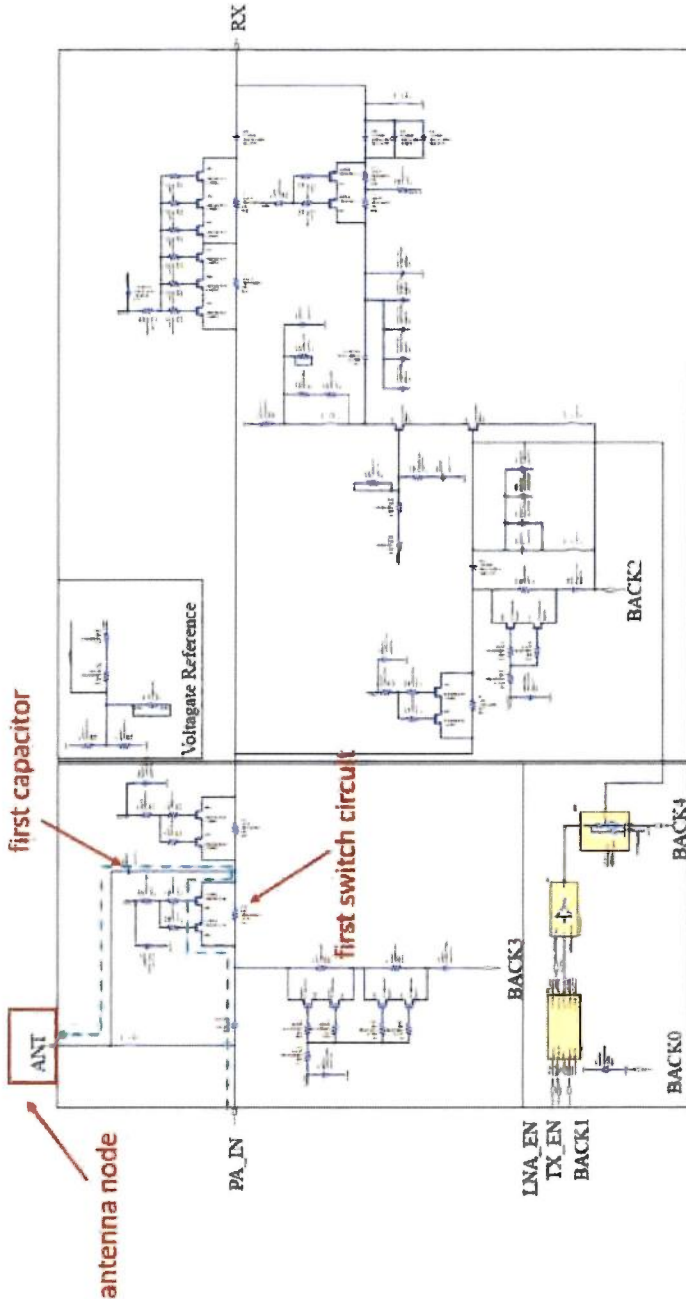
Claim	KCT8576HE
	A micrograph of a semiconductor substrate, likely a silicon wafer, showing a complex pattern of circuitry. A red rectangular grid is overlaid on the left side of the image, highlighting a specific region. A red line points from the text 'semiconductor substrate' to the grid. Several yellow lines point to various features on the substrate, including a small rectangular region on the left, a large rectangular region in the center, and several smaller rectangular regions on the right. The substrate is surrounded by a dark, textured material.
	See, e.g., photo of the KCT8576HE product, annotated to show the location of the semiconductor substrate.

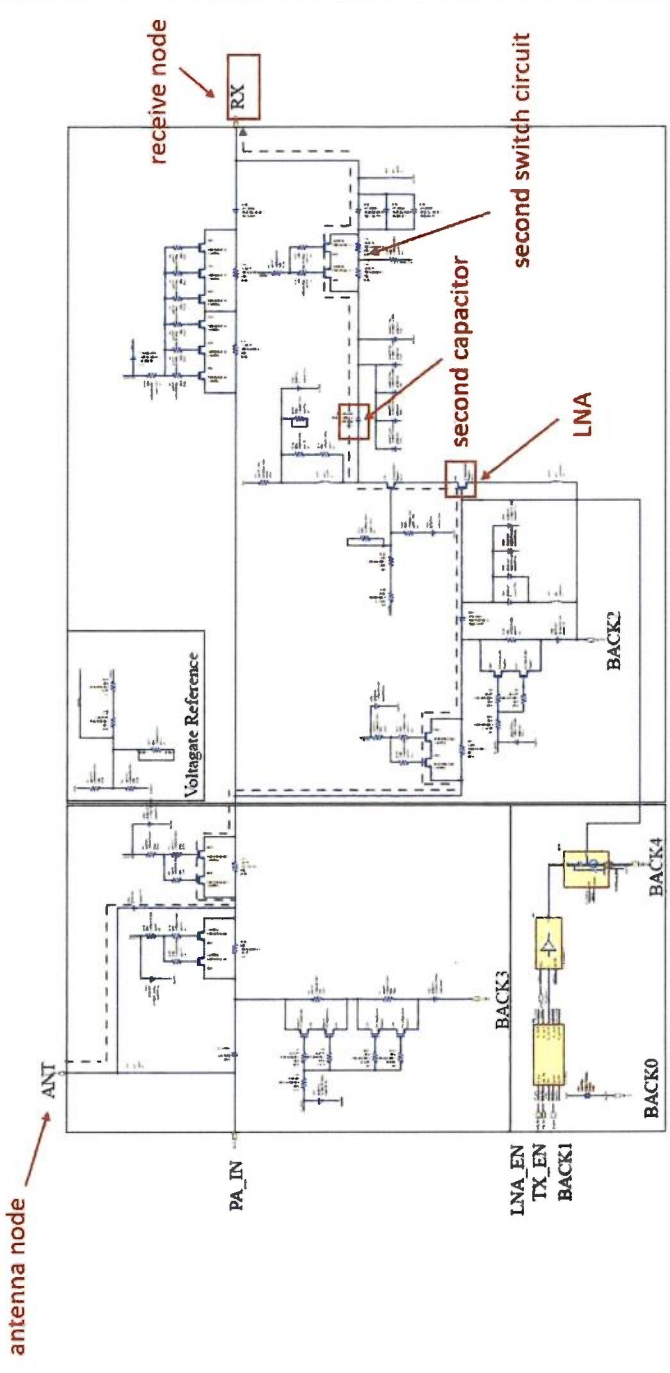
Claim	KCT8576HE
1[B] a first switch circuit formed on the semiconductor substrate connected between an antenna node and a transmit node;	The KCT8576HE comprises a first switch circuit formed on the semiconductor substrate connected between an antenna node and a transmit node. For example, in the KCT8576HE, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node ("ANT," highlighted by the red box) and transmit node ("PA IN," highlighted by the red box). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the green dashed line below. The first switch circuit is formed on the semiconductor substrate.  The diagram is a detailed circuit schematic of the KCT8576HE integrated circuit. It features a central horizontal line representing a common node. Above this line, from left to right, are the LNA (Low Noise Amplifier) and TX (Transmitter) blocks, followed by a series of four blocks labeled BACK0, BACK1, BACK2, and BACK3. Below the common line, from left to right, are the PA_IN (Power Amplifier Input) node, followed by a series of four blocks labeled BACK4, BACK3, BACK2, and BACK1. The PA_IN node is highlighted with a red box and labeled "transmit node" with a red arrow. The ANT (Antenna) node is highlighted with a red box and labeled "antenna node" with a red arrow. A "first switch circuit" is indicated by a red arrow pointing to a switch structure between the PA_IN node and the ANT node. A green dashed line traces a path from the PA_IN node, through the first switch circuit, and to the ANT node. Various other components like capacitors, inductors, and transistors are shown throughout the circuit. A "Voltage Reference" block is also present.

See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, annotated to

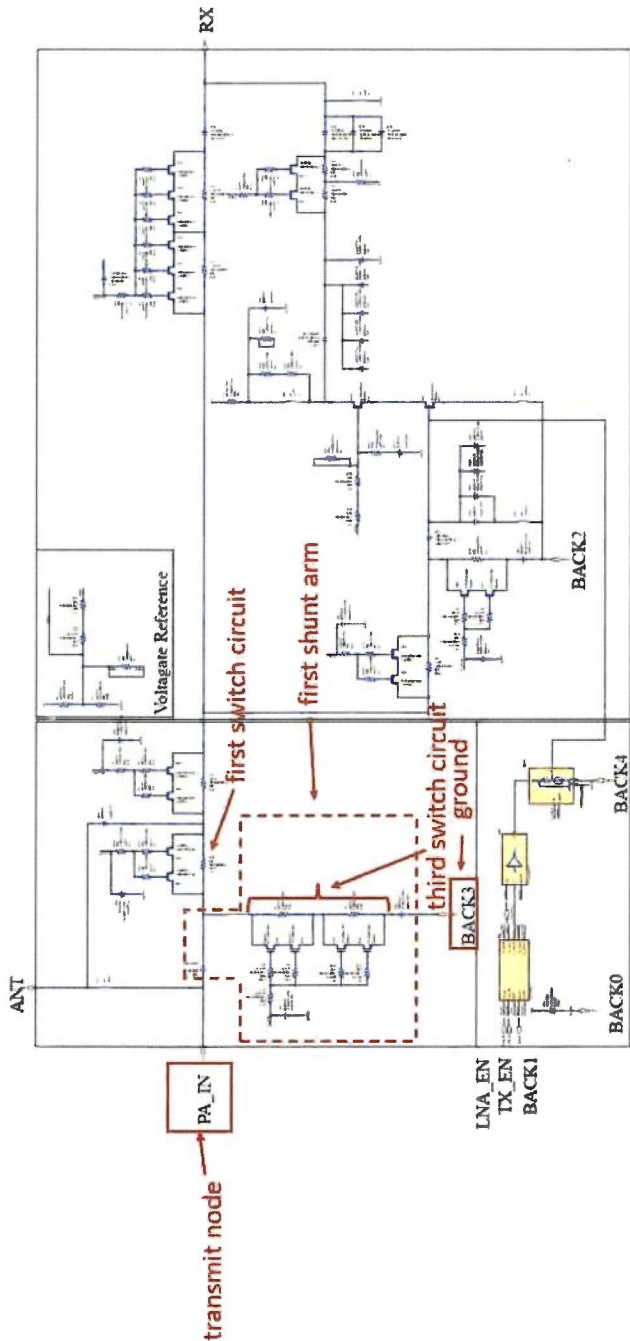
Claim	KCT8576HE
	show the location of a first switch circuit, antenna node, and transmit node. <i>See also</i>, 1[pre]-1[A].
1[C] a second switch circuit formed on the semiconductor substrate and connected between the antenna node and a receive node;	The KCT8576HE comprises a second switch circuit formed on the semiconductor substrate and connected between the antenna node and a receive node. For example, in the KCT8576HE, the second switch circuit (indicated by the corresponding red arrow below) is connected between the antenna node ("ANT," highlighted by the red box) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) is shown by the purple dashed line in the figure below. The second switch circuit is formed on the semiconductor substrate.

Claim	KCT8576HE
	antenna node → ANT PA_IN Voltagate Reference second switch circuit LNA receive node → RX BACK0 BACK1 BACK2 BACK3 BACK4 LNA_EN TX_EN See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier (LNA), and antenna node. See also, 1[pre]-1[A].
1[D] a first capacitor formed on the semiconductor substrate and connected in	The KCT8576HE comprises a first capacitor formed on the semiconductor substrate and connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8576HE, the first capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the

Claim	KCT8576HE
series with the first switch circuit between the first switch circuit and the antenna node;	figure below. In addition, the first capacitor is located between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).  See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node. See also, 1[A].
1[E] a second	The KCT8576HE comprises a second capacitor formed on the semiconductor substrate and connected in series

Claim	KCT8576HE
capacitor formed on the semiconductor substrate and connected in series with the second switch circuit between the second switch circuit and the antenna node; and	with the second switch circuit between the second switch circuit and the antenna node. For example, in the KCT8576HE, the second capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT).  The diagram illustrates the internal circuitry of the KCT8576HE, divided into two main sections: a Power Amplifier (PA) on the left and a Receiver (RX) on the right. The PA section includes a PA_IN input, a Voltage Reference block, and a series of transistors and capacitors leading to a node labeled BACK3. The RX section includes a node labeled BACK2, a Low Noise Amplifier (LNA), and a series of transistors and capacitors leading to an RX output node. A red arrow labeled 'antenna node' points to the ANT input. Another red arrow labeled 'second capacitor' points to a capacitor in the RX path. A third red arrow labeled 'second switch circuit' points to a switch in the RX path. A fourth red arrow labeled 'LNA' points to the Low Noise Amplifier. A purple dashed line indicates the signal path from the ANT node, through the second capacitor and second switch circuit, to the LNA, and finally to the RX output node. Various other components like capacitors, inductors, and transistors are shown throughout the circuit.

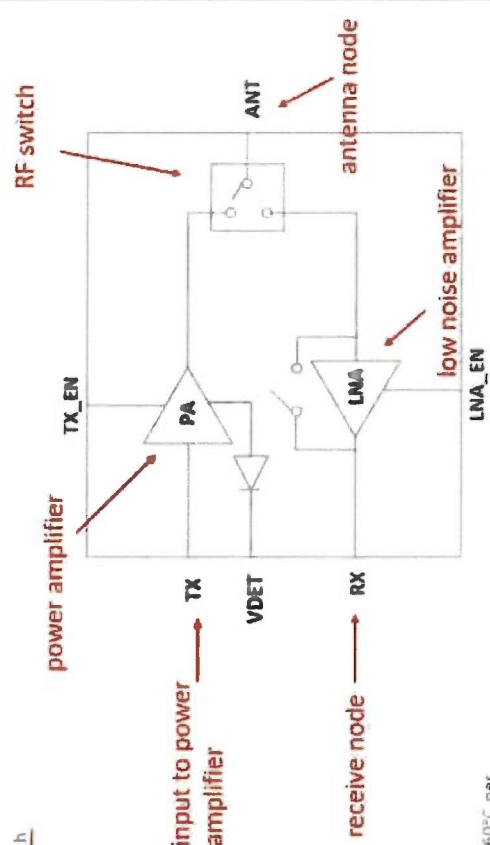
Claim	KCT8576HE
	<i>See, e.g.,</i> reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, annotated to show the location of a second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna node. <i>See also</i>, 1[A].
1[F] a first shunt arm formed on the semiconductor substrate and connected to the first switch circuit and the transmit node, the first shunt arm (indicated by the dashed line box below) is formed on the semiconductor substrate and is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red bracket below) connected to ground (BACK3) (indicated by the corresponding red arrow below).	The KCT8576HE comprises a first shunt arm formed on the semiconductor substrate and connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground. For example, in the KCT8576HE, the first shunt arm (indicated by the dashed line box below) is formed on the semiconductor substrate and is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red bracket below) connected to ground (BACK3) (indicated by the corresponding red arrow below).

Claim	KCT8576HE
	 The schematic diagram illustrates the internal circuitry of the KCT8576HE device. It features a central section with a 'transmit node' (PA_IN) and a 'first switch circuit' leading to an antenna (ANT). A 'first shunt arm' is also indicated. The receive path (RX) includes a 'third switch circuit' and a 'shunt ground' (BACK3). Other components include a 'Voltage Reference', 'LNA_EN', 'TX_EN', 'BACK1', 'BACK2', 'BACK3', 'BACK4', and 'BACK0'. The diagram is annotated with red text and arrows pointing to specific components and nodes.
	See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, annotated to show the location of the transmit node, first switch circuit, first shunt arm, third switch circuit, and ground. See also, 1[A].
7[pre]. A method for	To the extent that the preamble of claim 7 is limiting, the KCT8576HE performs a method for operating a radio-frequency (RF) device, comprising the steps shown below and for claim elements 7[A]-7[C].

Claim	KCT8576HE
operating a radio-frequency (RF) device, the method comprising:	For example, the KCT8576HE product description below states that the KCT8576HE is an “RF Front-end Module” which “incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”³ The image shows a small, square, black integrated circuit (IC) chip. On the top surface of the chip, the text 'KCT 8576HE' is printed in white. The chip has a central square area with a yellow/orange color, and several gold-colored pins or pads are visible around the perimeter of the chip. KCT8576HE 5GHz Mid-High Power 802.11ax RF Front-end Module Introduction KCT8576HE is a highly integrated RF front-end integrated circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8576HE integrates a high-efficiency, high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network, LO rejection, and harmonic filters all in one device. KCT8576HE has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8576HE is assembled in a compact, low profile 2.5x2.5x0.55mm 16-lead QFN package. KCT8576HE is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8576HE product description, https://perma.cc/N2ZN-83UW. For example, the KCT8576HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁴ The KCT product description describes the switch as a transmit/receive “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the

³ See <https://perma.cc/N2ZN-83UW>.

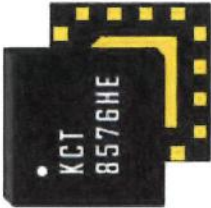
⁴ See <https://perma.cc/N2ZN-83UW>.

Claim	KCT8576HE
	corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch Integrated power detector Transmit gain: 30.5dB at 5V Receive gain: 15.5dB at 5V Noise Figure: 1.8dB at 5V Output power: +18dBm @ -43dB EVM, HET60/MCS11, 5V +21dBm @ -40dB EVM, HET60/MCS11, 5V +23dBm @ -35dB EVM, VHT80/MCS9, 5V +24dBm @ -30dB EVM, HT20/MCS7, 5V ESD protection circuitry on all pins Small package: QFN-16L, 2.5mm x 2.5mm x 0.55mm (MSL3, 260°C per JEDEC J-STD-020) RoHS and REACH compliant  The diagram illustrates the internal architecture of the KCT8576HE. It features a central RF switch controlled by TX_EN and LNA_EN pins. The switch routes signals between an antenna (ANT) and two main processing blocks: a Power Amplifier (PA) and a Low Noise Amplifier (LNA). The PA block includes an input to power amplifier (indicated by a red arrow) and a VDET (voltage detector) output. The LNA block includes a low noise amplifier (indicated by a red arrow) and an RX (receive) node (indicated by a red arrow). The antenna node is also indicated by a red arrow. The diagram shows the flow of signals and the control logic for transmitting and receiving data.

See, e.g., KCT8576HE product description, <https://perma.cc/N2ZN-83UW>.

For example, the photos below show the exterior of the KCT8576HE device die package, front (left) and back (right).

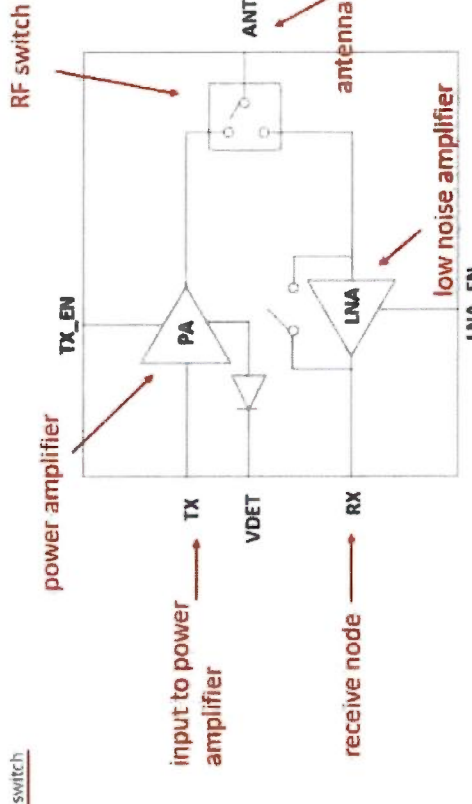
Claim	KCT8576HE	
	<i>See, e.g. photos of the KCT8576HE product.</i>	
7[A] providing an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.	The KCT8576HE provides an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.	

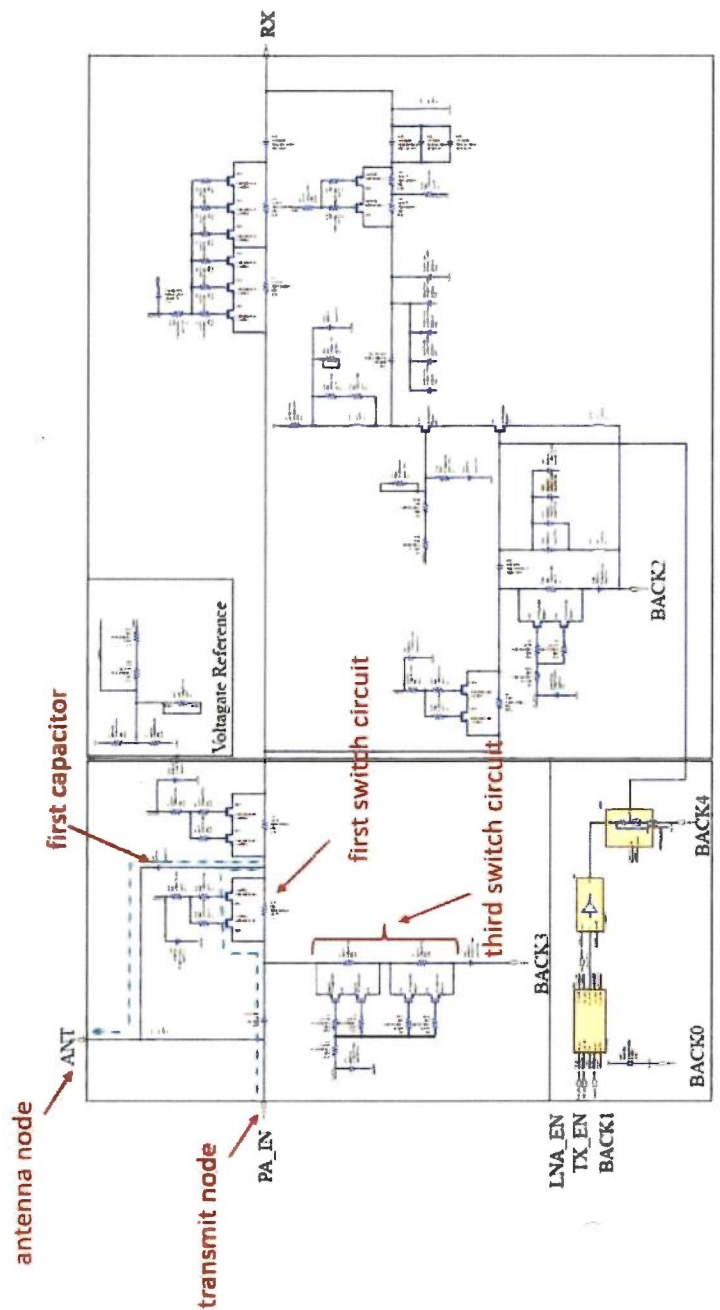
Claim	KCT8576HE
antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch	For example, the KCT8576HE is an RF device. The KCT product description describes the KCT8576HE as an “RF Front-end Module” and states that the KCT8576HE “incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”⁵  KCT8576HE 5GHz Mid-High Power 802.11ax RF Front-end Module Introduction KCT8576HE is a highly integrated RF front-end integrated circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8576HE integrates a high-efficiency, high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network, LO rejection, and harmonic filters all in one device KCT8576HE has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8576HE is assembled in a compact, low-profile 2.5x2.5x0.55mm 16-lead QFN package. KCT8576HE is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax See, e.g., KCT8576HE product description on KCT website, https://perma.cc/N2ZN-83UW. See also, claims 1 [pre]-1 [F], 7 [pre].

⁵ See <https://perma.cc/N2ZN-83UW>.

Claim	KCT8576HE
circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground;	
7[B] controlling an RF switch of the RF device by placing the first switch circuit in an ON state and	The KCT8576HE controls an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state. For example, the KCT8576HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals. The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below).⁶ The figure also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

⁶ See <https://perma.cc/N2ZN-83UW>.

Claim	KCT8576HE
Specifications Integrated 802.11ax 5GHz PA, LNA with bypass and T/R switch Integrated power detector Transmit gain: 30.5dB at 5V Receive gain: 15.5dB at 5V Noise Figure 1.8dB at 5V Output power: +18dBm @ -43dB EVM, HE160/MCS11, 5V +21dBm @ -40dB EVM, HE160/MCS11, 5V +23dBm @ -35dB EVM, VH180/MCS9, 5V +24dBm @ -30dB EVM, HT20/MCS7, 5V ESD protection circuitry on all PINs Small package: QFN-16L, 2.5mm x 2.5mm x 0.55mm (MSL3, 260°C per JEDEC J-STD-020) RoHS and REACH compliant	 See, e.g., KCT8576HE product description, https://perma.cc/NZ2N-83UW. For example, during use, the RF switch of the KCT8576HE works by turning ON the first switch circuit (indicated by the corresponding red arrow below) while turning OFF the third switch circuit (indicated by the corresponding red bracket below) to allow a signal to pass through the first switch circuit. This allows the signal to be transmitted from the transmit node (indicated by the corresponding red arrow below) to the antenna node (indicated by the corresponding red arrow below) as shown by the path of the green dashed lines below.

Claim	KCT8576HE
	 The diagram is a detailed circuit schematic for the KCT8576HE. It features an antenna node connected to an ANT pin, which leads into a transmit node at the PA_IN pin. A first capacitor is connected between the antenna node and the transmit node. The circuit includes a first switch circuit and a third switch circuit, both controlled by LNA_EN and TX_EN signals. The third switch circuit is connected to a third switch node, which is then connected to a third switch output. The first switch circuit is connected to a first switch output. The circuit also includes a Voltage Reference and a RX pin. The schematic is divided into several blocks labeled BACK0, BACK1, BACK2, BACK3, and BACK4.
7[C] inhibiting a low-frequency blocker signal from mixing	See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node. See also, claim 7[pre]. The KCT8576HE inhibits a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor. For example, during use, the first capacitor inhibits a low frequency blocker signal from mixing with a fundamental

Claim	KCT8576HE
with a fundamental-frequency signal in the RF switch using the first capacitor.	frequency signal in the RF switch (indicated by the corresponding red arrow below). See, e.g., KCT8576HE simplified block diagram, https://perma.cc/N2ZN-83UW. For example, in the KCT8576HE, the positioning of the first capacitor (indicated by the corresponding red arrow below) between the antenna node (indicated by the corresponding red arrow below) and the first switch circuit performs this function. The first capacitor filters the low frequency signal because the low frequency signal, in contrast to a high frequency signal, allows the capacitor time to charge. This charging process stops the low frequency signal from continuing along the signal path during transmission (indicated by the green dashed line below).

Claim	KCT8576HE
	The diagram is a detailed circuit schematic for the KCT8576HE product. It features several key components and nodes labeled with red text and arrows: antenna node: Points to the ANT input at the top left. transmit node: Points to the PA_IN input at the bottom left. first capacitor: Points to a capacitor in the first stage of the transmit path. first switch circuit: Points to a switch structure in the transmit path. third switch circuit: Points to a switch structure in the transmit path. RX: The receiver output at the top right. The schematic includes a Voltage Reference block, a BACK2 block, and a BACK4 block. It also shows a BACK0 block with pins labeled LNA_EN, TX_EN, and BACK1. The circuit is composed of various transistors, capacitors, and inductors, with a complex interconnection of signals and power lines.

See, e.g., reverse engineered circuit schematic of the KCT8576HE product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node.

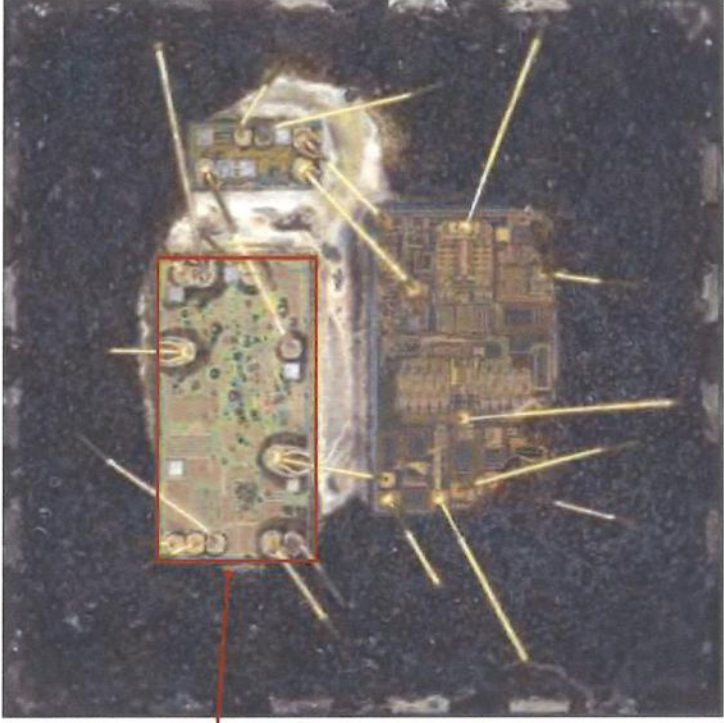
EXHIBIT 23

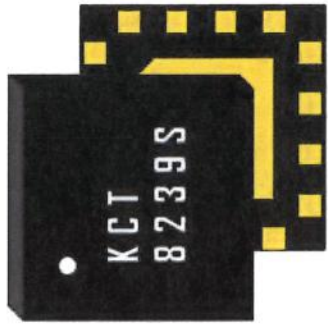
EXHIBIT 23
SKYWORKS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8239S
U.S. Patent No. 9,450,579
Independent Claims 1 and 7

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claims 1 and 7 of U.S. Patent No. 9,450,579 (the "'579 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd.'s and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8239S product. The disclosures in this claim chart directed to the KCT8239S are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8239S in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claims to corresponding components, aspects, and/or features of the KCT8239S product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

The analysis set forth below is based only upon information from publicly available sources regarding the KCT8239S product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8239S product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claims or as other circumstances so merit.

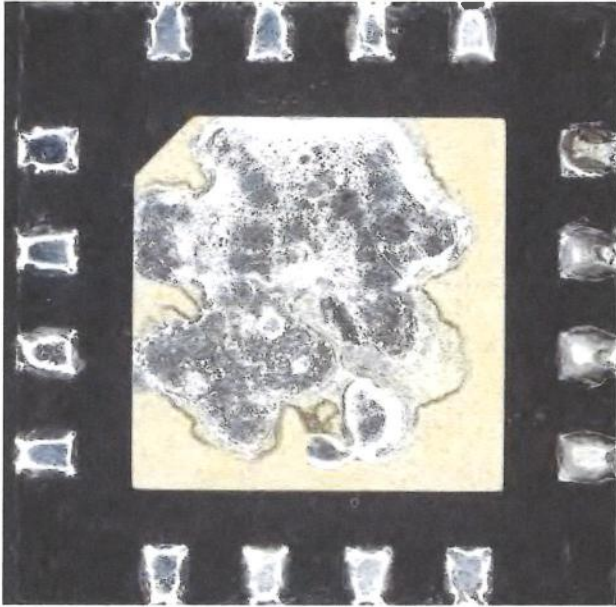
Claim	KCT8239S
1[pre] A semiconductor die comprising:	To the extent that the preamble of claim 1 is limiting, the KCT8239S comprises a semiconductor die. For example, the KCT8239S has a semiconductor die, highlighted by the red box below.  semiconductor die The image is a micrograph of a semiconductor die. A red rectangular box highlights a specific region on the left side of the die. A red line points from the text 'semiconductor die' to this box. Several yellow lines point to various features on the die, including what appear to be bond wires and internal circuitry. See, e.g., photo of the KCT8239S product identifying the semiconductor die.

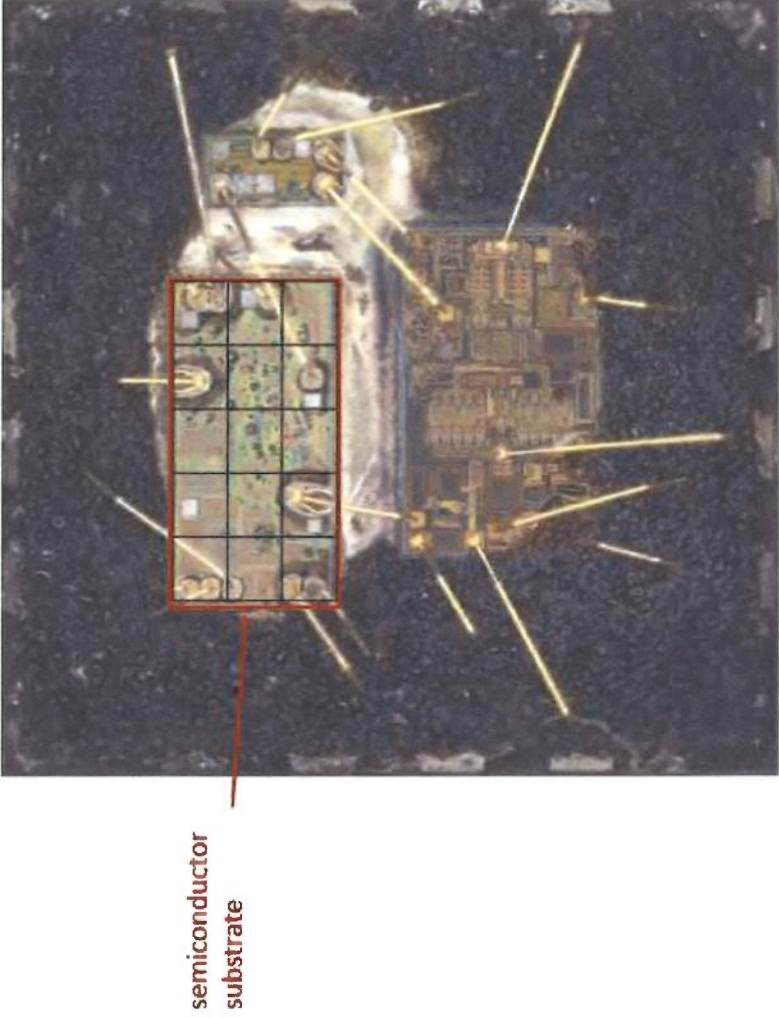
Claim	KCT8239S
	For example, the KCT8239S product description below states that the KCT8239S is an “RF Front-end Module” that “is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality.”¹  KCT8239S 2.4GHz 802.11ax RF Front-End Module Introduction KCT8239S is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality. It is integrated with a high-efficiency power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and a single-pole double-throw (SPDT) switch all in one device The PA power detector and a digital enable control are also integrated KCT8239S is assembled in a compact low-profile 3*3*0.55mm 16-pin M1S package. It is the perfect RF Front-end solution for implementing 2.4GHz high-performance WLAN systems supporting multiple standards See, e.g., KCT8239S product description, https://perma.cc/NS2E-VPYU.

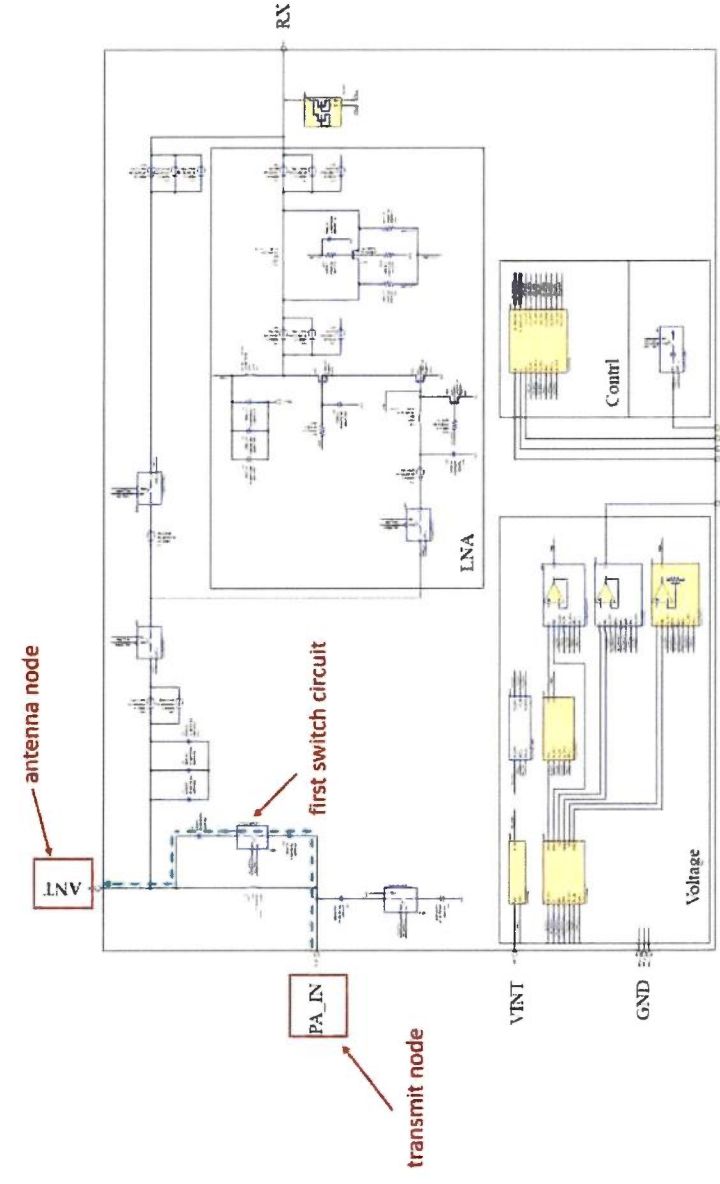
¹ See <https://perma.cc/NS2E-VPYU>.

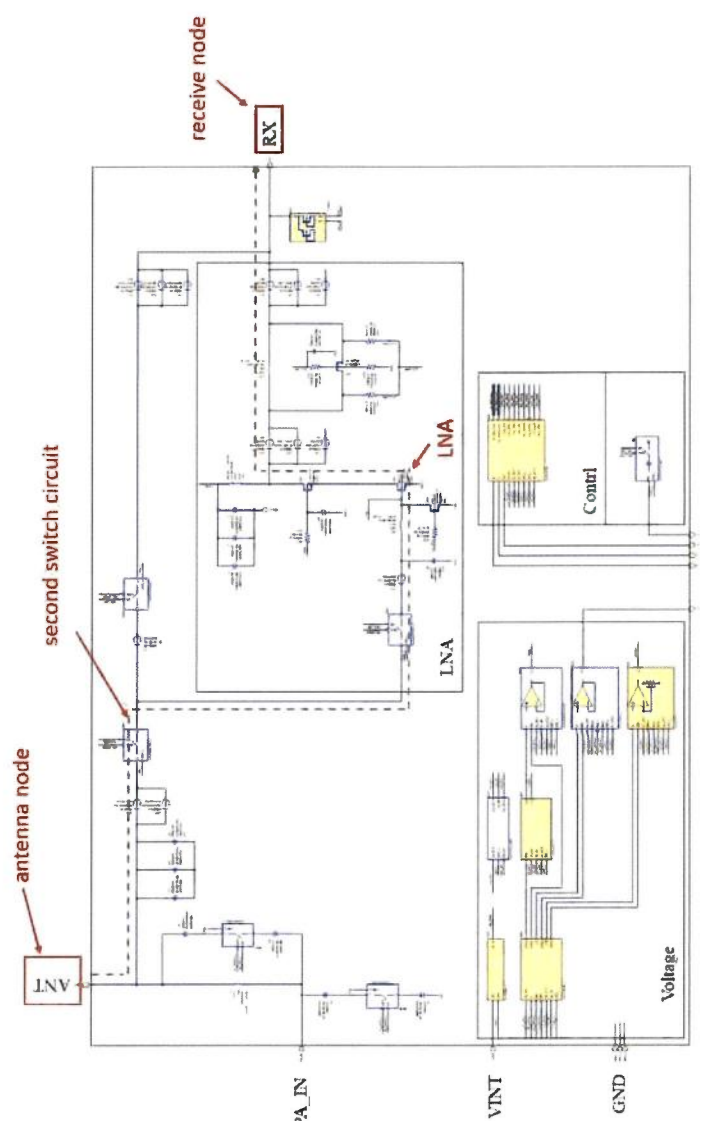
Claim	KCT8239S
	For example, the KCT8239S has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated high performance 2.4GHz PA, LNA with by-pass, and T/R switch</u> Fully-matched input and output Integrated Power Detector Output power • 20dBm @ DEVN=-43dB HE40/MCS11, 5V • 20.5dBm @ DEVN=-40dB HE40/MCS11, 5V • 22dBm @ DEVN=-35dB VHT40/MCS9, 5V • 23dBm @ DEVN=-30dB HT20/MCS7, 5V Transmit gain 29dB at 5V Receive gain 19dB at 5V Noise Figure 2.6dB at 5V ESD protection circuitry on all PINs Minimal External Components Required Small package MIS-16L 3*3*0.55mm (MSL-16L 260°C per JEDEC J-STD-Q20) ROHS and REACH Compliant

² See <https://perma.cc/NS2E-VPYU>.

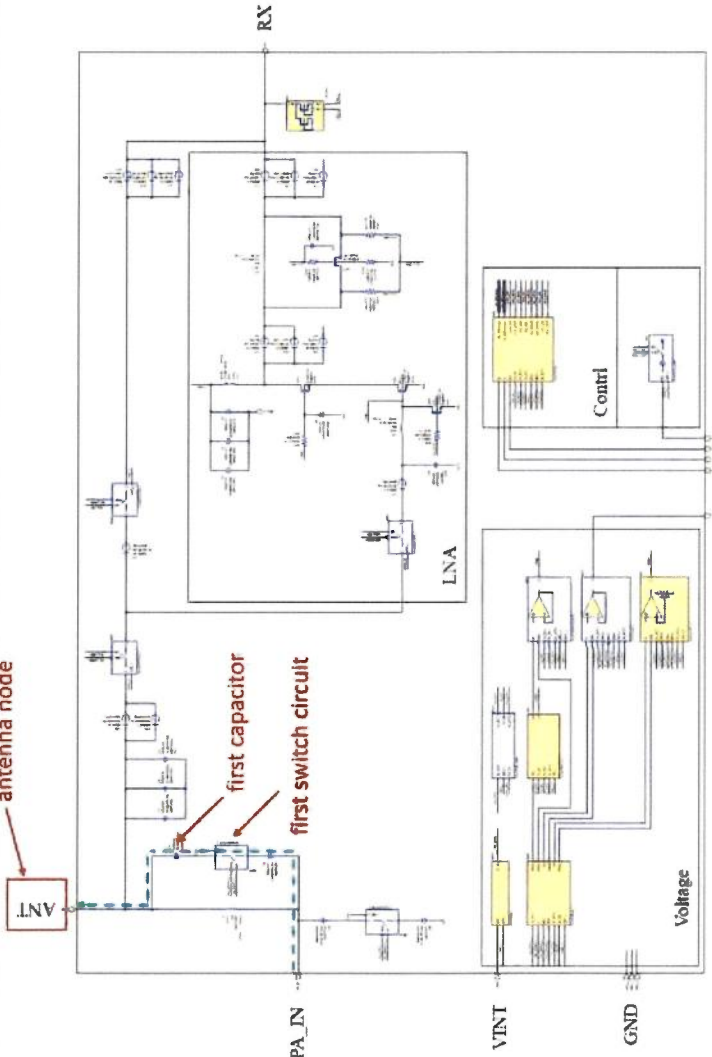
Claim	KCT8239S
	See, e.g., KCT8239S product description and simplified block diagram, https://perma.cc/NS2E-VPYU. For example, the photos below show the exterior of the KCT8239S device die package, front (left) and back (right).   See, e.g. photo of the KCT8239S product, exterior of package, front (left) and back (right).
1[A] a semiconductor substrate;	The KCT8239S comprises a semiconductor substrate. For example, a semiconductor substrate for the KCT8239S (indicated by black grid lines below) is the material upon which the devices on the die are fabricated.

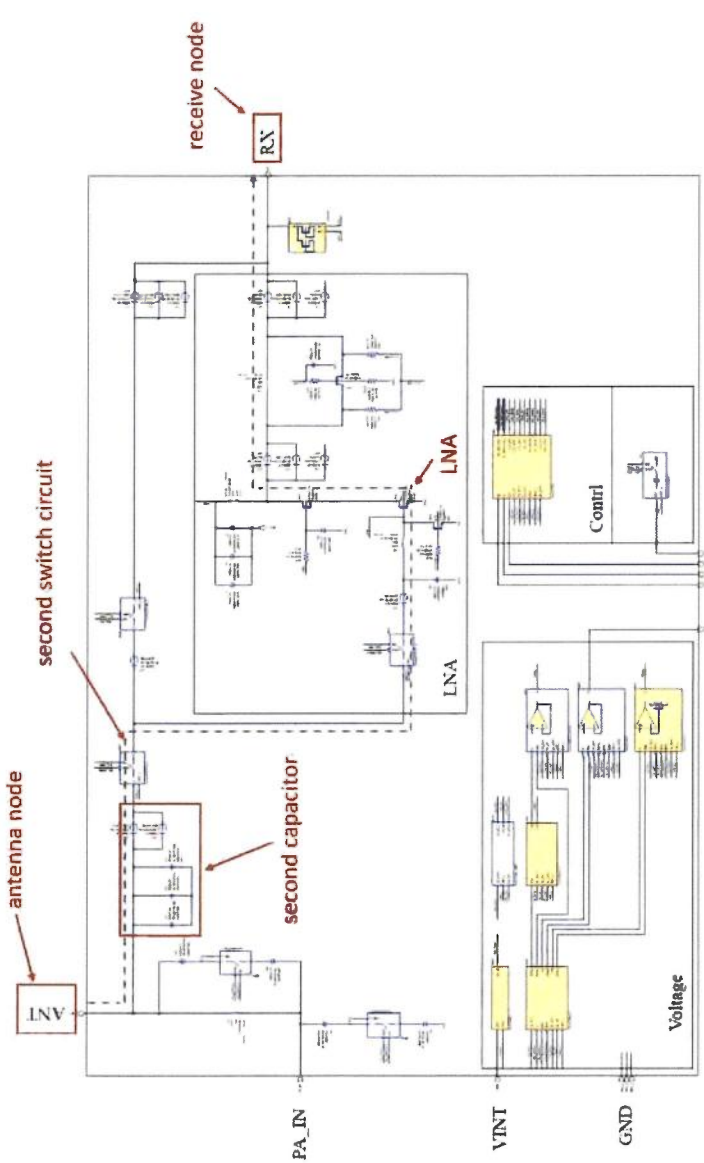
Claim	KCT8239S
	 semiconductor substrate See, e.g., photo of the KCT8239S product, annotated to show the location of the semiconductor substrate.
1[B] a first switch circuit formed on the semiconductor substrate connected between an	The KCT8239S comprises a first switch circuit formed on the semiconductor substrate connected between an antenna node and a transmit node. For example, in the KCT8239S, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node ("ANT," highlighted by the red box) and the transmit node ("PA IN," highlighted by the red box). In transmit mode, the signal path from the transmit node, through the first switch

Claim	KCT8239S
antenna node and a transmit node;	circuit, and to the antenna node is shown by the dashed green line below. The first switch circuit is formed on the semiconductor substrate.  The diagram is a detailed circuit schematic of the KCT8239S product. It shows an antenna node labeled 'ANT' connected to a first switch circuit. The switch circuit is controlled by a 'Control' block. The output of the switch circuit is connected to a transmit node labeled 'PA_IN'. The PA_IN node is connected to a Low Noise Amplifier (LNA) block. The LNA block is connected to a receiver (RX) block. The schematic also shows various other components like capacitors, inductors, and a voltage source. Red arrows point from labels to specific nodes: 'antenna node' points to ANT, 'transmit node' points to PA_IN, and 'first switch circuit' points to the switch circuit. A dashed green line connects the antenna node to the first switch circuit.
1[C] a second switch circuit formed on the	See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, annotated to show the location of a first switch circuit, transmit node, and antenna node. See also, 1[pre]-1[A]. The KCT8239S comprises a second switch circuit formed on the semiconductor substrate and connected between the antenna node and a receive node.

Claim semiconductor substrate and connected between the antenna node and a receive node;	KCT8239S For example, in the KCT8239S, the second switch circuit (indicated by the corresponding red arrow below) is connected between the antenna node ("ANT," highlighted by the red box) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. The second switch circuit is formed on the semiconductor substrate.  The diagram is a detailed circuit schematic of the KCT8239S product. It shows a central processing area with various transistors and capacitors. A purple dashed line traces a signal path from an 'ANT' node (highlighted in a red box) through an 'LNA' (Low Noise Amplifier) block to an 'RX' node (highlighted in a red box). A red arrow points to a 'second switch circuit' located between the ANT and RX nodes. Other components include a 'Voltage' section with several capacitors, a 'Control' block, and a 'GND' connection. Input/output pins are labeled 'PA_IN', 'VINT', and 'GND'. See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier (LNA), and antenna node.
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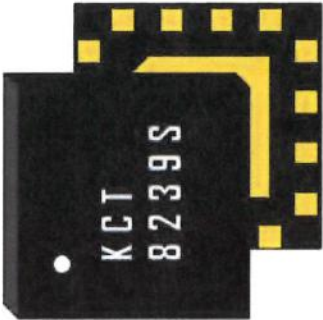
Claim	KCT8239S
	<i>See also</i>, 1[pre]-1[A].
1[D] a first capacitor formed on the semiconductor substrate and connected in series with the first switch circuit between the first switch circuit and the antenna node;	The KCT8239S comprises a first capacitor formed on the semiconductor substrate and connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8239S, the first capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is located between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).

Claim	KCT8239S
	 The diagram is a detailed circuit schematic for the KCT8239S product. It features an 'ANT' block (antenna node) connected to a network of capacitors and inductors. A red arrow points to a 'first capacitor' in this network. Another red arrow points to a 'first switch circuit' consisting of two transistors. The circuit includes an 'LNA' (Low Noise Amplifier) block, a 'PA_IN' (Power Amplifier Input) block, and an 'RX' (Receiver) block. A 'Voltage' block is connected to the circuit, and a 'Control' block is shown at the bottom. The schematic also includes various passive components like capacitors and inductors, and a ground connection labeled 'GND'.
	See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, annotated to show the location of the first switch circuit, first capacitor, and antenna node. See also, 1 [A].
1 [E] a second capacitor formed on the semiconductor substrate and	The KCT8239S comprises a second capacitor formed on the semiconductor substrate and connected in series with the second switch circuit between the second switch circuit and the antenna node. For example, in the KCT8239S, the second capacitor (indicated by the corresponding red arrow below) is formed on the semiconductor substrate and is connected in series with the second switch circuit (indicated by the

Claim connected in series with the second switch circuit between the second switch circuit and the antenna node; and	KCT8239S corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT).  See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, annotated to show the second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna node.
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Claim	KCT8239S
	<i>See also</i> , 1[A].
1[F] a first shunt arm formed on the semiconductor substrate and connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.	The KCT8239S comprises a first shunt arm formed on the semiconductor substrate and connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground. For example, in the KCT8239S, the first shunt arm (indicated by the corresponding red bracket below) is formed on the semiconductor substrate and is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm (indicated by the corresponding bracket below) includes a third switch circuit (indicated by the corresponding red arrow below) connected to ground (GND_2) (indicated by the corresponding red arrow below).

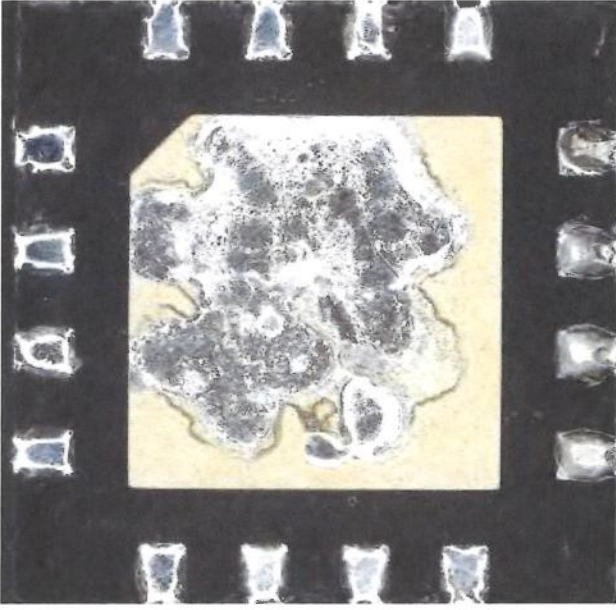
Claim	KCT8239S
	The diagram is a detailed circuit schematic for the KCT8239S. It features an antenna node (ANT) connected to a network of capacitors and inductors. A PA_IN signal is input to a first switch circuit, which is connected to a first shunt arm. This shunt arm is connected to ground. A third switch circuit is also shown, connected to a VINT node. A Voltage source is connected to the VINT node and ground. The schematic includes a Low Noise Amplifier (LNA) block and an RX output. Various components like capacitors, inductors, and transistors are labeled with values and symbols.
	See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die identifying the transmit node, the first switch circuit, first shunt arm, third switch circuit, and ground. See also, 1[A].
7[pre]. A method for operating a radio-frequency (RF) device, the	To the extent that the preamble of claim 7 is limiting, the KCT8239S performs a method for operating a radio-frequency (RF) device, comprising the steps shown below and for claim elements 7[A]-7[C].

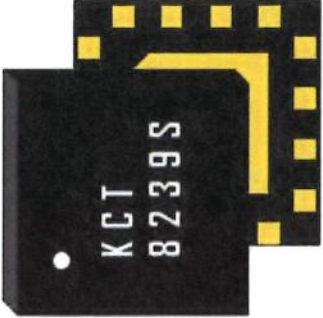
Claim	KCT8239S
method comprising:	For example, the KCT8239S product description below states that the KCT8239S is an “RF Front-end Module” that “is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality.”³ KCT8239S 2.4GHz 802.11ax RF Front-End Module Introduction KCT8239S is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality. It is integrated with a high-efficiency power amplifier (PA), a low noise amplifier (LNA) with bypass the associated matching network and a single-pole double-throw (SPDT) switch all in one device  The PA power detector and a digital enable control are also integrated. KCT8239S is assembled in a compact low-profile 3*3*0.55mm 16-pin M1S package. It is the perfect RF Front-end solution for implementing 2.4GHz high-performance WLAN systems supporting multiple standards See, e.g., KCT8239S product description, https://perma.cc/NS2E-VPYU.

³ See <https://perma.cc/NS2E-VPYU>.

Claim	KCT8239S
	For example, the KCT8239S has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁴ The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated high performance 2.4GHz PA, LNA with by-pass, and T/R switch</u> Fully-matched input and output Integrated Power Detector Output power • 20dBm @ DEVN=-43dB HE40/MCS11, 5V • 20.5dBm @ DEVN=-40dB HE40/MCS11, 5V • 22dBm @ DEVN=-35dB VHT40/MCS9, 5V • 23dBm @ DEVN=-30dB HT20/MCS7, 5V Transmit gain: 29dB at 5V Receive gain: 19dB at 5V Noise Figure: 2.6dB at 5V ESD protection circuitry on all PINs Minimal External Components Required Small package: MSL-16L, 3*3*0.55mm (MSL-16L, 260°C per JEDEC J-STD-020) ROHS and REACH Compliant The diagram shows a 16-pin package with the following connections and annotations: Pin 1: PDET Pin 2: VCC2 Pin 3: VCC1 Pin 4: PA_EN Pin 5: TX Pin 6: GND Pin 7: GND Pin 8: RX Pin 9: VDD Pin 10: GND Pin 11: C0 Pin 12: C1 Pin 13: GND Pin 14: GND Pin 15: ANT Pin 16: GND Internal circuitry includes a power amplifier (PA) and a low noise amplifier (LNA). Red arrows point to the following components: antenna node: Points to the ANT pin (Pin 15). power amplifier: Points to the PA block. low noise amplifier: Points to the LNA block. input to power amplifier: Points to the input of the PA block. receive node: Points to the RX pin (Pin 8). RF switch: Points to the switch between the ANT pin and the PA/LNA blocks.

⁴ See <https://perma.cc/NS2E-VPYU>.

Claim	KCT8239S
	See, e.g., KCT8239S product description and simplified block diagram, https://perma.cc/NS2E-VPYU. For example, the photos below show the exterior of the KCT8239S device die package, front (left) and back (right).   See, e.g. photo of the KCT8239S product, exterior of package, front (left) and back (right).
7[A] providing an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.	The KCT8239S provides an RF device including a first switch circuit connected between an antenna node and a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground.

Claim	KCT8239S
a transmit node, a second switch circuit connected between the antenna node and a receiver node, a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node, a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node, and a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch	For example, the KCT8239S product description below states that the KCT8239S is an “RF Front-end Module” that “is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality.”⁵ KCT8239S 2.4GHz 802.11ax RF Front-End Module Introduction <u>KCT8239S is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality. It is integrated with a high-efficiency power amplifier (PA), a low noise amplifier (LNA) with bypass the associated matching network and a single-pole double-throw (SPDT) switch all in one device</u> The PA power detector and a digital enable control are also integrated. KCT8239S is assembled in a compact, low-profile 3*3*0.55mm 16-pin MIS package. It is the perfect RF Front-end solution for implementing 2.4GHz high-performance WLAN systems supporting multiple standards  See, e.g., KCT8239S product description, https://perma.cc/NS2E-VPYU.

⁵ See <https://perma.cc/NS2E-VPYU>.

Claim	KCT8239S
circuit connected to ground;	<i>See also, claims 1 [pre]-1 [F], 7 [pre].</i>
7[B] controlling an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state;	The KCT8239S controls an RF switch of the RF device by placing the first switch circuit in an ON state and placing the third switch circuit in an OFF state. For example, the KCT8239S has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.⁶ The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

⁶ See <https://perma.cc/NS2E-VPYU>.

Claim

KCT8239S

Specifications

Integrated high performance 2.4GHz PA, LNA with bypass, and T/R switch

Fully-matched input and output

Integrated Power Detector

Output power

+20dBm @ DEVN=-43dB HE40MCS11 5V

+20.5dBm @ DEVN=-40dB HE40MCS11 5V

+22dBm @ DEVN=-35dB VHT40MCS9 5V

+23dBm @ DEVN=-30dB HT20MCS7 5V

Transmit gain 29dB at 5V

Receive gain 19dB at 5V

Noise Figure 2.6dB at 5V

ESD protection circuitry on all pins

Minimal External Components Required

Small package MIS-16L 3*3*0.55mm IMSL-16L 260°C per JEDEC J-STD-020)

ROHS and REACH Compliant

antenna node

low noise amplifier

input to power amplifier

receive node

See, e.g., KCT8239S product description and simplified block diagram, <https://perma.cc/NS2E-VPYU>.

For example, during use, the RF switch of the KCT8239S works by turning ON the first switch circuit (indicated by the corresponding red arrow below) while turning OFF the third switch circuit (indicated by the corresponding red arrow below) to allow a signal to pass through the first switch circuit. This allows the signal to be transmitted from the transmit node (indicated by the corresponding red arrow below) to the antenna node (indicated by the corresponding red arrow below) as shown by the path of the green dashed line below.

Claim	KCT8239S
	The diagram is a detailed circuit schematic for the KCT8239S. It features a central LNA (Low Noise Amplifier) block. To its left is a PA_IN (Power Amplifier Input) block, which is connected to an antenna node. A first capacitor is connected between the antenna node and the PA_IN block. A first switch circuit is connected between the PA_IN block and the LNA. A third switch circuit is connected between the LNA and a VINT (Voltage Input Terminal) block. The VINT block is connected to a GND (Ground) block. A Voltage block is connected to the VINT block. A Control block is connected to the LNA and the VINT block. The RX (Receiver) block is connected to the LNA. The TX (Transmitter) block is connected to the PA_IN. The schematic includes various electronic components such as capacitors, inductors, and transistors.
7[C] inhibiting a low-frequency blocker signal from mixing with	See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node. See also, claim 7 [pre]. The KCT8239S inhibits a low-frequency blocker signal from mixing with a fundamental-frequency signal in the RF switch using the first capacitor.

Claim	KCT8239S
a fundamental-frequency signal in the RF switch using the first capacitor.	For example, during use, the first capacitor inhibits a low frequency blocker signal from mixing with a fundamental frequency signal in the RF switch (indicated by the corresponding red arrow below). See, e.g., KCT8239S simplified block diagram, https://perma.cc/NS2E-VPYU. For example, in the KCT8239S, the positioning of the first capacitor (indicated by the corresponding red arrow below) between the antenna node (indicated by the corresponding red arrow below) and the first switch circuit performs this function. The first capacitor filters the low frequency signal because the low frequency signal, in contrast to a high frequency signal, allows the capacitor time to charge. This charging process stops a low frequency signal from continuing along the signal path during transmission (indicated by the green dashed line below).

Claim	KCT8239S The diagram is a detailed circuit schematic for the KCT8239S product. It features several key components and nodes: Antenna Node: A red box labeled 'ANT' is connected to the 'antenna node'. First Capacitor: A red arrow points to a capacitor in the first stage of the circuit. First Switch Circuit: A red arrow points to a switch circuit in the first stage. Transmit Node: A red box labeled 'PA_IN' is connected to the 'transmit node'. Third Switch Circuit: A red arrow points to a switch circuit in the third stage. LNA (Low Noise Amplifier): A block labeled 'LNA' is shown in the center of the circuit. RX (Receiver): A block labeled 'RX' is shown on the right side of the circuit. Voltage and Control: Two blocks labeled 'Voltage' and 'Control' are shown at the bottom of the circuit.
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See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, identifying the antenna node, first capacitor, first switch circuit, third switch circuit, and transmit node.

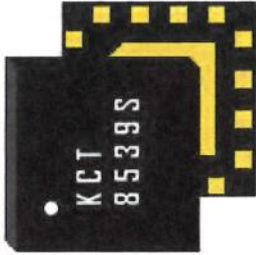
EXHIBIT 24

EXHIBIT 24
SKYWORKS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8539S
U.S. Patent No. 9,148,194
Independent Claim 4

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claim 4 of U.S. Patent No. 9,148,194 (the "'194 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd's and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8539S product. The disclosures in this claim chart directed to the KCT8539S are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8539S in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claim to corresponding components, aspects, and/or features of the KCT8539S product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

The analysis set forth below is based only upon information from publicly available sources regarding the KCT8539S product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8539S product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claim or as other circumstances so merit.

Claim 4	KCT8539S
4[pre] A radio-frequency (RF) switch system comprising:	To the extent the preamble of claim 4 is limiting, the KCT8539S comprises a radio-frequency (RF) switch system. For example, the KCT8539S product description below states that the KCT8539S is an “RF Front-end Module” that “incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.85GHz range.”¹  KCT8539S 5GHz 802.11ax RF Front-End Module Introduction KCT8539S is a highly integrated RF Front-End Integrated Circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.85GHz range. KCT8539S integrates a high-efficiency high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network, LO rejection and harmonic filters all in one device. KCT8539S has simple and low-voltage control logic and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8539S is assembled in a compact low-profile 3x3x0.85mm 16-lead LGA package. KCT8539S is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8539S product description, https://perma.cc/DA7F-4CED. For example, the KCT8539S has a transmit/receive switch (“T/R switch”) (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description

¹ See <https://perma.cc/DA7F-4CED>.

² See <https://perma.cc/DA7F-4CED>.

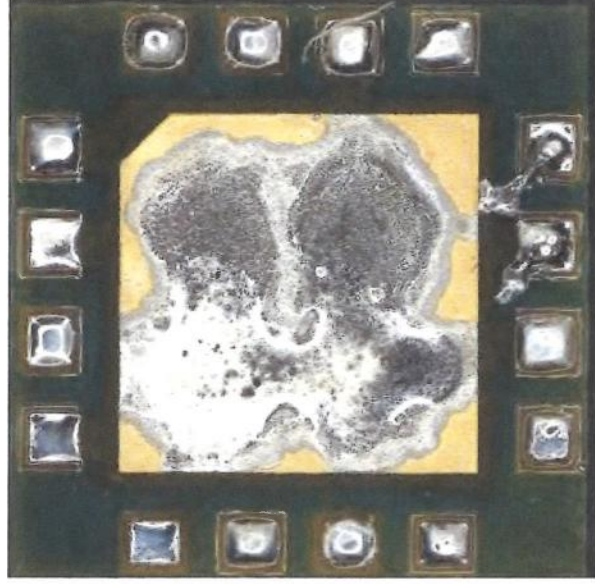
Claim 4

KCT8539S

describes the switch as a "T/R switch" (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

Specifications	
Integrated 102.11MHz ECHz PA + LNA with bypass and T/R switch	
Fully matched input and output	
Integrated power detector	
Transmit gain	30dB at 5V
Receive gain	14dB at 5V
Noise figure	2.6dB at 5V
Output power	
• 17dBm @ -43dB DEVM	HF1670MCS11 5V
• 20dBm @ -40dB DEVM	HF1670MCS11 5V
• 21.5dBm @ -35dB DEVM	VHT30MCS9 5V
• 22.5dBm @ -30dB DEVM	HT20MCS7 5V
ESD protection circuitry on all I/Os	
Minimal external components required	
Small package LGA 1xL 3mmx3mmx0.35mm (HSL3) 260°C per JEDEC J STD 020)	
RoHS and REACH Compliant	

See, e.g., KCT8539S product description and simplified block diagram, <https://perma.cc/DA7F-4CED>.

Claim 4	KCT8539S
	For example, the photos below show the exterior of the KCT8539S device die package, front (left) and back (right).   <i>See, e.g.</i> photo of KCT8539S product, exterior of package, front (left) and back (right).
4[A] a first switch circuit connected between an antenna node and a transmit node;	The KCT8539S comprises a first switch circuit connected between an antenna node and a transmit node. For example, in the KCT8539S, the first switch circuit (located within the block and identified by the corresponding red arrow below) is connected between the antenna node (indicated by the corresponding red arrow below) and the transmit node (indicated by the corresponding red arrow below). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the green dashed line below.

Claim 4	KCT8539S The diagram is a reverse-engineered circuit schematic for the KCT8539S. It features a central processing block with various internal components like transistors, capacitors, and resistors. On the left, there are two multi-pin connectors. The top right shows an RX (Receiver) section with an antenna symbol. The bottom right shows an ESD (Electrostatic Discharge) protection circuit. A dashed blue box encloses a portion of the central circuit, with a red arrow pointing to it from the text 'first switch circuit included in block'. Three specific nodes are highlighted with red arrows and labels: 'transmit node' pointing to the PA_IN pin, 'antenna node' pointing to the INV pin, and another 'antenna node' pointing to a node within the dashed box. Power pins at the bottom are labeled C0, C1, VDD, and GND.
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See, e.g., reverse engineered circuit schematic of KCT8539S product, annotated to show the location of a first switch circuit, transmit node, and antenna node.

For example, in the KCT8539S, the first switch circuit (indicated by the corresponding red arrow below) is between the transmit node and the antenna (ANT) node, as shown in the expanded view below.

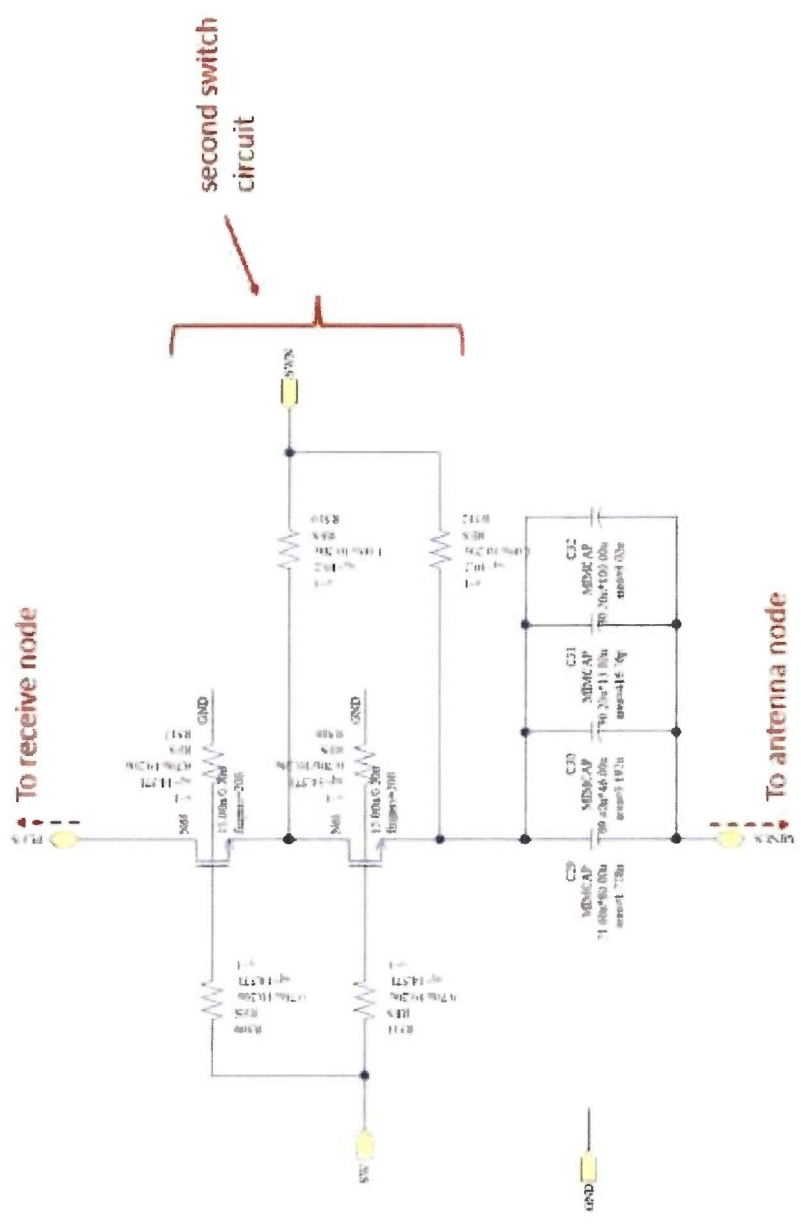
Claim 4	KCT8539S The schematic diagram illustrates the internal circuitry of the KCT8539S. It features a central horizontal line representing a common signal path. On the left, a yellow antenna symbol is labeled "To antenna node". This path leads into a complex network of components including resistors, capacitors, and two MOSFETs. A red bracket labeled "first switch circuit" encompasses a portion of this network. On the right, the path continues to another yellow antenna symbol labeled "To transmit node". Various component values are specified, such as 100k, 10k, 1k, 100p, 10n, and 10p. The diagram is oriented vertically on the page.
4[B] a	See, e.g., reverse engineered circuit schematic of KCT8539S product showing an expanded view of block containing the first switch circuit on the low noise amplifier die. The KCT8539S comprises a second switch circuit connected between the antenna node and a receive node.

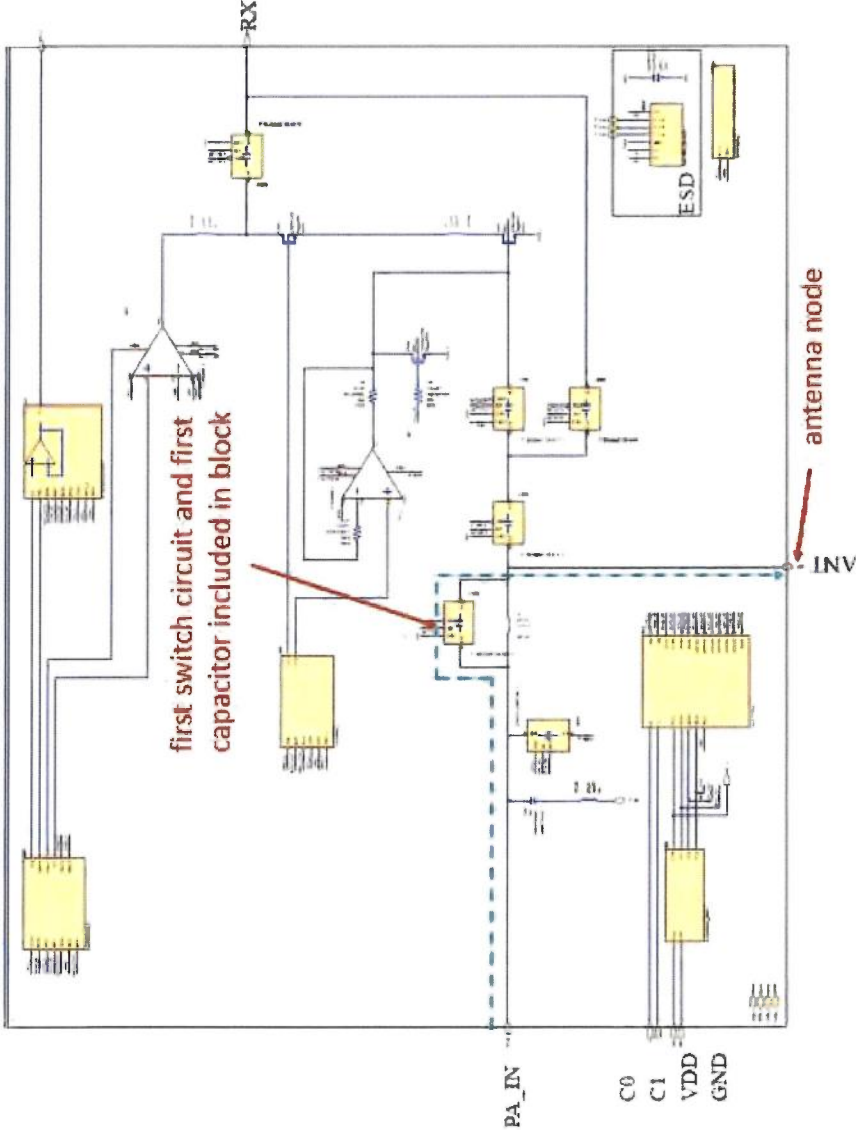
Claim 4	KCT8539S
second switch circuit connected between the antenna node and a receive node;	For example, in the KCT8539S, the second switch circuit (located in the box and identified by the corresponding red arrow below) is connected between the antenna node (indicated by the corresponding red arrow below) and the receive node (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node to the receive node through the low noise amplifier (LNA) is shown by the dashed purple line in the figure below.

Claim 4	KCT8539S The diagram is a circuit schematic for the KCT8539S. It shows a central processing block with several input and output pins. On the left, there are pins labeled PA_IN, C0, C1, VDD, and GND. On the right, there is a pin labeled ANT. The schematic includes a power management section with a PA_IN pin connected to a PA block, which is further connected to a PA block. A second switch circuit is shown, connected to the PA block and the ANT pin. The LNA (Low Noise Amplifier) is connected to the ANT pin and the RX (receive) node. The RX node is connected to the PA block. The schematic also includes an ESD (Electrostatic Discharge) protection circuit. Annotations in red text point to the RX node (labeled 'receive node'), the LNA, the second switch circuit (labeled 'second switch circuit included in block'), and the ANT pin (labeled 'antenna node').
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See, e.g., reverse engineered circuit schematic of KCT8539S product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, antenna node, and low noise amplifier (LNA).

For example, in the KCT8539S, the second switch circuit (indicated by the corresponding red arrow below) is between the receive node and the antenna (ANT) node, as shown in the expanded view below.

Claim 4	KCT8539S
	 The schematic diagram illustrates the internal circuitry of the KCT8539S. It features a low noise amplifier (LNA) stage. The input is connected to a 'To receive node' (indicated by a red arrow). The LNA consists of a first switch (C29) and a second switch (C31). The output of the first switch is connected to the antenna node (indicated by a red arrow). The second switch is connected to a second circuit (indicated by a red arrow). The circuit includes various components such as resistors (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100), capacitors (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100), and inductors (L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100). The circuit is powered by a 5V supply and includes a ground connection.
4[C] a first capacitor connected in series	See, e.g., reverse engineered circuit schematic of KCT8539S product showing an expanded view of block containing the second switch circuit on the low noise amplifier die. The KCT8539S comprises a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8539S, the first capacitor (indicated by the corresponding red arrow below) is connected in

Claim 4 with the first switch circuit between the first switch circuit and the antenna node;	KCT8539S series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is located between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below). 
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Claim 4	KCT8539S
	See, e.g., reverse engineered circuit schematic of KCT8539S product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node. For example, in the KCT8539S, the first switch circuit and first capacitor are in series. In addition, the first capacitor is between the first switch circuit and the antenna (ANT) node, as shown below.

The figure shows a detailed circuit schematic for the KCT8539S. Key components and annotations include:

- To antenna node:** Indicated by a red arrow pointing to the input of the first capacitor.
- first capacitor:** A capacitor labeled 'C1' with a value of '100pF'.
- first switch circuit:** A red bracket highlights the first stage of the switch circuit, which includes a transistor (MOSFET) and associated biasing components.
- Other components:** The schematic includes various resistors (e.g., 10k, 100k, 1M, 10M), capacitors (e.g., 100pF, 1nF, 10nF, 100nF, 1μF), and transistors (MOSFETs).

See, e.g., reverse engineered circuit schematic of KCT8539S product showing an expanded view of block containing the first switch circuit and first capacitor.

Claim 4	KCT8539S
4[D] a second capacitor connected in series with the second switch circuit between the antenna node;	The KCT8539S comprises a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node. For example, in the KCT8539S, the second capacitor and the second switch circuit (indicated by the corresponding red arrow below) are located in the block, in which the second capacitor is connected in series with the second switch circuit. In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. The second capacitor and the second switch circuit are in the block as indicated by the corresponding red arrow below.

Claim 4	KCT8539S
	The diagram is a reverse-engineered circuit schematic of the KCT8539S product's low noise amplifier (LNA) die. It shows a complex network of transistors, capacitors, and inductors. Key components and nodes are labeled: PA_IN, C0, C1, VDD, GND, RX, LNA, and INV. A dashed line separates the circuit into two main sections. A red arrow points to a node labeled 'receive node' near the RX input. Another red arrow points to a node labeled 'antenna node' near the INV input. A third red arrow points to a node labeled 'second switch circuit and second capacitor included in block' near the LNA output. The schematic includes various passive components like capacitors (C0, C1) and inductors (L), as well as active components like transistors and diodes. The overall layout is organized to show the signal flow from the antenna node through the LNA to the RX output.

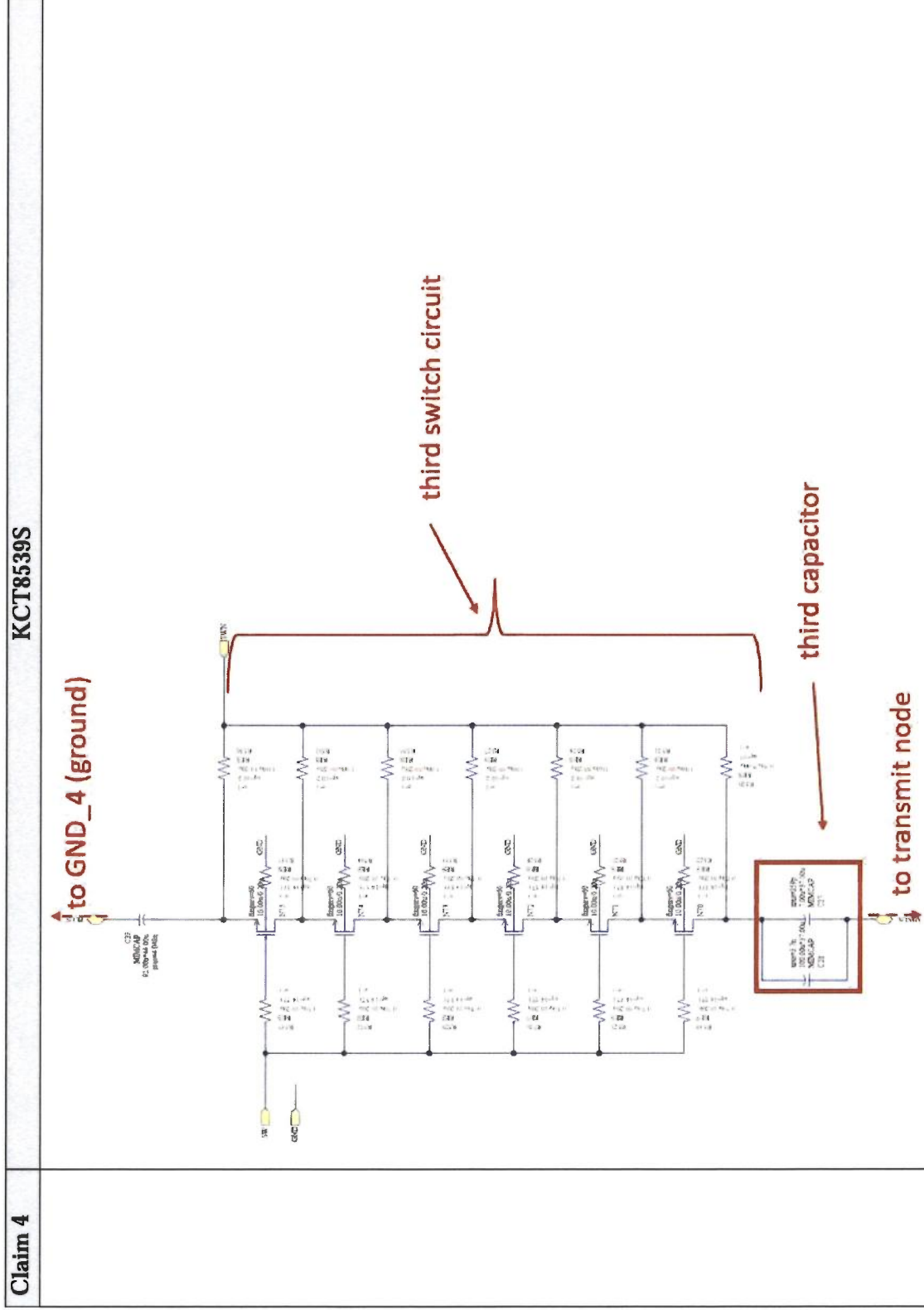
See, e.g., reverse engineered circuit schematic of KCT8539S product's low noise amplifier die, annotated to show the antenna node, receive node, low noise amplifier (LNA), second switch circuit, and second capacitor.

For example, the second capacitor (indicated by the corresponding red arrow below) is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In addition, the second capacitor is located

Claim 4	KCT8539S
shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node.	arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node. For example, in the KCT8539S, the first shunt arm (indicated by the corresponding red arrow identifying the corresponding block below) is connected to the first switch circuit (indicated by the red arrow identifying the corresponding block below) and the transmit node (indicated by the corresponding red arrow below). The first shunt arm (indicated by the corresponding red arrow identifying the corresponding block below) includes a third switch circuit (indicated by the red arrow identifying the corresponding block below) connected to ground (indicated by the corresponding red arrow below).

Claim 4	KCT8539S
The diagram is a detailed circuit schematic of a low noise amplifier (LNA) die, identified as KCT8539S. It shows a complex network of transistors, capacitors, and other electronic components. Key features include: Transmit Node: Labeled as PA_IN, it is the input point for the transmit signal. First Switch Circuit: Indicated by a red arrow pointing to a specific transistor structure. Third Switch Circuit: Indicated by a red arrow pointing to another transistor structure. First Shunt Arm: Indicated by a red arrow pointing to a shunt component in the circuit. Ground: Multiple ground connections are shown, including GND and GND 4. Other Labels: RX, ESD, and various component values like 100pF, 10k, and 100k are visible.	See, e.g., reverse engineered circuit schematic of KCT8539S product's low noise amplifier die showing the first shunt arm, the first switch circuit, third switch circuit, transmit node, and ground. For example, an enlarged view of the circuit schematic block corresponding to the first shunt arm (indicated by the corresponding red arrow below) shows that it is connected to ground (GND 4) (indicated by the corresponding red arrow, the first switch circuit, third switch circuit, transmit node, and ground).

Claim 4	KCT8539S
	arrow below). The diagram shows a circuit schematic for the KCT8539S product. A horizontal line at the top represents a power supply rail, with a label '29.0 RC_SWITCH_2' and a blue dot indicating a connection point. Below this line, a yellow rectangular block represents the device. Inside the block, there are two horizontal lines labeled 'GND' and 'X93_ZN'. Below these, there is a label 'SW' and a switch symbol. To the right of the switch, there is a label 'X113_ZN' and another switch symbol. A red arrow points from the text 'first shunt arm' to the switch symbol. Below the switch, there is a label 'PLUS' and a connection point. To the right of this, there is a label 'GND_4' and a connection point. A red arrow points from the text 'ground' to the 'GND_4' connection point. The label 'MT20' is also present near the 'GND_4' connection point. See, e.g., reverse engineered circuit schematic of KCT8539S product showing the ground connection of the first shunt arm on the low noise amplifier die. For example, in the KCT8539S, the first shunt arm shown below includes a third switch circuit (indicated by the corresponding red arrow and bracket) and a third capacitor. The third capacitor (indicated by the corresponding red arrow below) is connected between the third switch circuit and the transmit node.



Claim 4	KCT8539S
	See, e.g., reverse engineered circuit schematic of KCT8539S product showing an expanded view of the first shunt arm, identifying the third switch circuit on the low noise amplifier die.

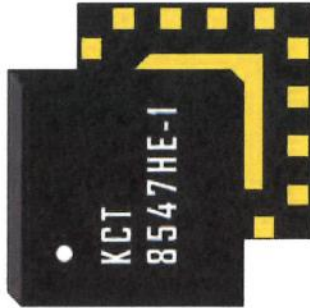
EXHIBIT 25

EXHIBIT 25
SKYWORKS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8547HE
U.S. Patent No. 9,148,194
Independent Claim 4

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claim 4 of U.S. Patent No. 9,148,194 (the "'194 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd.'s and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8547HE product. The disclosures in this claim chart directed to the KCT8547HE are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8547HE in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claim to corresponding components, aspects, and/or features of the KCT8547HE product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

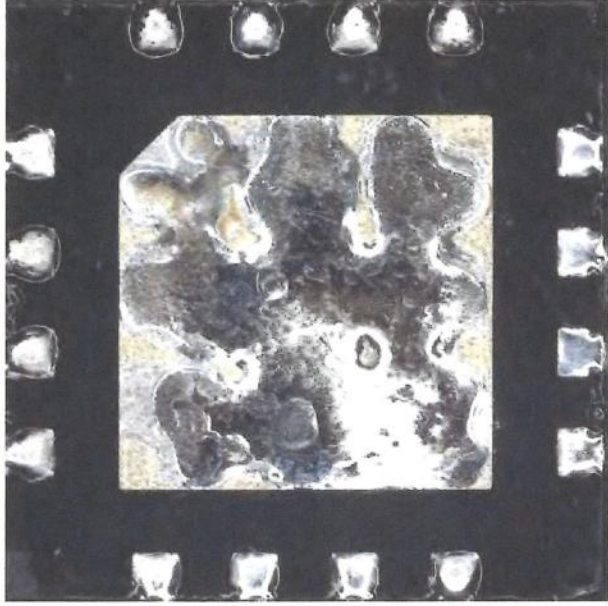
The analysis set forth below is based only upon information from publicly available sources regarding the KCT8547HE product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8547HE product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claim or as other circumstances so merit.

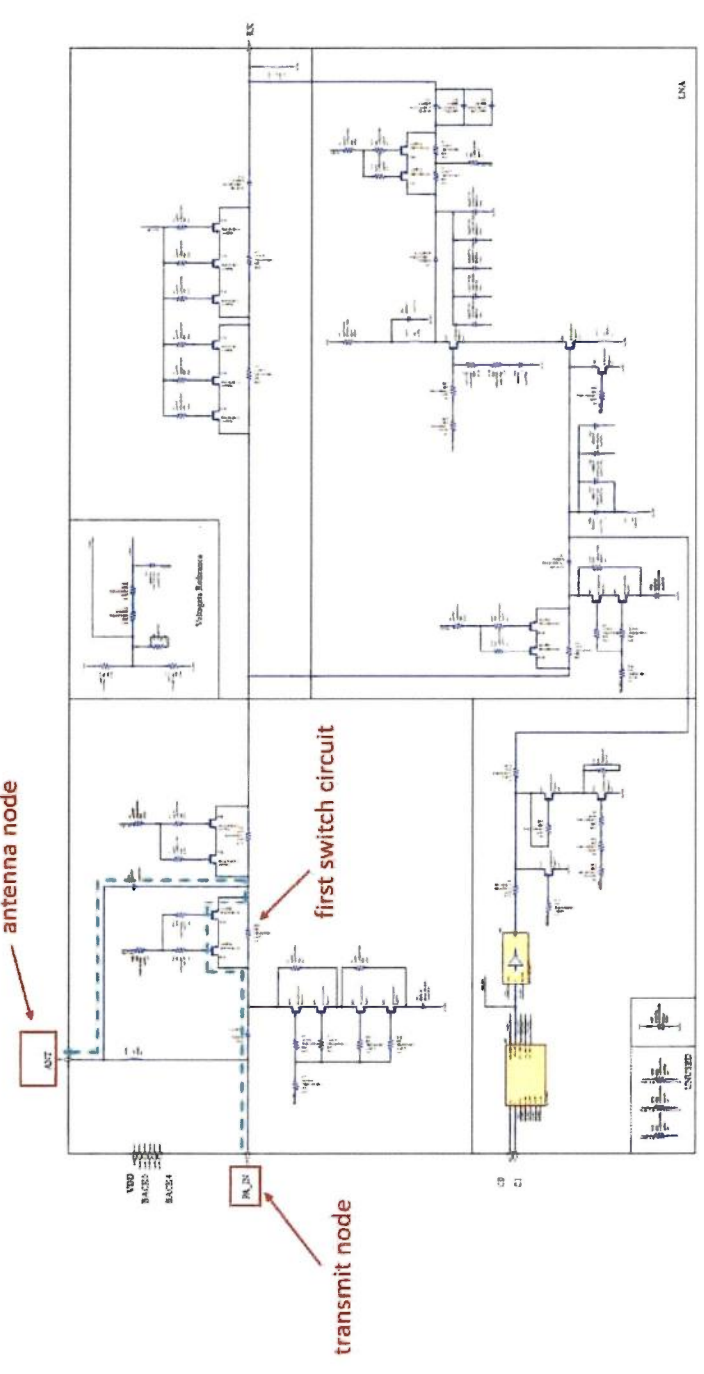
Claim 4	KCT8547HE
4[pre] A radio-frequency (RF) switch system comprising:	To the extent the preamble of claim 4 is limiting, the KCT8547HE comprises a radio-frequency (RF) switch system. For example, the KCT8547HE product description below states that the KCT8547HE is an “RF Front-end Module” that is a “highly integrated RF Front-End Integrated Circuit incorporat[ing] key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”¹  KCT8547HE-1 5GHz Mid Power 802.11ax RF Front-end Module Introduction KCT8547HE-1 is a highly integrated RF Front-End Integrated Circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8547HE-1 integrates a high-efficiency high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and harmonic filters all in one device. KCT8547HE-1 has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8547HE-1 is assembled in a compact, low-profile 3x3x0.55mm 16-lead MIS package. KCT8547HE-1 is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax.

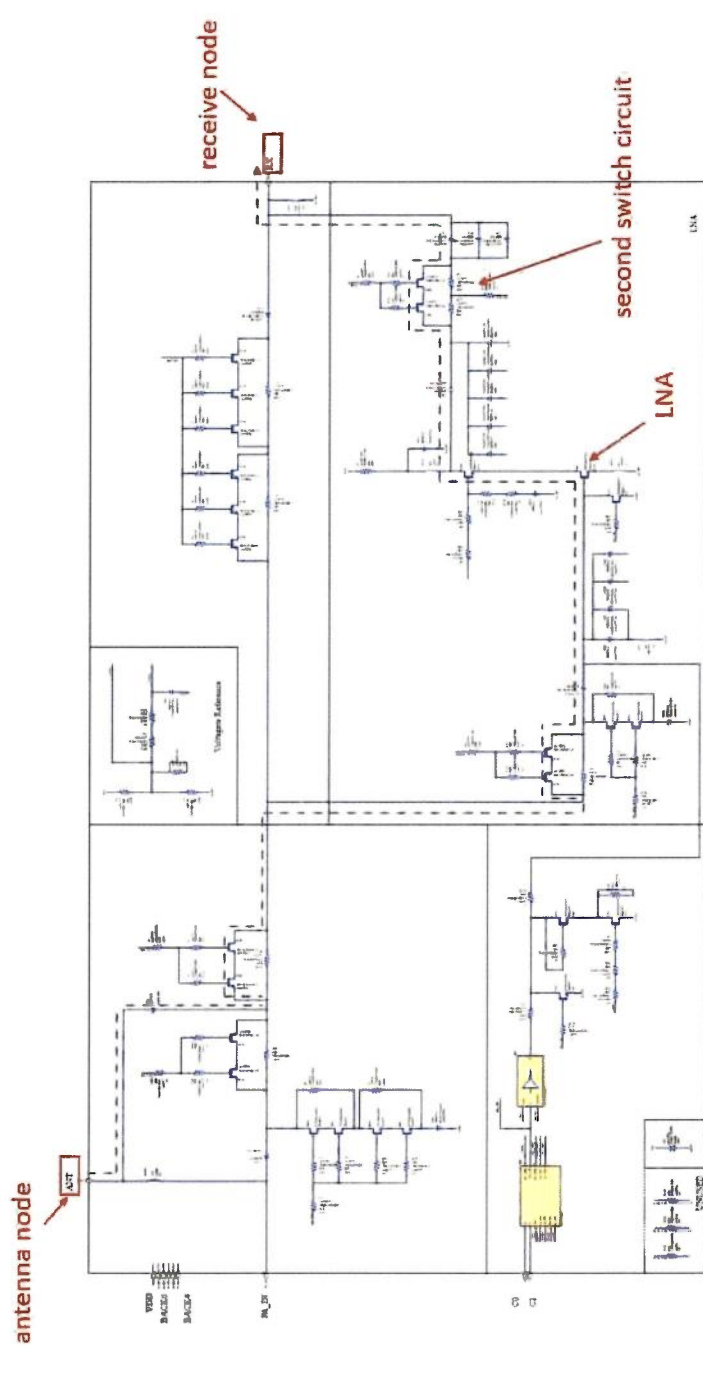
¹ See <https://perma.cc/GV2Y-HD8A>.

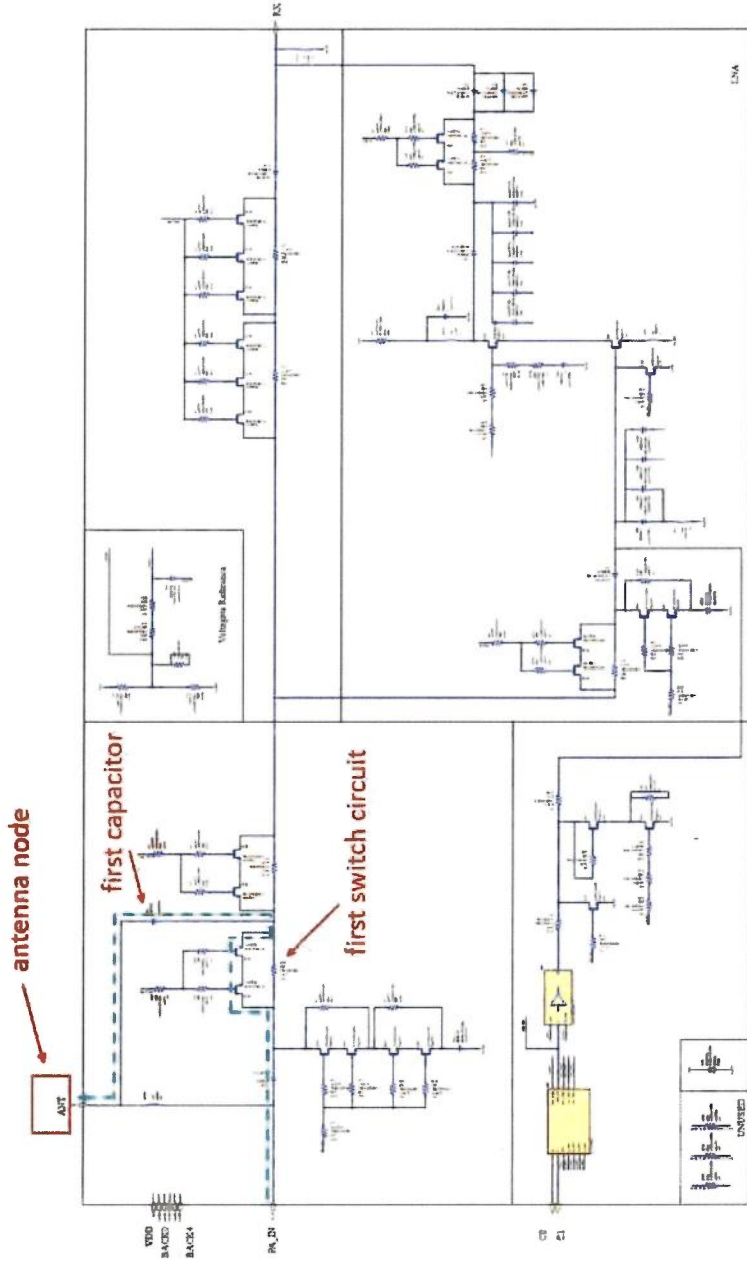
Claim 4	KCT8547HE
	<i>See, e.g.</i>, KCT8547HE product description, https://perma.cc/GV2Y-HD8A. For example, the KCT8547HE has an RF switch (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the receive node (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

² See <https://perma.cc/GV2Y-HD8A>.

Claim 4	KCT8547HE
	  <i>See, e.g.</i> photo of the KCT8547HE product, exterior of package, front (left) and back (right).
4[A] a first switch circuit connected between an antenna node and a transmit node;	The KCT8547HE comprises a first switch circuit connected between an antenna node and a transmit node. For example, in the KCT8547HE, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node (indicated by the corresponding red arrow below) and the transmit node (indicated by the corresponding red arrow below). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the dashed green line below.

Claim 4	KCT8547HE
	 The diagram is a detailed reverse-engineered circuit schematic of the KCT8547HE product. It features a central 'first switch circuit' (highlighted with a red dashed line) that connects an 'antenna node' (ANT, highlighted with a red dashed line) to either a 'transmit node' (TX, highlighted with a red dashed line) or a 'receive node' (RX, highlighted with a red dashed line). The transmit path includes a power amplifier (PA) and a matching network. The receive path includes a low noise amplifier (LNA) and a matching network. The schematic also shows various biasing networks, including a 'Voltage Reference' and 'Bias' sections, and a 'Control' section. The overall layout is organized into functional blocks, with the antenna node at the top, the switch circuit in the middle, and the PA and LNA sections at the bottom.
4[B] a second switch circuit connected between the antenna	See, e.g., reverse engineered circuit schematic of the KCT8547HE product's low noise amplifier die, annotated to show the location of a first switch circuit, transmit node, and antenna node. The KCT8547HE comprises a second switch circuit connected between the antenna node and a receive node. For example, in the KCT8547HE, the second switch circuit (identified by the corresponding red arrow below) is located between the antenna node ("ANT," highlighted by the corresponding red box below) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) is shown by the purple dashed line in the figure below.

Claim 4	KCT8547HE
node and a receive node;	 The diagram is a detailed circuit schematic for the KCT8547HE product. It shows a multi-stage receiver circuit. At the top left, an 'antenna node' is indicated by a red arrow pointing to a node connected to an antenna symbol. Below this, there is a series of transistors and capacitors forming a low noise amplifier (LNA) stage. A 'receive node' is indicated by a red arrow pointing to a node in the LNA stage. Further down, there is a 'second switch circuit' indicated by a red arrow pointing to a switch structure. The circuit is powered by a 'VDD' supply and includes various biasing and matching components. A green dashed line is shown in the bottom right corner, indicating the location of a first capacitor. The schematic is labeled 'KCT8547HE' and 'LNA'.
4[C] a first capacitor connected in series with the first switch	See, e.g., reverse engineered circuit schematic of KCT8547HE product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier (LNA), and antenna node. The KCT8547HE comprises a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8547HE, the first capacitor (indicated by the corresponding red arrow below) is connected in series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is located

Claim 4	KCT8547HE
circuit between the first switch circuit and the antenna node;	between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).
the first switch circuit and the antenna node;	 The diagram is a detailed circuit schematic for the KCT8547HE. It shows a multi-stage circuit. On the left, there are input nodes labeled VDD, BACKD, and BACKL. A red box labeled 'ANT' (antenna node) is connected to the circuit. A red arrow points from the 'ANT' box to a node labeled 'first capacitor'. Another red arrow points from the 'first capacitor' node to a node labeled 'first switch circuit'. The schematic includes various transistors, capacitors, and interconnects. A legend at the bottom right indicates 'UNTESTED' components. The schematic is labeled 'LSNA' in the top right corner.
	See, e.g., reverse engineered circuit schematic of KCT8547HE product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node.
4[D] a second capacitor	The KCT8547HE comprises a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node.

Claim 4 connected in series with the second switch circuit between the second switch circuit and the antenna node;	KCT8547HE For example, in the KCT8547HE, the second capacitor (indicated by the corresponding red arrow below) is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below). The diagram illustrates the internal circuitry of the KCT8547HE. It features a central horizontal line representing a common signal path. On the left, a box labeled 'ANT' (antenna node) is connected to the circuit. A red arrow points to this node. The circuit includes several transistors, capacitors, and inductors. A red arrow points to a 'second capacitor' located between the antenna node and the rest of the circuit. Another red arrow points to a 'second switch circuit' further along the path. The signal path continues through a 'LNA' (low noise amplifier) and finally reaches a box labeled 'RX' (receive node) on the right. A purple dashed line traces the signal path from the antenna node, through the second capacitor, the second switch circuit, the LNA, and to the receive node. Various other components and labels are present, including 'VDD', 'GND', 'MOSFET', and 'LNA'.
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Claim 4	KCT8547HE
4[E] a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node.	See, e.g., reverse engineered circuit schematic of KCT8547HE product's low noise amplifier die, annotated to show the second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna node. The KCT8547HE comprises a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node. For example, in the KCT8547HE, the first shunt arm (indicated by the dashed line box below) is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red arrow below) connected to ground (BACK3) (indicated by the corresponding red arrow below) and a third capacitor (indicated by the corresponding red arrow below). The third capacitor (indicated by the corresponding red arrow below) is connected between the third switch circuit and the transmit node.

Claim 4	KCT8547HE third capacitor transmit node first switch circuit first shunt arm third switch circuit ground VDD Voltage Reference LNA
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See, e.g., reverse engineered circuit schematic of KCT8547HE product's low noise amplifier die identifying the transmit node, first switch circuit, first shunt arm, third switch circuit, third capacitor, and ground.

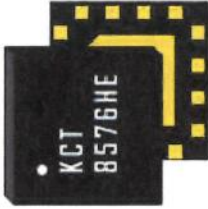
EXHIBIT 26

EXHIBIT 26
SKYWORKS SOLUTIONS INC.'S INFRINGEMENT CHART
KCT8576HE
U.S. Patent No. 9,148,194
Independent Claim 4

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claim 4 of U.S. Patent No. 9,148,194 (the "'194 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd's and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8576HE product. The disclosures in this claim chart directed to the KCT8576HE are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8576HE in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

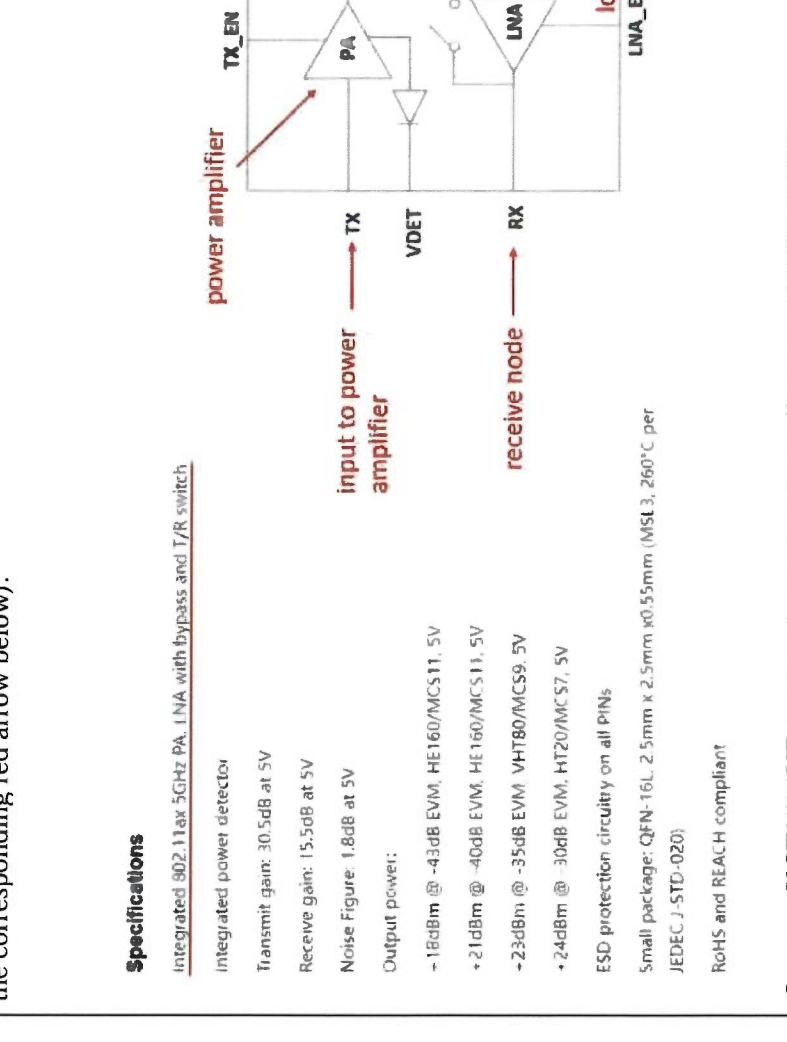
The claim chart below demonstrates infringement by comparing each element of the charted claim to corresponding components, aspects, and/or features of the KCT8576HE product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

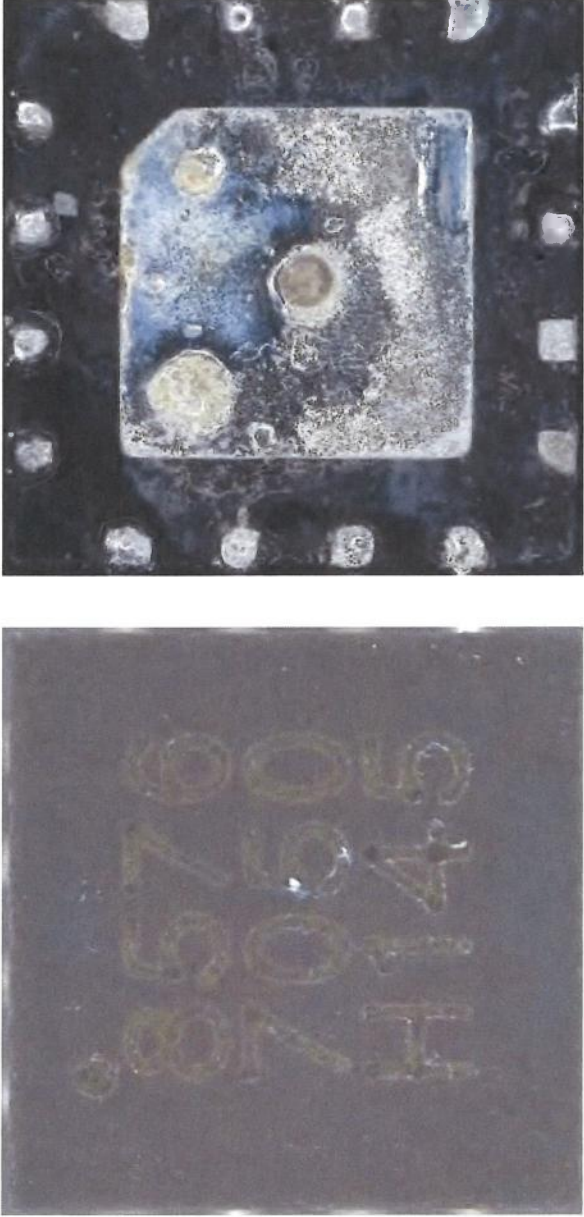
The analysis set forth below is based only upon information from publicly available sources regarding the KCT8576HE product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8576HE product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claim or as other circumstances so merit.

Claim 4	KCT8576HE
4[pre] A radio-frequency (RF) switch system comprising:	To the extent the preamble of claim 4 is limiting, the KCT8576HE comprises a radio-frequency (RF) switch system. For example, the KCT8576HE product description below states that the KCT8576HE is an “RF Front-end Module” that “incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range.”¹  KCT8576HE 5GHz Mid-High Power 802.11ax RF Front-end Module Introduction KCT8576HE is a highly integrated RF front-end integrated circuit incorporates key RF functionality needed for IEEE 802.11a/n/ac/ax WLAN systems operating in the 5.15-5.95GHz range. KCT8576HE integrates a high-efficiency, high-linearity power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network, LO rejection, and harmonic filters all in one device. KCT8576HE has simple and low-voltage control logic, and requires minimal external components. A power detector is also integrated for accurately monitoring of output power from the PA. KCT8576HE is assembled in a compact, low profile 2.5x2.5x0.55mm 16-lead QFN package. KCT8576HE is the ideal RF front-end solution for implementing 5GHz high-power WLAN systems supporting multiple standards including 802.11a/n/ac/ax. See, e.g., KCT8576HE product description, https://perma.cc/N2ZN-83UW. For example, as shown below, the KCT8576HE has a transmit/receive switch (“T/R switch”) (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The figure below also shows the power amplifier (indicated by

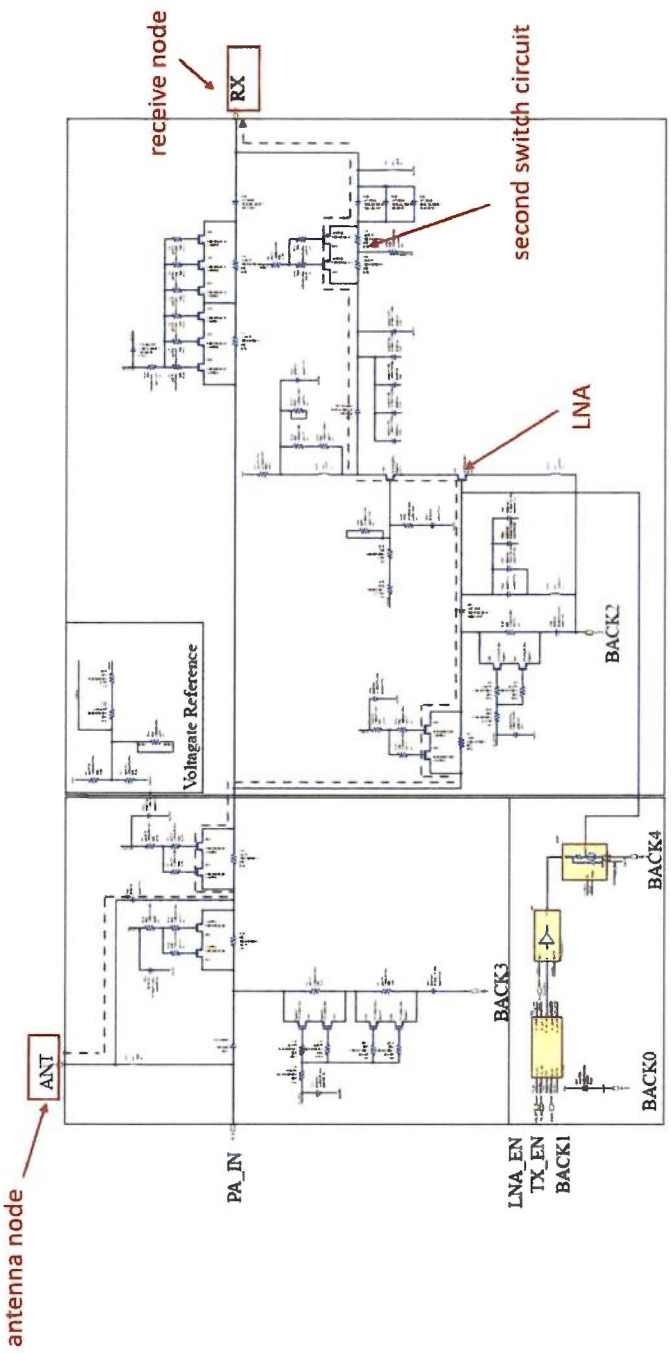
¹ See <https://perma.cc/N2ZN-83UW>.

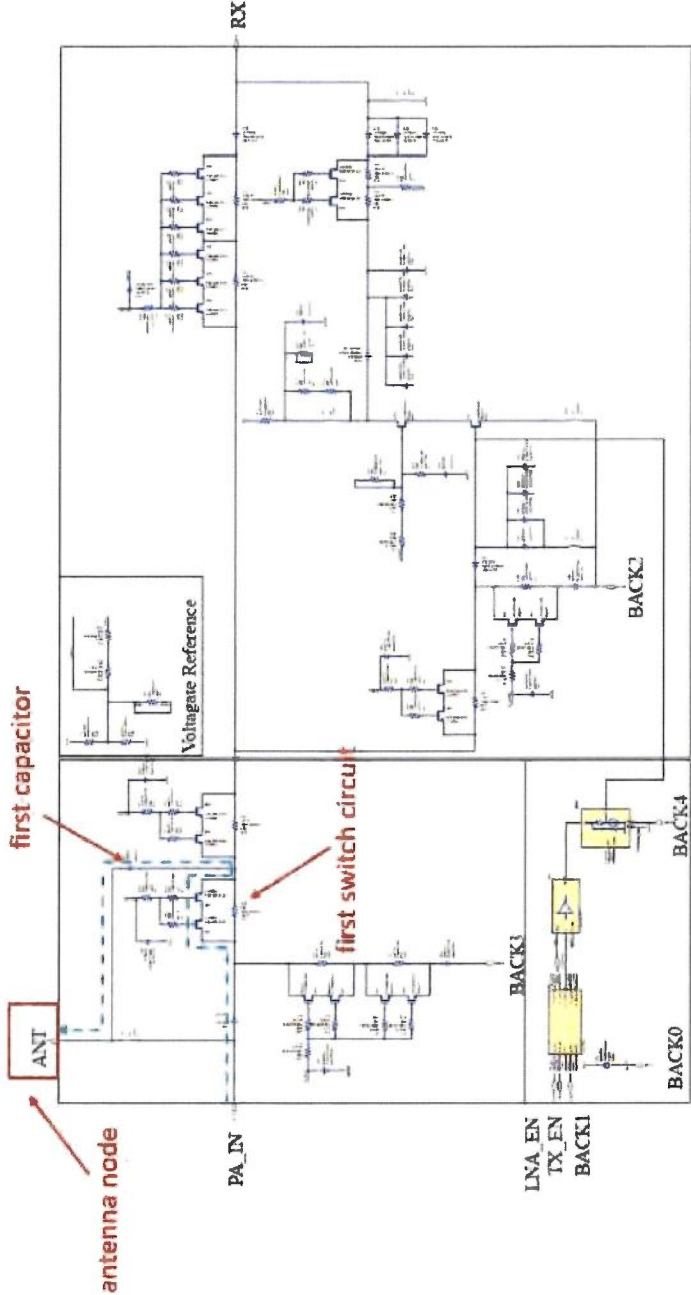
² See <https://perma.cc/N2ZN-83UW>.

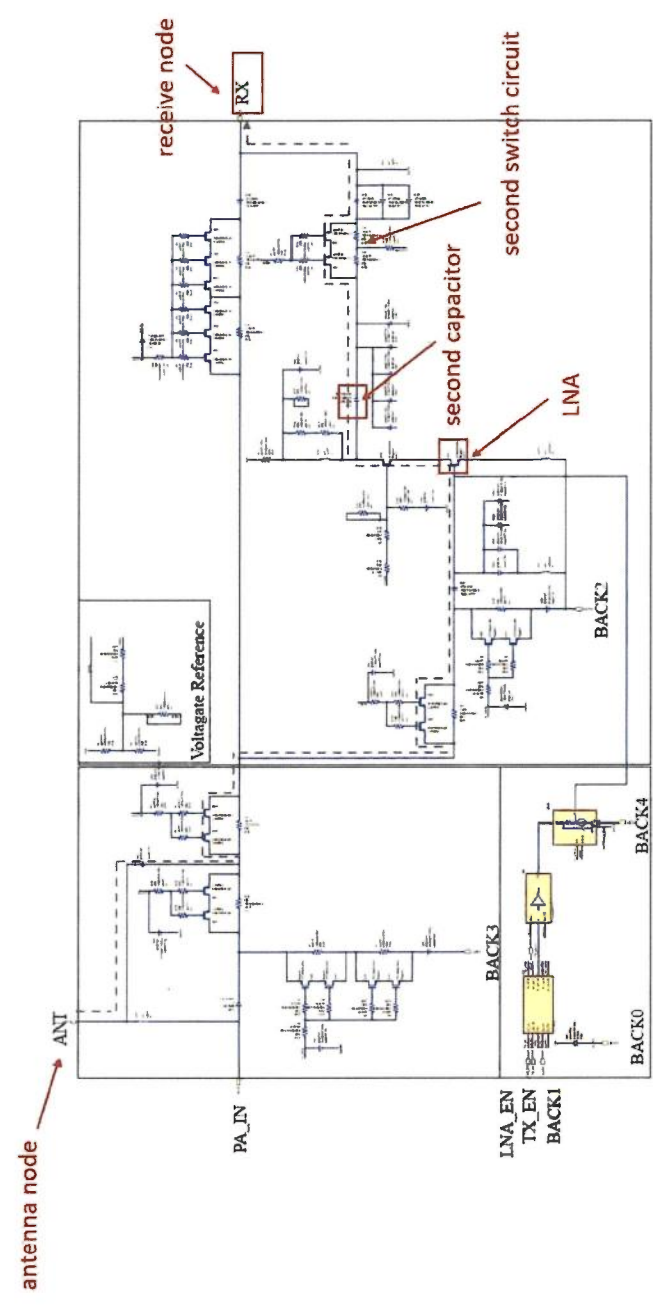
Claim 4	the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below). Specifications <u>Integrated 902.11ax 5GHz PA, LNA with bypass and T/R switch</u> Integrated power detector Transmit gain: 30.5dB at 5V Receive gain: 15.5dB at 5V Noise Figure: 1.8dB at 5V Output power: -18dBm @ -43dB EVM, HE160/MCS11, 5V +21dBm @ -40dB EVM, HE160/MCS11, 5V -23dBm @ -35dB EVM, VHT80/MCS9, 5V +24dBm @ -30dB EVM, HT20/MCS7, 5V ESD protection circuitry on all PINs Small package: QFN-16L, 2.5mm x 2.5mm x0.55mm (MSL3, 260°C per JEDEC J-STD-020) RoHS and REACH compliant
Claim 4	KCT8576HE
the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).	

Claim 4	KCT8576HE	
	 <i>See, e.g.</i> photos of KCT8576HE product.	
4[A] a first switch circuit connected between an antenna node and a transmit node;	The KCT8576HE comprises a first switch circuit connected between an antenna node and a transmit node. For example, in the KCT8576HE, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node (“ANT,” highlighted by the red box) and transmit node (“PA IN,” highlighted by the red box). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the green dashed line below.	

Claim 4	KCT8576HE ANT PA_IN first switch circuit Voltage Reference LNA_EN TX_EN BACK1 BACK2 BACK3 BACK4 RX See, e.g., reverse engineered circuit schematic of KCT8576HE product's low noise amplifier die, annotated to show the location of a first switch circuit, antenna node, and transmit node.
4[B] a second switch circuit connected between the antenna node	The KCT8576HE comprises a second switch circuit connected between the antenna node and a receive node. For example, in the KCT8576HE, the second switch circuit (indicated by the corresponding red arrow below) is located between the antenna node ("ANT," highlighted by the red box) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) is shown by the purple dashed line in the figure below.

Claim 4	KCT8576HE
and a receive node;	 The diagram is a detailed circuit schematic of the KCT8576HE integrated circuit. It shows various functional blocks including a PA_IN input, a Voltage Reference, an ANT (antenna) node, an RX (receive) node, an LNA (Low Noise Amplifier), and a second switch circuit. The schematic is divided into several sections labeled BACK0, BACK1, BACK2, BACK3, and BACK4. Red arrows point to the antenna node, the receive node, and the LNA. A green dashed line indicates a signal path through the first switch circuit. The diagram also shows various capacitors, inductors, and transistors used in the circuit.
4[C] a first capacitor connected in series with the first switch circuit	See, e.g., reverse engineered circuit schematic of KCT8576HE product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier (LNA), and antenna node. The KCT8576HE comprises a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8576HE, the first capacitor (indicated by the corresponding red arrow below) is connected in series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is

KCT8576HE	
Claim 4	located between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).  The diagram is a detailed circuit schematic for the KCT8576HE. It shows a PA_IN input connected to a network of transistors and capacitors. A red box labeled 'ANT' (antenna node) is connected to this network. A red arrow points to a capacitor labeled 'first capacitor'. Another red arrow points to a switch circuit labeled 'first switch circuit'. The circuit includes a 'Voltage Reference' block and a 'RX' output. Various other nodes are labeled, including BACK1, BACK2, BACK4, BACK0, LNA_EN, and TX_EN. The schematic is complex, with many transistors and capacitors connected in a multi-stage fashion.
	See, e.g., reverse engineered circuit schematic of KCT8576HE product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node.
4[D] a second	The KCT8576HE comprises a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node.

Claim 4	KCT8576HE
capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node;	For example, in the KCT8576HE, the second capacitor (indicated by the corresponding red arrow below) is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT).  The diagram is a detailed circuit schematic of the KCT8576HE. It shows a central processing block with various internal components like capacitors, inductors, and transistors. Key nodes and components are labeled: 'ANT' (antenna node) at the top left, 'PA_IN' (power amplifier input) at the top center, 'LNA' (low noise amplifier) at the bottom center, and 'RX' (receive node) at the bottom right. A 'Voltage Reference' block is located on the left side. Several capacitors are highlighted with red boxes and labeled: 'second capacitor' (between the second switch circuit and the antenna node), 'second capacitor' (between the second switch circuit and the LNA), and 'second capacitor' (between the LNA and the RX). A red arrow points to the 'antenna node' (ANT). A red arrow points to the 'receive node' (RX). A red arrow points to the 'second capacitor' (between the second switch circuit and the LNA). A red arrow points to the 'second capacitor' (between the LNA and the RX). A red arrow points to the 'second capacitor' (between the second switch circuit and the antenna node). A purple dashed line indicates the signal path from the antenna node (ANT) through the LNA to the receive node (RX). The schematic also shows a 'second switch circuit' and a 'second capacitor' located between the second switch circuit and the antenna node (ANT). The diagram includes labels for 'BACK0', 'BACK1', 'BACK2', 'BACK3', 'BACK4', 'LNA_EN', 'TX_EN', and 'PA_IN'.

See, e.g., reverse engineered circuit schematic of KCT8576HE product's low noise amplifier die, annotated to show the location of the second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna

Claim 4	KCT8576HE
4[E] a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node. For example, in the KCT8576HE, the first shunt arm (indicated by the dashed line box below) is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red bracket below) connected to ground (BACK3) (indicated by the corresponding red arrow below) and a third capacitor (indicated by the corresponding red arrow below). The third capacitor (indicated by the corresponding red arrow below) is connected between the third switch circuit and the transmit node.	node.

Claim 4 KCT8576HE

See, e.g., reverse engineered circuit schematic of KCT8576HE, product's low noise amplifier die identifying the transmit node, first switch circuit, first shunt arm, third switch circuit, third capacitor, and ground.

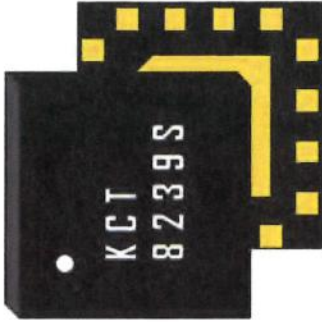
EXHIBIT 27

EXHIBIT 27
SKYWORKS SOLUTIONS, INC.'S INFRINGEMENT CHART
KCT8239S
U.S. Patent No. 9,148,194
Independent Claim 4

Skyworks Solutions, Inc. ("Skyworks") provides this exemplary claim chart for independent claim 4 of U.S. Patent No. 9,148,194 (the "'194 patent") applied to Kangxi Communication Technologies (Shanghai) Co., Ltd.'s and Grand Chip Labs, Inc.'s (collectively, "KCT") KCT8239S product. The disclosures in this claim chart directed to the KCT8239S are also more broadly directed to any sale, offer for sale, use, or importation of the KCT8239S in the U.S., including in an end product such as a wireless router or as a standalone product that is not incorporated in an end product.

The claim chart below demonstrates infringement by comparing each element of the charted claim to corresponding components, aspects, and/or features of the KCT8239S product. This claim chart is not intended to constitute an expert report on infringement. This claim chart includes information provided by way of example, and not by way of limitation.

The analysis set forth below is based only upon information from publicly available sources regarding the KCT8239S product. Further analysis of non-public information during fact discovery will likely assist in identifying all infringing features and functionalities used by KCT in the KCT8239S product. Accordingly, Skyworks reserves the right to supplement this infringement analysis once such information is made available to Skyworks. Further, Skyworks reserves the right to supplement this infringement analysis, as appropriate, upon issuance of an order construing any terms recited in the asserted claim or as other circumstances so merit.

Claim 4	KCT8239S
4[pre] A radio-frequency (RF) switch system comprising:	To the extent the preamble of claim 4 is limiting, the KCT8239S comprises a radio-frequency (RF) switch system. For example, the KCT8239S product description below states that the KCT8239S is an “RF Front-end Module” that “is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality.”¹ KCT8239S 2.4GHz 802.11ax RF Front-End Module Introduction <u>KCT8239S is a fully integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which incorporates key RF functionality. It is integrated with a high-efficiency power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated matching network and a single-pole, double-throw (SPDT) switch all in one device.</u> The PA power detector and a digital enable control are also integrated KCT8239S is assembled in a compact, low-profile 3*3*0.55mm 16-pin MIS package. It is the perfect RF Front-end solution for implementing 2.4GHz high-performance WLAN systems supporting multiple standards. 

¹ See <https://perma.cc/NS2E-VPYU>.

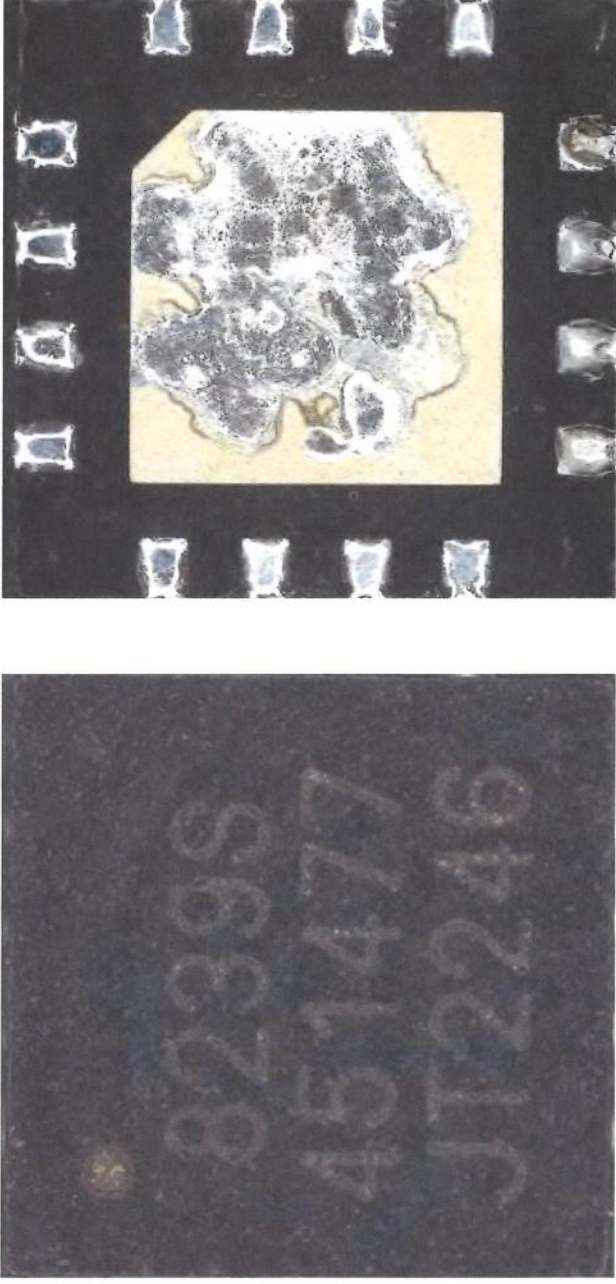
Claim 4	KCT8239S
	<i>See, e.g.</i>, KCT8239S product description, https://perma.cc/NS2E-VPYU. For example, as shown below, the KCT8239S has a transmit/receive switch (“T/R switch”) (indicated by the corresponding red arrow in the figure below) that selectively allows either transmission or reception of signals.² The KCT product description describes the switch as a “T/R switch” (indicated by the red underlining in the text below). The figure below also shows the power amplifier (indicated by the corresponding red arrow below), the antenna node (indicated by the corresponding red arrow below), the receive node (indicated by the corresponding red arrow below), the low noise amplifier (indicated by the corresponding red arrow below), and the input to the power amplifier (indicated by the corresponding red arrow below).

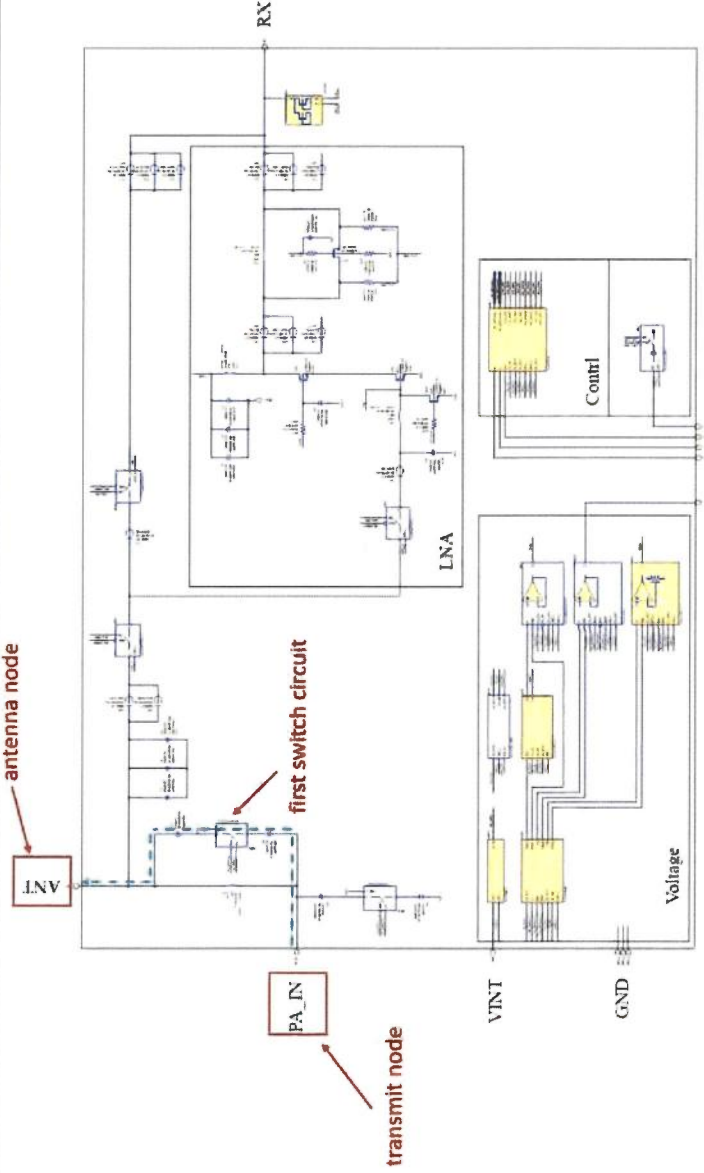
² See <https://perma.cc/NS2E-VPYU>.

Claim 4	Specifications <u>Integrated high performance 2.4GHz PA, LNA with bypass and T/R switch</u> Fully-matched input and output Integrated Power Detector Output power +20dBm @ DEVN=-43dB HE40/MCS11 5V -20.5dBm @ DEVN=-40dB HE40/MCS11 5V +22dBm @ DEVN=-35dB VHT40/MCS9 5V +23dBm @ DEVN=-30dB HT20/MCS7 5V Transmit gain 29dB at 5V Receive gain 19dB at 5V Noise Figure 2.6dB at 5V ESD protection circuitry on all I/Os Minimal External Components Required Small package M/S-16L 3x3x0.55mm (MSL-16L 260°C per JEDEC J-STD-020) RoHS and REACH Compliant antenna node switch system T/R switch power amplifier input to power amplifier low noise amplifier receive node
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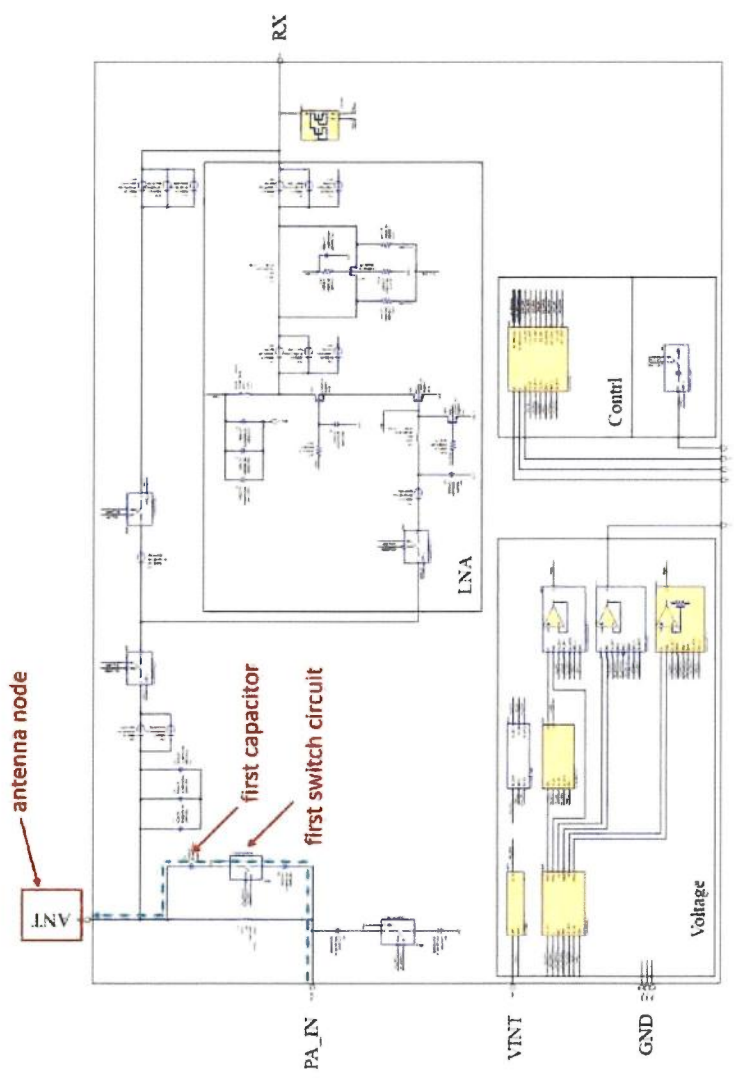
See, e.g., KCT8239S product description and simplified block diagram, <https://perma.cc/NS2E-VPYU>.

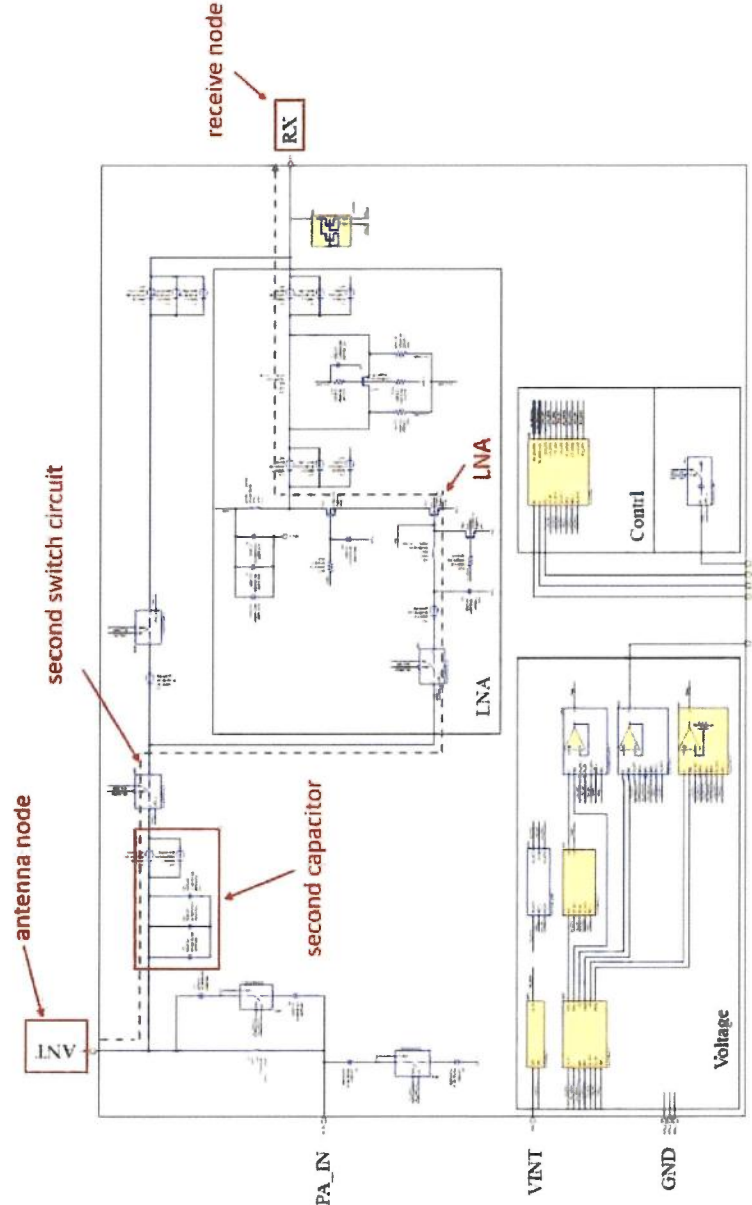
For example, the photos below show the exterior of the KCT8239S device die package, front (left) and back (right).

Claim 4	KCT8239S
	 <i>See, e.g.</i> photo of KCT8239S product, exterior of package, front (left) and back (right).
4[A] a first switch circuit connected between an antenna node and a transmit node;	The KCT8239S comprises a first switch circuit connected between an antenna node and a transmit node. For example, in the KCT8239S, the first switch circuit (identified by the corresponding red arrow below) is connected between the antenna node (indicated by the corresponding red arrow below) and the transmit node (indicated by the corresponding red arrow below). In transmit mode, the signal path from the transmit node, through the first switch circuit, and to the antenna node is shown by the dashed green line below.

Claim 4	KCT8239S  See, e.g., reverse engineered circuit schematic of the KCT8239S product's low noise amplifier die, annotated to show the location of a first switch circuit, transmit node, and antenna node. The KCT8239S comprises a second switch circuit connected between the antenna node and a receive node.
4[B] a second switch circuit connected between the antenna node and a	For example, in the KCT8239S, the second switch circuit (identified by the corresponding red arrow below) is located between the antenna node ("ANT," highlighted by the corresponding red box below) and the receive node ("RX," highlighted by the corresponding red box below). In receive mode, the approximate signal path from the antenna node (ANT) to the receive node (RX) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below.

Claim 4	KCT8239S
receive node;	The diagram is a detailed circuit schematic of the KCT8239S product. It features an antenna node (ANT) at the top left, connected to a second switch circuit (indicated by a red arrow). This switch circuit is part of a larger system that includes a low noise amplifier (LNA) and a receive node (RX, indicated by a red arrow). The schematic also shows a PA_IN input, a VINT pin, a GND connection, and a Voltage section with various capacitors and inductors. A Control block is also present, connected to the main circuitry. The entire circuit is enclosed in a dashed box, with various components and connections labeled throughout.
4[C] a first capacitor connected in series with the first switch	See, e.g., reverse engineered circuit schematic of KCT8239S product's low noise amplifier die, annotated to show the location of a second switch circuit, receive node, low noise amplifier, and antenna node. The KCT8239S comprises a first capacitor connected in series with the first switch circuit between the first switch circuit and the antenna node. For example, in the KCT8239S, the first capacitor (indicated by the corresponding red arrow below) is connected in series with the first switch circuit (indicated by the corresponding red arrow below). The approximate signal path during transmit mode is shown by the green dashed line in the figure below. In addition, the first capacitor is located

Claim 4	KCT8239S
circuit between the first switch circuit and the antenna node;	between the first switch circuit and the antenna node (ANT) (indicated by the corresponding red arrow below).  The diagram is a detailed circuit schematic for the KCT8239S. It features several key components and connections: - Antenna Node (ANT): A red box labeled 'ANT' is connected to the 'antenna node' via a red arrow. - First Capacitor: A red arrow points to a capacitor in the signal path, labeled 'first capacitor'. - First Switch Circuit: A red arrow points to a switch structure, labeled 'first switch circuit'. - Low Noise Amplifier (LNA): A large block labeled 'LNA' is shown with multiple internal stages and components. - Power Amplifier Input (PA_IN): A connection point labeled 'PA_IN' is shown. - Receiver (RX): A component labeled 'RX' is connected to the LNA. - Voltage and Control: A 'Voltage' block and a 'Control' block are shown at the bottom, with various connections to the main circuit. - VTNT and GND: Connections for 'VTNT' and 'GND' are indicated at the bottom of the schematic.
See, e.g., reverse engineered circuit schematic of KCT8239S product's low noise amplifier die, annotated to show the location of a first switch circuit, first capacitor, and antenna node.	
4[D] a second	The KCT8239S comprises a second capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node.

Claim 4	KCT8239S
capacitor connected in series with the second switch circuit between the second switch circuit and the antenna node;	For example, in the KCT8239S, the second capacitor (indicated by the corresponding red arrow pointing to the red box below) is connected in series with the second switch circuit (indicated by the corresponding red arrow below). In receive mode, the approximate signal path from the antenna node (ANT) (indicated by the corresponding red arrow below) to the receive node (RX) (indicated by the corresponding red arrow below) through the low noise amplifier (LNA) (indicated by the corresponding red arrow below) is shown by the purple dashed line in the figure below. In addition, the second capacitor is located between the second switch circuit and the antenna node (ANT).  The diagram illustrates the internal circuitry of the KCT8239S. Key components and their connections are as follows: Antenna Node (ANT): Indicated by a red box and a red arrow. It is the input point for the antenna signal. Second Switch Circuit: Indicated by a red arrow. It is located between the ANT and the second capacitor. Second Capacitor: Indicated by a red box and a red arrow. It is connected in series with the second switch circuit. LNA (Low Noise Amplifier): Indicated by a red arrow. It is located between the second capacitor and the RX node. Receive Node (RX): Indicated by a red box and a red arrow. It is the output point for the received signal. PA_IN: A pin input located near the ANT. VINT: A pin input located near the LNA. GND: Ground connection points. Voltage: A section showing various voltage regulators and their connections to VINT and GND. Cont1: A control block connected to the LNA and RX. A purple dashed line traces the signal path from the ANT, through the second switch circuit, the second capacitor, the LNA, and finally to the RX node.

Claim 4	KCT8239S
4[E] a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node.	See, e.g., reverse engineered circuit schematic of KCT8239S product's low noise amplifier die, annotated to show the location of the second capacitor, low noise amplifier (LNA), second switch circuit, receive node, and antenna node. The KCT8239S comprises a first shunt arm connected to the first switch circuit and the transmit node, the first shunt arm including a third switch circuit connected to ground and a third capacitor connected between the third switch circuit and the transmit node. For example, in the KCT8239S, the first shunt arm (indicated by the corresponding red bracket below) is connected to the first switch circuit (indicated by the corresponding red arrow below) and the transmit node (PA IN) (highlighted by a red box). The first shunt arm includes a third switch circuit (indicated by the corresponding red arrow below) connected to ground (GND_2) (indicated by the corresponding red arrow below) and a third capacitor (indicated by the corresponding red arrow below). The third capacitor (indicated by the corresponding red arrow below) is connected between the third switch circuit and the transmit node.

Claim 4	KCT8239S The diagram is a detailed circuit schematic of the KCT8239S product's low noise amplifier (LNA) die. It features a central LNA block with multiple input and output ports. The input ports are labeled 'LNV' and 'RX'. The output ports are labeled 'VTNT' and 'GND'. The schematic includes various components such as capacitors, inductors, and transistors. Red arrows point to specific components and nodes, with labels: 'transmit node' pointing to the 'PA_IN' node, 'first switch circuit' pointing to a switch structure, 'first shunt arm' pointing to a shunt arm, 'third capacitor' pointing to a capacitor, 'third switch circuit' pointing to another switch structure, and 'ground' pointing to a ground connection. The schematic also shows a 'Voltage' section with three yellow boxes and a 'Control' section with a yellow box and a control signal line. The overall layout is organized into functional blocks, with the LNA block being the central focus.
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See, e.g., reverse engineered circuit schematic of KCT8239S product's low noise amplifier die identifying the transmit node, first switch circuit, first shunt arm, third switch circuit, third capacitor, and ground.