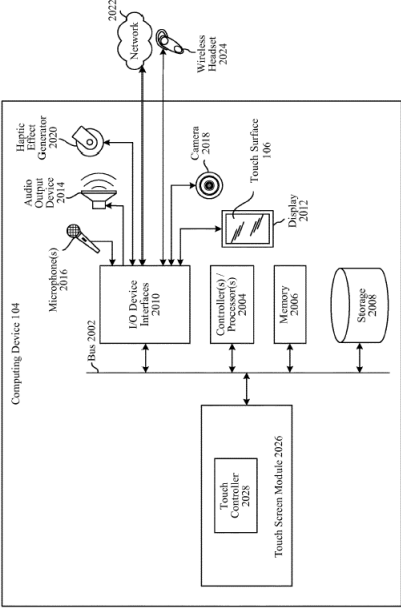
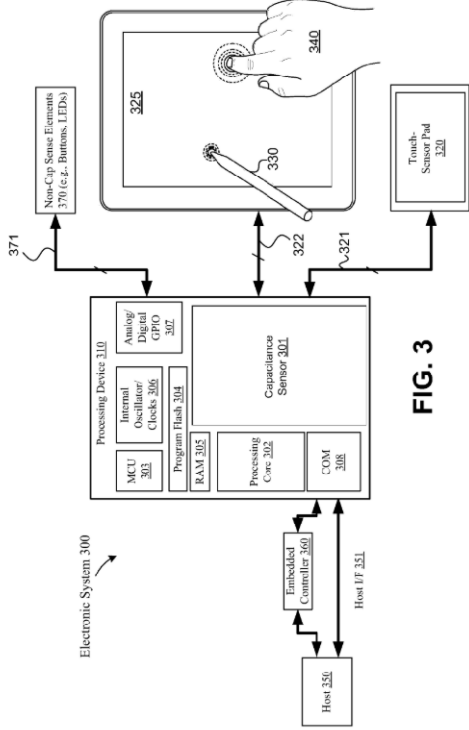
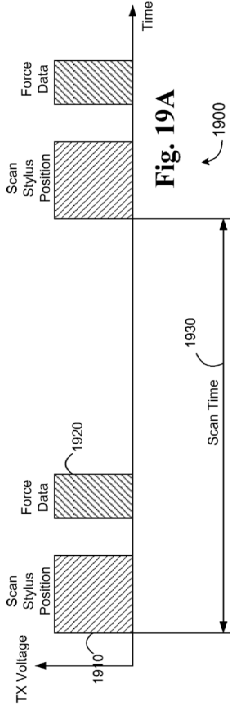
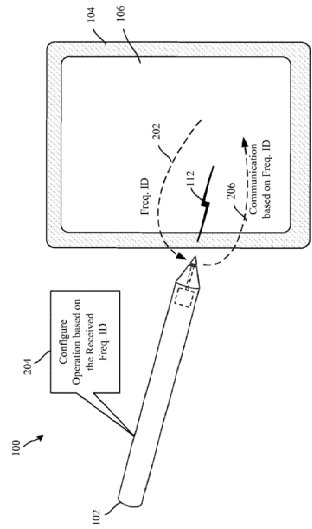


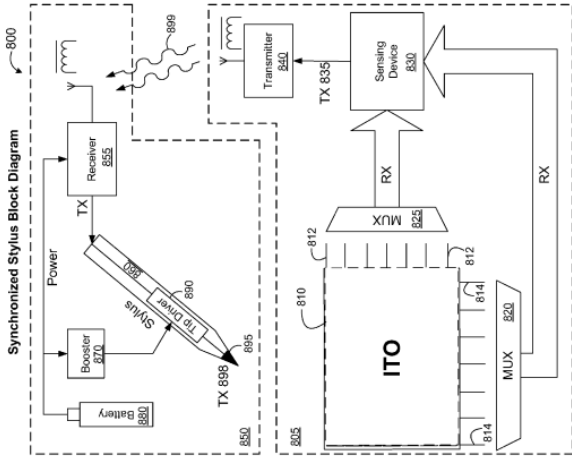
APPENDIX B Kremin '361 in view of Sundara-Rajan U.S. Patent No. 9,977,519

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin ’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
Claim 1 (Ind. Claim) 1[pre] A processing system for an input device, the processing system comprising:	Kremin ’361 discloses an input device with a processing system. Specifically, in Figure 3, Kremin ’361 discloses “a block diagram illustrating one embodiment of an electronic system 300 having a processing device 310 for detecting a presence of a touch object 340 and a stylus 330. Electronic system 300 includes processing device 310, touch screen 325, touch sensor pad 320, stylus 330, host processor 350, embedded controller 360, and non-capacitance sense elements 370. In the depicted embodiment, the electronic system 300 includes the touch screen 325 coupled to the processing device 310 via bus 322. Touch screen 325 may include a multi-dimension capacitive sense array.” Kremin ’361, at ¶0051. FIG. 3	Sundara-Rajan discloses an input device with a processing system. Specifically, in Figure 20, Sundara-Rajan discloses a computing device 104 that has a touchscreen module 2026 and touch screen controller 2028, as well as a display 2012 that may have a touch surface 106 which are understood to be input devices. Sundara-Rajan, at 18:11-63; ’519 Patent at 1:24-27 (“Input devices including proximity sensor devices (also commonly called touchpads or touch sensor devices) are widely used in a variety of electronic systems.”). The computing device 104 also has controller(s)/processor(s) 2004 that may each include a central processing unit (CPU) for processing data and computer-readable instructions. Sundara-Rajan, at 18:11-63. FIG. 1

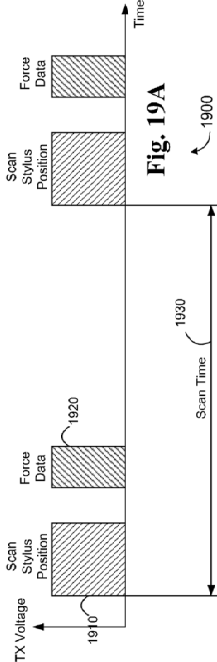
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
1[a] a sensor module coupled to sensor circuitry and configured to:	Kremin’361 discloses a sensor module coupled to sensor circuitry. Specifically, Kremin’361 discloses a “capacitance sensor 301” which “may be integrated into processing device 310. Capacitance sensor 301 may include analog I/O for coupling to an external component, such as touch-sensor pad 320, touch screen 325, touch-sensor slider (not shown), touch-sensor buttons (not shown), and/or other devices.” Kremin’361, at ¶0055; <i>see also</i> Fig. 3:	FIG. 20  The diagram shows a Computing Device 104 with a central Bus 2002. Connected to the bus are: Microphones(s) 2016, an Audio Output Device 2014, an Haptic Effect Generator 2020, IO Device Interfaces 2010, a Camera 2018, a Touch Surface 106, a Display 2012, a Controller(s)/Processor(s) 2004, Memory 2006, and Storage 2008. A Touch Screen Module 2026, containing a Touch Controller 2028, is connected to the bus. Externally, the device connects to a Network 2022 and a Wireless Headset 2024.
1[a] a sensor module coupled to sensor circuitry and configured to:	Sundara-Rajan discloses a sensor module coupled to sensor circuitry. Specifically, Sundara-Rajan discloses a touch controller in a touch screen module, which a POSITA would understand to function as a sensor module with sensor circuitry. <i>See, e.g.</i>, Sundara-Rajan at 2:26-2:31 (“In an embodiment, offered is an active capacitive stylus that enables the computing device to communicate to the active stylus, for example, via a touch controller, using an electromagnetic communication channel, such as a capacitive link or a capacitive communication channel.”).	Sundara-Rajan discloses a sensor module coupled to sensor circuitry. Specifically, Sundara-Rajan discloses a touch controller in a touch screen module, which a POSITA would understand to function as a sensor module with sensor circuitry. <i>See, e.g.</i>, Sundara-Rajan at 2:26-2:31 (“In an embodiment, offered is an active capacitive stylus that enables the computing device to communicate to the active stylus, for example, via a touch controller, using an electromagnetic communication channel, such as a capacitive link or a capacitive communication channel.”).

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
1[b] initiate a current beacon period comprising a plurality of timeslots by broadcasting, to a plurality of active pens comprising a first active pen, a current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen;	 FIG. 3	Sundara-Rajan discloses a sensor module that initiates a current beacon period comprising a plurality of timeslots. Specifically, Sundara-Rajan discloses a frequency ID, which a POSITA would understand to be a plurality of timeslots. in Fig. 2, “the device 104 may transmit a frequency ID, illustrated as 202, to the stylus device 102 via the carrier frequency. In this example, the frequency ID may correspond to a frequency the computing device 104 desires to operate on. The stylus device 102 configures its operation according to the frequency corresponding to the frequency ID, illustrated as 204. The stylus device 102 then communicates with the computing device 104 using the frequency, illustrated as 206. The frequency ID, or other content, may be communicated between the computing device and the stylus device using a Bluetooth message, a WiFi message, an infrared message, electromagnetic (e.g., capacitive, inductive, resonance, radio frequency backscatter, etc.) message, or a haptic message.” Sundara-Rajan, at 4:37-4:50.

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	Additionally, Kremin’361, at ¶¶0124-0125 and Fig. 19A, disclose “a timing diagram 1900 for a host device configured to transmit stylus position data and force data during separate intervals, according to an embodiment of the invention.” “In an embodiment, the host utilizes the interval between the end of one stylus position scan to the beginning of the next stylus position scan to synchronize the host and stylus to provide robust data transfer and error-free stylus position tracking. By transmitting force data separately in time (e.g., time division multiplexing the stylus TX signal and force data), less time is available in the scan time 1930 for the host device to perform the synchronization and tracking operations. In an embodiment, an increased scan time (i.e., reduced system operating frequency) may be needed. It should be noted that high bit rates may be achieved with this method. In an embodiment, 16 bits are transferred per scan time interval. Alternatively, less or more than 16 bits may be transferred per scan time interval.”  Fig. 19A Kremin’361 also discloses an “active stylus [that] receives synchronization or timing data from the touch screen controller.” Kremin’361, at ¶0079; <i>see also id.</i> ¶0083 (“In another embodiment, the transmitter 840 sends a synchronization signal 899, or timing data, whereby the stylus 850 generates the stylus TX signal 898 based on the	FIG. 2  Sundara-Rajan discloses that “the computing device 104 may transmit a configuration ID, illustrated as 114, to the stylus device 102 via the carrier frequency.” Sundara-Rajan, at 4:24-4:26. “The configuration ID may correspond to a type of touch controller of the computing device 104 and/or may include other information.” <i>Id.</i> at 4:26-4:28. A POSITA could reasonably expect that such “other information” could include a pen ID. It would be obvious to a POSITA that the embodiments disclosed in Sundara-Rajan could apply to a plurality of active pens.

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	synchronization signal 899 received by the receiver 855 from the transmitter 840.”).  Fig. 8 In addition to timing data, Kremin’361 includes “stylus scan count” 2025 2040 (Fig. 20 and ¶0129) which a POSITA would understand as a pen ID. If the number of styluses is counted by the processor, then each stylus must be assigned a numerical identification. According to Kremin’361, at ¶0093, the stylus and the host communicate “bi-directionally” which means that a POSITA would understand that the “stylus scan count” would be known by both the stylus and the host. According to Kremin’361, at ¶0075, there are “active” and “passive” styluses. A POSITA would understand that each stylus would require a unique	

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	identification to prevent transmission interference with the host.	
1[c] receive, during a first timeslot, a first downstream packet from a first active pen transceiver of the first active pen; and	Kremin’361 discloses a time division multiplexing (“TDM”) scheme, whereby “the stylus 1300 transmits the stylus TX signal 898 in one time slot, and transmits the additional data (e.g., force data, acceleration data) in another time slot, as described with respect to FIG. 19. Similarly, code division multiplying (CDM) may be used to transmit the stylus TX signal and the additional data. The stylus 1300 may transmit the stylus TX signal 898 using one code, and may transmit the additional data using another code. In an embodiment, the stylus TX signal 898 and additional data may utilize the same frequency or different frequencies. In other embodiments, optical, ultrasonic, inductive, or RF signal transmissions may be utilized to transfer the additional data from the stylus 1300 to the sensing device 830. For example, additional data may be wirelessly coupled from the stylus 1300 to the sensing device 830.” Kremin’361, ¶0111. Additionally, Kremin’361, at ¶¶0124-0125 and Fig. 19A, discloses “a timing diagram 1900 for a host device configured to transmit stylus position data and force data during separate intervals, according to an embodiment of the invention.” “In an embodiment, the host utilizes the interval between the end of one stylus position scan to the beginning of the next stylus position scan to synchronize the host and stylus to provide robust data transfer and error-free stylus position tracking. By transmitting force data separately in time (e.g., time division multiplexing the stylus TX signal and force data), less time is available in the scan time 1930 for the host device to perform the synchronization and tracking operations. In an embodiment, an increased scan time (i.e., reduced system operating frequency) may be	Sundara-Rajan discloses an active pen with a transceiver. For example, the stylus disclosed in Sundara-Rajan can “function as an electrode(s) to transmit and receive information over the capacitive communication channel.” Sundara-Rajan at 4:55-4:62. Because the active pen can both receive and transmit information and signals, a POSITA would understand that it has a transceiver. Sundara-Rajan discloses that the stylus “may create an output sequence to be transmitted to the computing device based on the encoding scheme (i.e., FSK, BPSK or ASK), output pressure levels of the pressure sensor, buttons, and other components of the stylus device, illustrated as block 1906. The output sequence may be the data the stylus device is to transmit to the computing device encoded with the appropriate encoding scheme (i.e. the output bit patterns the stylus device is to transmit to the computing device).” Sundara-Rajan, at 17:36-17:44. A POSITA would understand this to be a downstream packet.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) needed. It should be noted that high bit rates may be achieved with this method. In an embodiment, 16 bits are transferred per scan time interval. Alternatively, less or more than 16 bits may be transferred per scan time interval.”  Fig. 19A Because the active pen can both receive and transmit information and signals, a POSITA would understand that it has a transceiver.	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
1[d] receive, during a second timeslot, a second downstream packet from a second active pen transceiver; and	It would be obvious to a POSITA that the embodiments disclosed in Kremin’361 described in 1[c] could apply to a second active pen. Kremin’361 expressly discloses that the processing device of the touchscreen “is configured to detect a presence” of both an active stylus and a touch object individually or concurrently. Kremin’361, ¶¶0052, 0048 (disclosing using electrodes to track the position of multiple touch objects). A POSITA would understand that Kremin’361 teaches the ability to have a second pen by examining Fig. 3, 6B, 8 and the following statement: “Additionally, the interconnection between circuit components or blocks may be shown as buses [for bidirectional communication] or as single signal lines. Each of the buses may alternatively be one or more single signal lines and each of the single signal lines may alternatively be buses.” <i>Id.</i> ¶0139.	It would be obvious to a POSITA that the embodiments disclosed in Sundara-Rajan described in 1[c] could apply to a second active pen because Sundara-Rajan states “the term ‘a’ or ‘one’ may include one or more items.” Sundara-Rajan, at 20:8-20:9. Therefore, a POSITA would interpret the features of the “stylus device” in Sundara-Rajan to apply to one or more pens. Furthermore, a POSITA would understand that Sundara-Rajan teaches the ability to handle multiple pens based on the description of Fig. 20 which specifies an I/O Device Interfaces 2010 that communicates with a plurality of devices. The I/O Device Interfaces are described as allowing “[a] variety of components [to] be connected.” Sundara-Rajan, at 18:51-18:53.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) A POSITA would have been motivated to use Kremin’361’s disclosure of multiple touch objects with the disclosure of Sundara-Rajan. <i>See</i> limitation 1[d]. Sundara-Rajan is directed to an active stylus that is capable with communicating with “a multitude of touch controllers” but provides minimal detail on how to use more than one active stylus simultaneously. Sundara-Rajan, at 3:2-3:9. A POSITA would thus look to Kremin’361’s specific disclosure of simultaneous use of multiple touch objects (such as multiple active styluses) with a single touchscreen.	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
1[e] a determination module configured to:	A POSITA would have been motivated to use Kremin’361’s disclosure of stylus scan counts being maintained by the “processing logic” in Fig. 20 (“the processing logic initializes and sets the APA scan count and the stylus scan count to zero.” [0128]) to serve the same purpose as a determination module with the disclosure of Sundara-Rajan. Sundara-Rajan is directed to communication methods between an active stylus and a computing device. Sundara-Rajan, Abstract. A POSITA would thus look to Sundara-Rajan’s specific disclosure of what is communicated between the stylus and the computing device (i.e., the contents of the upstream and downstream packets). <i>See</i> limitation 1[e]. A POSITA would understand that the “processing logic” that maintains the “stylus scan count” (Fig. 20, method 2000) serves the same purpose as the “determination module” in the ’519 Patent. <i>Id.</i>	Sundara-Rajan discloses the use of a Configuration ID that is passed from the touch controller to the stylus during synchronization. <i>See</i> Sundara-Rajan, at 11:11-11:20 (“The frequency synch may be followed by a 2 bit start of frame (0,0), a 3 bit identifier or identification code (also referred to herein as a configuration ID), and a 2 bit end of frame (1,1). This handshake packet may be transmitted by the touch controller about every 10 ms. In the time between transmissions, the touch controller listens for a stylus transmission that matches or acknowledges the requested operation. Once the correct stylus operation is detected, the touch controller may cease transmitting the handshake signals.”). The Configuration ID is described as “an identifier or identification code of the computing device 104, an identifier or identification code corresponding to an encoding scheme and/or an operating frequency stored on the stylus device 102, or other information for communicating a mode of operation to the stylus device 102.” <i>Id.</i> at 10:55-10:61. In response to receiving the Configuration ID, “[t]he stylus device 102 then communicates with the computing device 104 using the encoding scheme, illustrated as 118.” <i>Id.</i> at 4:34-4:36.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
		Sundara-Rajan also discloses that “the stylus device 102 may be configured with firmware (or other code) containing a number of various modes of operation/encoding/frequency schemes that correspond to different computing devices.” <i>Id.</i> at 14:23-14:26. “The modes of operation/encoding schemes may be identified by an identifier or identification code, such as a device identifier or configuration ID, which may relate to a specific computing device.” <i>Id.</i> at 14:28-14:31. “[T]he stylus device 102 may be configured to operate with specific computing devices 104 using the device identifiers. For example, the computing device 104 or touch controller of the computing device 104 may transmit a device identifier to the stylus device 102 and the stylus device 102 may access or pull the corresponding firmware from memory and configure itself in the mode of operation/encoding scheme corresponding to the received device identifier. The stylus may then be configured to operate with the corresponding computing device.” <i>Id.</i> at 14:32-14:41. A POSITA would understand that such a device contains a determination module.
1[f] generate the upstream packet for the first active pen specifying the pen ID; and	A POSITA would have been motivated to use Kremin’361’s disclosure of “stylus scan count” with the disclosure of Sundara-Rajan. Sundara-Rajan is directed to communication methods between an active stylus and a computing device. Sundara-Rajan, Abstract. A POSITA would thus look to Sundara-Rajan’s specific disclosure of what is communicated between the stylus and the computing device (i.e., the contents of the upstream and downstream packets).	As discussed above in limitation 1[e], “the computing device 104 or touch controller of the computing device 104 may transmit a device identifier to the stylus device 102 and the stylus device 102 may access or pull the corresponding firmware from memory and configure itself in the mode of operation/encoding scheme corresponding to the received device identifier.” Sundara-Rajan, at 14:34-14:40. Additionally, “the touch controller may transmit configuration information to the stylus device 102 to request the stylus device 104 to operate in a certain mode. The stylus may use this configuration information to configure (1409) its operation to match the computing device 104. The configuration information may include an identifier or

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
		identification code of the computing device 104, an identifier or identification code corresponding to an encoding scheme and/or an operating frequency stored on the stylus device 102, or other information for communicating a mode of operation to the stylus device 102.” <i>Id.</i> at 10:51-10:61. A POSITA would understand that the transmitted information could include a pen ID.
1[g] determine an attribute of the first active pen comprising the first active pen transceiver from at least the first downstream packet.	Kremin’361 discloses a stylus that is “configured to be capacitively coupled to the mutual capacitance array, where the active stylus receives synchronization or timing data from the touch screen controller.” Kremin’361, at ¶0079. <i>See, e.g., id.</i> ¶0093 (“In an alternative embodiment, a stylus is configured to operate as the timing “master,” and has a transmitter similar to transmitter 900 to send synchronization information to the host, which would include a receiver similar to receiver 950. In another embodiment, the stylus and/or the host may each include transceivers that allow for bi-directional communication. It should be noted that the communication between the host and the stylus for synchronization is done on a communication channel or link communication link. The communication channel or link may be considered a backchannel that is used to communicate data between the host and stylus. The communication data may include synchronization information as described herein, as well as additional data, such as force data, button data, or the like. The communication channel or link may be a RF link, Bluetooth link, an optical link, an infrared (IR) link, or other communication channels/links as would be appreciated by one of ordinary skill in the art having the benefit of this disclosure.”). In Kremin’361, at ¶0105, “other data” is prescribed for synchronization. <i>Id.</i> (“In an embodiment, the	Sundara-Rajan discloses that the stylus “may create an output sequence to be transmitted to the computing device based on the encoding scheme (i.e., FSK, BPSK or ASK), output pressure levels of the pressure sensor, buttons, and other components of the stylus device, illustrated as block 1906. The output sequence may be the data the stylus device is to transmit to the computing device encoded with the appropriate encoding scheme (i.e. the output bit patterns the stylus device is to transmit to the computing device).” Sundara-Rajan, at 17:36-17:44. <i>See also supra</i> regarding 1[c].

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) synchronizing mod block 1350 is configured to modulate additional data into the TX signal 835. Some types of additional data that may be modulated into the stylus TX signal 835 include battery data, acceleration data, button data, force data, and other data as would be appreciated by one of ordinary skill in the art having the benefit of this disclosure.”). <i>See also id.</i> ¶10108 (“In one embodiment, the stylus 1300 includes buttons 1340 and 1341. Buttons may provide additional functionality to the stylus including, but not limited to, “left click” and “right click” functions, similar to that of a computer mouse. Buttons 1340 and 1341 of stylus 1300 are coupled to the CPU core 1330. The buttons 1340, 1341, may be mechanical, electrical, capacitive, or other types that would be known by one of ordinary skill in the art. The CPU core 1330 processes the button input data and sends it to the synchronizing mod block 1350. The synchronizing mod block 1350 modulates the button data into the stylus TX signal 835. The tip driver 890, in conjunction with the voltage booster 870, amplifies the modulated stylus TX signal 835 and the stylus tip 895 capacitively couples the modulated stylus TX signal 898 to the sense array 810. In an embodiment, the synchronizing mod block 1350 may modulate one or more other types of additional data into the stylus TX signal 835 in addition to the button data and/or battery data, such as the force data described below.”).	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
Claim 4 4[pre] The processing system of claim 1, wherein the determination	<i>See supra</i> 1[pre] – 1[g].	<i>See supra</i> 1[pre] – 1[g].

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module is further configured to:	It would be obvious to a POSITA that the embodiments disclosed in Kremin’361 described in I[g] could apply to a second active pen. Kremin’361 expressly discloses that the processing device of the touchscreen “is configured to detect a presence” of both an active stylus and a touch object individually or concurrently. Kremin’361, ¶¶0052, 0048 (disclosing using electrodes to track the position of multiple touch objects). A POSITA would understand that Kremin’361 teaches the ability to have a second pen by examining Fig. 3, 6B, 8 and the following statement: “Additionally, the interconnection between circuit components or blocks may be shown as buses [for bidirectional communication] or as single signal lines. Each of the buses may alternatively be one or more single signal lines and each of the single signal lines may alternatively be buses.” <i>Id.</i> ¶¶00139). A POSITA would have been motivated to use Kremin’361’s disclosure of multiple touch objects with the disclosure of Sundara-Rajan. <i>See</i> limitation I[d]. Sundara-Rajan is directed to an active stylus that is capable with communicating with “a multitude of touch controllers” but provides minimal detail on how to use more than one active stylus simultaneously. Sundara-Rajan, at 3:2-3:9. A POSITA would thus look to Kremin’361’s specific disclosure of simultaneous use of multiple touch objects (such as multiple active styluses) with a single touchscreen.	It would be obvious to a POSITA that the embodiments disclosed in Sundara-Rajan described in I[g] could apply to a second active pen because Sundara-Rajan states “the term ‘a’ or ‘one’ may include one or more items.” Sundara-Rajan, at 20:8-20:9. Therefore, a POSITA would interpret the features of the “stylus device” in Sundara-Rajan to apply to one or more pens. Furthermore, a POSITA would understand that Sundara-Rajan teaches the ability to handle multiple pens based on the description of Fig. 20 which specifies an I/O Device Interfaces 2010 that communicates with a plurality of devices. The I/O Device Interfaces are described as allowing “[a] variety of components [to] be connected.” Sundara-Rajan, at 18:51-18:53.

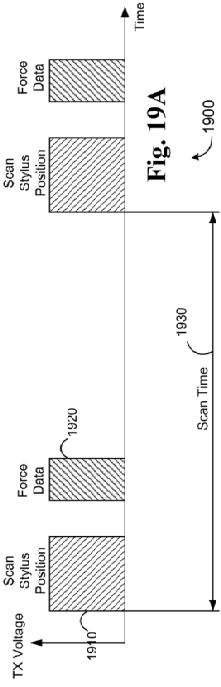
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
Claim 6 6[pre] The processing system of claim 4, wherein the determination module is further configured to:	<i>See supra</i> 1[pre] – 1[g]; 4[pre] – 4[a].	<i>See supra</i> 1[pre] – 1[g]; 4[pre] – 4[a].
6[a] detect a collision between the first active pen and the second active pen; and	Kremin’361 discloses the use of “code division multiplexing” at ¶0111, which a POSITA would understand utilizes “collision packets” to detect collisions. <i>See, e.g., Ex. 1016, IEEE Std 802.3, 2000 Edition</i> , at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	
6[b] generate a collision packet for the first active pen and the second active pen,	Kremin’361 discloses the use of “code division multiplexing” at ¶0111, which a POSITA would understand utilizes “collision packets.” <i>See, e.g., Ex. 1016, IEEE Std 802.3, 2000 Edition</i> , at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing	

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	a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	
6[c] wherein the sensor module is further configured to send the collision packet, and	See Kremin’361, ¶0111 (discussing “code division multiplexing”); Ex. 1016, IEEE Std 802.3, 2000 Edition, at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	
6[d] wherein each of the first active pen and the second active pen wait a random time interval before reattempting to	See Kremin’361, ¶0111 (discussing “code division multiplexing”); Ex. 1016, IEEE Std 802.3, 2000 Edition, at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a	

Claim Elements U.S. Patent No. 9,977,519	pair in response to the collision packet.	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
Claim 12 (Ind. Claim)	12[pre] A method for operating a processing system of an input device, comprising:	Kremin’361 discloses an input device with a processing system. Specifically, in Figure 3, Kremin’361 discloses “a block diagram illustrating one embodiment of an electronic system 300 having a processing device 310 for detecting a presence of a touch object 340 and a stylus 330. Electronic system 300 includes processing device 310, touch screen 325, touch sensor pad 320, stylus 330, host processor 350, embedded controller 360, and non-capacitance sense elements 370. In the depicted embodiment, the electronic system 300 includes the touch screen 325 coupled to the processing device 310 via bus 322. Touch screen 325 may include a multi-dimension capacitive sense array.” Kremin’361, at ¶0051.	
		Sundara-Rajan discloses an input device with a processing system. Specifically, in Figure 20, Sundara-Rajan discloses a computing device 104 that has a touchscreen module 2026 and touch screen controller 2028, as well as a display 2012 that may have a touch surface 106 which are understood to be input devices. Sundara-Rajan, at 18:11-63; ’519 Patent at 1:24-27 (“Input devices including proximity sensor devices (also commonly called touchpads or touch sensor devices) are widely used in a variety of electronic systems.”). The computing device 104 also has controller(s)/processor(s) 2004 that may each include a central processing unit (CPU) for processing data and computer-readable instructions. Sundara-Rajan, at 18:11-63.	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	FIG. 3	FIG. 1 FIG. 20
12 a] generating an upstream packet for a first active pen specifying a pen	Kremin’361 discloses an “active stylus [that] receives synchronization or timing data from the touch screen controller.” Kremin’361, at ¶0079; <i>see also id.</i> ¶0083 (“In another embodiment, the transmitter 840 sends a synchronization signal 899, or timing data, whereby the	Sundara-Rajan discloses that “the computing device 104 may transmit a configuration ID, illustrated as 114, to the stylus device 102 via the carrier frequency.” Sundara-Rajan, at 4:24-4:26. “The configuration ID may correspond to a type of touch controller of the computing device 104 and/or may

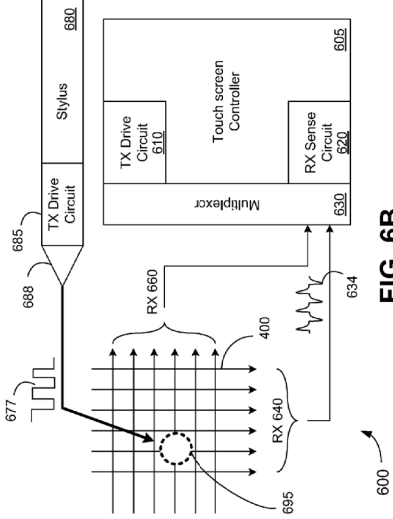
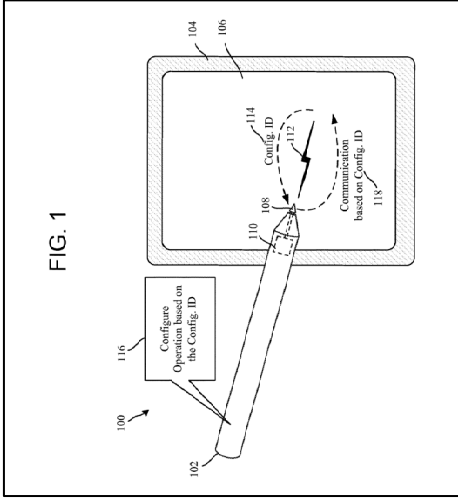
Claim Elements U.S. Patent No. 9,977,519	identification (ID) associated with the first active pen;	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
		stylus 850 generates the stylus TX signal 898 based on the synchronization signal 899 received by the receiver 855 from the transmitter 840.”). The diagram illustrates a synchronized stylus system. A dashed box labeled "Synchronized Stylus Block Diagram" encloses several components. On the left, a "Battery" (860) provides power to a "Booster" (870), which connects to a "TX Driver" (880). The "TX Driver" drives a "Stylus" (890), which has a "TX" (895) at its tip. The stylus also includes a "Receiver" (855) and a "TX" (850). An external "Transmitter" (840) sends a synchronization signal (899) to the stylus's receiver (855). The stylus's TX (895) sends a signal (898) to a "MUX" (825) on an "ITO" (Interdigitated Transparent Oxide) layer. This MUX is connected to another "MUX" (820) via an "RX" path. The second MUX (820) is connected to a "Sensing Device" (830) via an "RX" path. Various other interconnects (810, 812, 814, 816) are shown connecting different parts of the system. Fig. 8	include other information.” <i>Id.</i> at 4:26-4:28. A POSITA could reasonably expect that such “other information” could include a pen ID.
		In addition to timing data, Kremin’361 includes “stylus scan count” 2025 2040 (Fig. 20 and ¶0129) which a POSITA would understand as a pen ID. If the number of styluses is counted by the processor, then each stylus must be assigned a numerical identification. According to Kremin’361, at ¶0093, the stylus and the host communicate “bi-directionally” which means that a POSITA would understand that the “stylus scan count” would be known by both the stylus and the host. According to Kremin’361, at ¶0075, there are “active” and “passive” styluses. A POSITA would understand that each stylus would require a unique	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	needed. It should be noted that high bit rates may be achieved with this method. In an embodiment, 16 bits are transferred per scan time interval. Alternatively, less or more than 16 bits may be transferred per scan time interval.”  Fig. 19A	
12[c] receiving, during a first timeslot, a first downstream packet from a first active pen transceiver over a first frequency;	Kremin’361 discloses a time division multiplexing (“TDM”) scheme, whereby “the stylus 1300 transmits the stylus TX signal 898 in one time slot, and transmits the additional data (e.g., force data, acceleration data) in another time slot, as described with respect to FIG. 19. Similarly, code division multiplying (CDM) may be used to transmit the stylus TX signal and the additional data. The stylus 1300 may transmit the stylus TX signal 898 using one code, and may transmit the additional data using another code. In an embodiment, the stylus TX signal 898 and additional data may utilize the same frequency or different frequencies. In other embodiments, optical, ultrasonic, inductive, or RF signal transmissions may be utilized to transfer the additional data from the stylus 1300 to the sensing device 830. For example, additional data may be wirelessly coupled from the stylus 1300 to the sensing device 830.” Kremin’361, at ¶0111.	Sundara-Rajan discloses an active pen with a transceiver. For example, the stylus disclosed in Sundara-Rajan can “function as an electrode(s) to transmit and receive information over the capacitive communication channel.” Sundara-Rajan at 4:55-4:62. Sundara-Rajan discloses that the stylus “may create an output sequence to be transmitted to the computing device based on the encoding scheme (i.e., FSK, BPSK or ASK), output pressure levels of the pressure sensor, buttons, and other components of the stylus device, illustrated as block 1906. The output sequence may be the data the stylus device is to transmit to the computing device encoded with the appropriate encoding scheme (i.e. the output bit patterns the stylus device is to transmit to the computing device).” Sundara-Rajan, at 17:36-17:44. A POSITA would understand this to be a downstream packet.
12[d] receiving, during a second timeslot, a second downstream	It would be obvious to a POSITA that the embodiments disclosed in Kremin’361 described in 12[c] could apply to a second active pen. See 1[d].	It would be obvious to a POSITA that the embodiments disclosed in Sundara-Rajan described in 12[c] could apply to a second active pen. See 1[d].

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
packet from a second active pen transceiver over a second frequency; and		Sundara-Rajan discloses that if there is noise at the frequency the embodied pen is operating on, the pen will switch to a different frequency. <i>See, e.g.</i>, Sundara-Rajan at 12:24-12:32 (“If the computing device detects noise at a current operating frequency of the stylus device (such as a pre-selected or default frequency) that interferes with stylus-computing device communications, or if the touch controller identifies a better (i.e., higher quality) operating frequency that can be used, the touch controller may start transmitting handshake packets as described above to change the stylus device’s behavior to operate at a different or second operating frequency.”); <i>id.</i> at 13:24-13:39 (“If the touch controller detects noise at a current operating frequency that the computing device and stylus device are using to communicate (for example, an operating frequency associated with the configuration ID described above), the touch controller may transmit handshake packets as described above to change the stylus device’s behavior/operation. For example, the touch controller may transmit a change data packet communication including information corresponding to a new/second operating frequency having a better signal to noise ratio (SNR) to be used for communication with the computing device. This may prompt the stylus device to change its operation and operate using the second operating frequency. The stylus device receives this communication and changes the operating frequency of the stylus device (otherwise referred to a frequency hopping), illustrated as block 1522.”). It would be obvious to a POSITA that a second downstream pack could be transmitted at a different frequency.
12[e] determining an attribute of the first active pen	Kremin’361 discloses a time division multiplexing (“TDM”) scheme, whereby “the stylus 1300 transmits the stylus TX signal 898 in one time slot, and transmits the additional data	Sundara-Rajan discloses that the stylus “may create an output sequence to be transmitted to the computing device based on the encoding scheme (i.e., FSK, BPSK or ASK), output

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) (e.g., force data, acceleration data) in another time slot, as described with respect to FIG. 19.” Kremin’361, at ¶0111.	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”) pressure levels of the pressure sensor, buttons, and other components of the stylus device, illustrated as block 1906. The output sequence may be the data the stylus device is to transmit to the computing device encoded with the appropriate encoding scheme (i.e. the output bit patterns the stylus device is to transmit to the computing device).” Sundara-Rajan, at 17:36-17:44. <i>See also supra</i> regarding 1[c].
Claim 14		
14[pre] The method of claim 12, further comprising:	<i>See supra</i> 12[pre] – 12[e].	<i>See supra</i> 12[pre] – 12[e].
14[a] determining an attribute of a second active pen comprising the second active pen transceiver from the second downstream packet.	It would be obvious to a POSITA that the embodiments disclosed in Kremin’361 described in 12[c] and 12[e] could apply to a second active pen. Kremin’361 expressly discloses that the processing device of the touchscreen “is configured to detect a presence” of both an active stylus and a touch object individually or concurrently. Kremin’361, ¶¶0052, 0048 (disclosing using electrodes to track the position of multiple touch objects). A POSITA would understand that Kremin’361 teaches the ability to have a second pen by examining Fig. 3, 6B, 8 and the following statement: “Additionally, the interconnection between circuit components or blocks may be shown as buses [for bidirectional communication] or as single signal lines. Each of the buses may alternatively be one or more single signal lines and each of the single signal lines may alternatively be buses.” <i>Id.</i> ¶¶00139]. A POSITA would have been motivated to use Kremin’361’s disclosure of multiple touch objects with the disclosure of	It would be obvious to a POSITA that the embodiments disclosed in Sundara-Rajan described in 2[a] and 13[b] could apply to a second active pen because Sundara-Rajan states “the term ‘a’ or ‘one’ may include one or more items.” Sundara-Rajan, at 20:8-20:9. Therefore, a POSITA would interpret the features of the “stylus device” in Sundara-Rajan to apply to one or more pens. Furthermore, a POSITA would understand that Sundara-Rajan teaches the ability to handle multiple pens based on the description of Fig. 20 which specifies an I/O Device Interfaces 2010 that communicates with a plurality of devices. The I/O Device Interfaces are described as allowing “[a] variety of components [to] be connected.” Sundara-Rajan, at 18:51-18:53.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	Sundara-Rajan. <i>See</i> limitation 1[d]. Sundara-Rajan is directed to an active stylus that is capable with communicating with “a multitude of touch controllers” but provides minimal detail on how to use more than one active stylus simultaneously. Sundara-Rajan, at 3:2-3:9. A POSITA would thus look to Kremin’361’s specific disclosure of simultaneous use of multiple touch objects (such as multiple active styluses) with a single touchscreen.	
Claim 16		
16[pre] The method claim 14, further comprising:	<i>See supra</i> 14[pre] – 14[a].	
16[a] detecting a collision between the first active pen and the second active pen; and	Kremin’361 discloses the use of “code division multiplexing” at ¶0111, which a POSITA would understand utilizes “collision packets” to detect collisions. <i>See, e.g., Ex. 1016, IEEE Std 802.3, 2000 Edition</i> , at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	

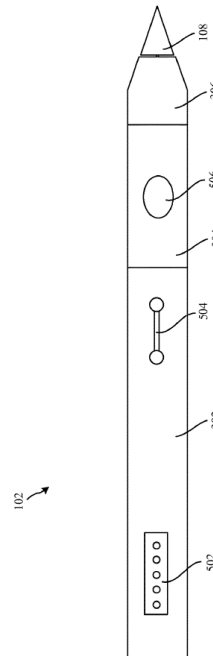
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
16 b sending a collision packet for the first active pen and the second active pen,	See Kremin’361, at ¶0111 (“code division multiplexing”); Ex. 1016, IEEE Std 802.3, 2000 Edition, at 4, 47 (“jam” bit sequence).	
16 c wherein each of the first active pen and the second active pen wait a random time interval before reattempting to pair in response to the collision packet.	See Kremin’361, at ¶0111 (“code division multiplexing”); Ex. 1016, IEEE Std 802.3, 2000 Edition, at 4, 47 (“jam” bit sequence), (“wait function for timing”).	
Claim 20 (Ind. Claim)		
20 pre An active pen, comprising:	Kremin’361 discloses an active pen. <i>See, e.g., Kremin’361, at Fig. 6B:</i> 	Sundara-Rajan discloses an active pen. <i>See, e.g., Sundara-Rajan at Fig. 1:</i> 

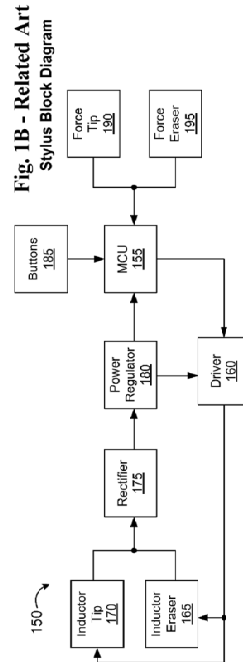
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) <i>See also id.</i> ¶0073: “In an embodiment, the stylus TX drive circuit 685 of stylus 680 provides a TX signal 677 directly to contact point 695 on sense array 400.”	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”) Fig. 1 illustrates a stylus device 102 and a computing device 104 having a touch screen 106. The stylus device 102 is an active capacitive type of stylus including an active tip 108 and a pressure sensor 110. <i>See also id.</i> at Figs. 2-5; <i>id.</i> at 3:33-35 (“The embodiments described herein provide an active capacitive stylus that enables the computing device to communicate to the active stylus . . .”).
20[a] an identification (ID) register storing a pen identification (ID);	Kremin’361 discloses an active pen having an identification (ID) register storing a pen identification (ID). For example, Kremin’361 discloses a stylus that is “configured to be capacitively coupled to the mutual capacitance array, where the active stylus receives synchronization or timing data from the touch screen controller.” Kremin’361, at ¶0079. <i>See, e.g., id.</i> ¶0093 (“In an alternative embodiment, a stylus is configured to operate as the timing “master,” and has a transmitter similar to transmitter 900 to send synchronization information to the host, which would include a receiver similar to receiver 950. In another embodiment, the stylus and/or the host may each include transceivers that allow for bi-directional communication. It should be noted that the communication between the host and the stylus for synchronization is done on a communication channel or communication link. The communication channel or link may be considered a backchannel that is used to communication data between the host and stylus. The communication data may include synchronization information as described herein, as well as additional data, such as force data, button data, or the like. The communication channel or link may be a RF link, Bluetooth link, an optical link, an infrared (IR) link, or other	Sundara-Rajan discloses an active pen having an identification (ID) register storing a pen identification (ID). For example, the stylus device disclosed in Sundara-Rajan contains a microcontroller (any type of microcontroller). Sundara-Rajan at 6:19-6:42. “The microcontroller 602 may include memory sufficient to store the encoding schemes” <i>Id.</i> at 6:36-6:38. Sundara-Rajan also discloses that the stylus receives a “configuration ID” from a computing device that may include information. <i>Id.</i> at 4:24-4:28 (“For example, the computing device 104 may transmit a configuration ID, illustrated as 114, to the stylus device 102 via the carrier frequency. The configuration ID may correspond to a type of touch controller of the computing device 104 and/or may include other information.”). “In response to the configuration ID being received, the stylus device configures the stylus device to operate using the encoding scheme or operation mode corresponding to the configuration ID of the computing device (e.g., FSK, BPSK or ASK), illustrated as block 1516, and shifts to active mode. Configuration information may be stored in a memory of the stylus device and retrieved based on the received configuration ID.” <i>Id.</i> at 13:5-13:23.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) communication channels/links as would be appreciated by one of ordinary skill in the art having the benefit of this disclosure.”). In Kremin’361, at ¶0105, “other data” is prescribed for synchronization. <i>Id.</i> (“In an embodiment, the synch mod block 1350 is configured to modulate additional data into the TX signal 835. Some types of additional data that may be modulated into the stylus TX signal 835 include battery data, acceleration data, button data, force data, and other data as would be appreciated by one of ordinary skill in the art having the benefit of this disclosure.”). A POSITA would understand that this synchronization data or other data could be a pen identification and/or act as a pen identification. Alternatively, Kremin’361 discloses a “stylus count” which a POSITA would understand to be a pen identification. In Kremin’361, at ¶0055, multiple devices may be integrated into processing device, creating the need for a POSITA to identify each type of processing device. <i>Id.</i> (“As illustrated, capacitance sensor 301 may be integrated into processing device 310. Capacitance sensor 301 may include analog I/O for coupling to an external component, such as touch-sensor pad 320, touch screen 325, touch sensor slider (not shown), touch-sensor buttons (not shown), and/or other devices. Capacitance sensor 301 and processing device 310 are described in more detail below.”). Figure 7 shows two different input options:	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”) A POSITA would understand that the disclosed stylus contains an identification (ID) register capable of storing data such as a pen identification (ID) or configuration ID.
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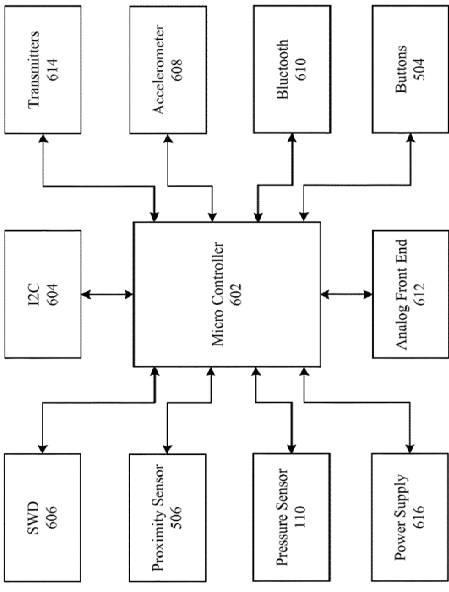
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	FIG. 7 Additionally, a POSITA would understand that the fact that there is a “system bus” in the processing device provides the capacity to add more sensing components. <i>Id.</i> ¶¶0053-0054. Kremin’361 discloses the use of multiple input sources. <i>See id.</i> ¶0057 (“In an embodiment, the electronic system 300 may also include non-capacitance sense elements 370 coupled to the processing device 310 via bus 371 and GPIO port 307. The non-capacitance sense elements 370 may include buttons, light emitting diodes (“LEDs”), and other user interface devices, such as a mouse, a keyboard, or other functional keys that do not require capacitance sensing. In one embodiment, buses 321, 322, and 371 are embodied in a single bus. Alternatively, these buses may be configured into any combination of one or more separate buses.” <i>See id.</i> ¶0063 (“It should also be noted that these embodiments of capacitive sensing implementations may be used in conjunction with non-capacitive sensing elements, including but not limited to pick buttons, sliders (ex. display brightness and contrast), Scroll-wheels, multi-media control (ex. Volume, track advance, etc) handwriting recognition, and numeric keypad operation.”), ¶0067 (“When a touch object,	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	such as a finger or stylus, approaches the NxM electrode matrix 425, the object causes...”), ¶0071 (“In an embodiment, a passive object (e.g., a finger or other conductive object) touches the sense array 400...”), ¶0075 (“As described above, a passive stylus may be used as a touch object to interface with the various touch screens described above. In contrast to passive styluses, an active stylus described herein provides the transmit (“TX”) signal that is typically provided by the touchscreen controller 605 in finger sensing modes, as described above in conjunction with FIGS. 6A and 6B.”). To deal with these multiple inputs, Kremin’361 discloses a “stylus count” which a POSITA would understand is, or acts as, a pen identification. <i>Id.</i> ¶0129 (“The stylus scan and processing begins (block 2015). In an embodiment, the stylus has a higher priority than an APA scan for a passive touch object. If at block 2020, the processing logic detects a stylus touch or stylus hover signal, the sensing device sets the stylus scan count to zero (block 2025), the processing logic reports the results to a host processor, (block 2030), and the stylus scan and processing restarts (block 2015). In an embodiment, the host processor may be host 350 of FIG. 3. If at block 2020, a stylus touch or hover is not detected, the processing logic increments the stylus scan count if the current stylus scan count value is less than the predetermined maximum value (i.e., “M”), block 2040. If the stylus scan count is less than M (block 2045), the processing logic reports the results to a host processor, (block 2030) and stylus scan and processing restarts (block 2015). If the stylus scan count is equal to or greater than M, then APA scan and processing begins (block 2050).”). <i>Id.</i> ¶0137 (“The shape detector determines if the detected signal is a legitimate	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	hovering stylus TX signal from a hovering stylus (block 2170). If the shape detector determines that the detected is a legitimate hovering stylus TX signal, the processing logic determines the current stylus count. At block 2180, if the stylus count is less than a predetermined count value, the processing logic determines that there is no stylus touch or stylus hover signal on the sense array (block 2175) and stylus processing ends (block 2195). At block 2180, if the stylus count is equal to or greater than the predetermined count value, the processing logic determines that the signal is a stylus hover TX signal (block 2185). At block 2190, the processing logic calculates the centroid in post processing and stylus processing ends, block 2195.”).	Sundara-Rajan discloses an active pen with a button. See Sundara-Rajan at 5:46-5:49 (“Referring to FIG. 5, in an embodiment, the stylus device 102 may also include one or more connectors 502, one or more switches or buttons 504, and one or more proximity sensors 506.”)
20[b] a button; and	Kremin’361 discloses an active pen with a button. See Kremin’361, at ¶0006 (“FIG. 1B is a block diagram illustrating a conventional embodiment of an active stylus 150 used in a system for tracking the position of a touch object on an inductive sense array 107. The stylus 150 includes a micro-controller unit (“MCU”) 155, a driver 160, and inductor eraser 165, and inductor tip 170, a rectifier 175, a power regulator 180, a button(s) 185, a force tip 190, and a force eraser 195. The inductor eraser 165 and inductor tip 170 are configured on different stylus edges.”).	FIG. 5 

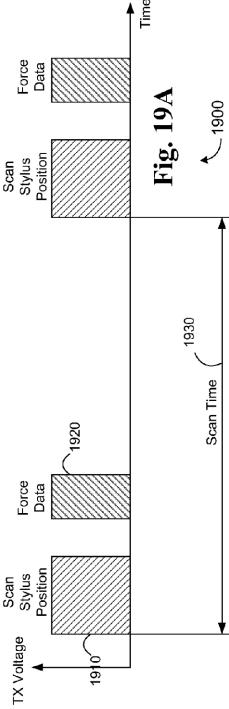
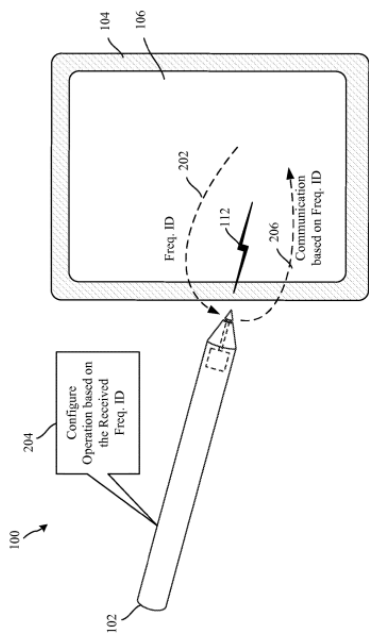


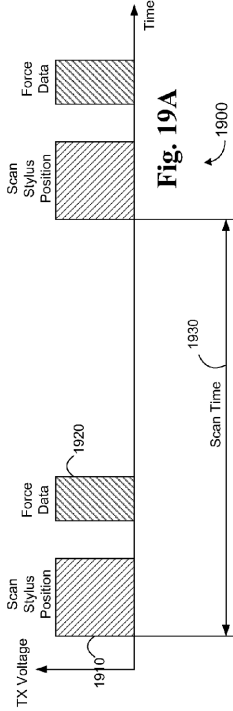
Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) <i>See also id.</i> ¶10108 (“In one embodiment, the stylus 1300 includes buttons 1340 and 1341. Buttons may provide additional functionality to the stylus including, but not limited to, “left click” and “right click” functions, similar to that of a computer mouse. Buttons 1340 and 1341 of stylus 1300 are coupled to the CPU core 1330. The buttons 1340, 1341, may be mechanical, electrical, capacitive, or other types that would be known by one of ordinary skill in the art. The CPU core 1330 processes the button input data and sends it to the synch mod block 1350. The synch mod block 1350 modulates the button data into the stylus TX signal 835. The tip driver 890, in conjunction with the voltage booster 870, amplifies the modulated stylus TX signal 835 and the stylus tip 895 capacitively couples the modulated stylus TX signal 898 to the sense array 810. In an embodiment, the synch mod block 1350 may modulate one or more other types of additional data into the stylus TX signal 835 in addition to the button data and/or battery data, such as the force data described below.”).	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
20[c] a transceiver configured to:	Kremin’361 discloses that a CPU 120 sends a carrier signal to the stylus 150, and the stylus sending information back to the host device’s sense array 107. Kremin’361, at ¶10008 (“The host CPU 120 sends a high frequency carrier signal to the stylus 150 via an amplifier (not shown), a transmitter 130, an impedance matching circuit 135, and the inductive sense array 107. The stylus 150 receives and utilizes the high frequency carrier signal for self-powering and data transmission. In operation, the stylus 150 rectifies (rectifier 175) and regulates (power regulator 180) the carrier signal and feeds the resultant signal to the MCU 155 and driver 160. The MCU 155 measures force sensors (force tip 190 and force eraser 195) and button states (button(s) 185) and	Sundara-Rajan discloses an active pen with a transceiver. For example, the stylus disclosed in Sundara-Rajan can “function as an electrode(s) to transmit and receive information over the capacitive communication channel.” Sundara-Rajan at 4:55-4:62. Additionally, Sundara-Rajan discloses a stylus capable of two-way communication. <i>See id.</i> at 6:19-6:27 (“A functional block diagram of example components of the stylus device 102 is described with reference to FIG. 6. As illustrated in FIG. 6, the stylus device 102 may include one or more of a microcontroller 602, one or more I2C (inter-integrated circuit) communication ports 604, button(s) 504, one or more serial wire debug (SWD) ports 606, accelerometer 608, Bluetooth

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) couples the resultant data signal to the driver 160. The driver 160 drives the inductor tip 170 and inductor eraser 165, which inductively couples the stylus 150 to the inductive sense array 107.”); <i>see also id.</i> ¶0093 (“In another embodiment, the stylus and/or the host may each include transceivers that allow for bi-directional communication.”). Additionally, Kremin’361 discloses that the host device provides a TX signal to the stylus, and the stylus generates a TX signal to send to the host devices. <i>Id.</i> ¶0083 (“In one embodiment, the TX 835 signal sent by the transmitter 840 is the same signal as the TX signal generated and applied to the ITO 810 on the TX lines 812 (or 814) during finger position tracking. Alternatively, the TX signal 835 may be a different signal than the TX signal generated and applied to the ITO 810 and may have different signal characteristics (e.g., different frequency, phase, or code modulation). In another embodiment, the transmitter 840 sends a synchronization signal 899, or timing data, whereby the stylus 850 generates the stylus TX signal 898 based on the synchronization signal 899 received by the receiver 855 from the transmitter 840. In an embodiment, the synchronization signal 899 has different signal characteristics than the TX signal generated and applied to the ITO 810 during finger position tracking.”)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”) 610, analog front end (AFE) 612, one or more transmitters 614, proximity sensor(s) 506, pressure sensor 110, and power supply module 616.”). FIG. 6  <pre> graph TD SWD[SWD 606] --> MC[Micro Controller 602] PS[Proximity Sensor 506] --> MC PSENS[Pressure Sensor 110] --> MC PSUP[Power Supply 616] --> MC I2C[I2C 604] <--> MC ACC[Accelerometer 608] --> MC BT[Bluetooth 610] --> MC B[Buttons 504] --> MC AFE[Analog Front End 612] <--> MC </pre>
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Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	Fig. 8 In addition to timing data, Kremin’361 includes “stylus scan count” 2025 2040 (Fig. 20 and ¶0129) which a POSITA would understand as a pen ID. If the number of styluses is counted by the processor, then each stylus must be assigned a numerical identification. According to Kremin’361, at ¶0093, the stylus and the host communicate “bi-directionally” which means that a POSITA would understand that the “stylus scan count” would be known by both the stylus and the host. According to Kremin’361, at ¶0075, there are “active” and “passive” styluses. A POSITA would understand that each stylus would require a unique identification to prevent transmission interference with the host.	stylus device 102 via the carrier frequency.” <i>Id.</i> at 4:37-4:38. “[T]he frequency ID may correspond to a frequency the computing device 104 desires to operate on.” <i>Id.</i> at 4:39-4:41. FIG. 2 Additionally, Sundara-Rajan discloses the touch controller of the host device transmitting “a handshake packet to the stylus device using the capacitive link.” <i>Id.</i> at 10:34-10:36. “As part of the handshake, or in a different communication, using the electrodes, the touch controller may transmit configuration information to the stylus device 102 to request the stylus device 104 to operate in a certain mode. The stylus may use this configuration information to configure (1409) its operation to match the computing device 104. The configuration information may include an identifier or identification code of the computing device 104, an identifier or identification code corresponding to an encoding scheme and/or an operating frequency stored on the stylus device 102, or other information for communicating a mode of operation to the stylus device 102.” <i>Id.</i> at 10:50-10:61.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) A POSITA would be motivated to combine Sundara-Rajan’s disclosure of frequency information in the upstream packet Sundara-Rajan is directed to communication methods between an active stylus and a computing device. Sundara-Rajan, Abstract. A POSITA would thus look to Sundara-Rajan’s specific disclosure of what is communicated between the stylus and the computing device (i.e., the contents of the upstream and downstream packets).	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”) Sundara-Rajan also discloses a host device communicating the proper frequency to a stylus (or active pen). <i>See, e.g., id.</i> at 10:33-11:10, 13:24-13:39.
20 e wherein the current beacon signal initiates a current beacon period comprising a plurality of timeslots; and	Kremin’361 discloses a time division multiplexing (“TDM”) scheme, whereby “the stylus 1300 transmits the stylus TX signal 898 in one time slot, and transmits the additional data (e.g., force data, acceleration data) in another time slot, as described with respect to FIG. 19. Similarly, code division multiplying (CDM) may be used to transmit the stylus TX signal and the additional data. The stylus 1300 may transmit the stylus TX signal 898 using one code, and may transmit the additional data using another code. In an embodiment, the stylus TX signal 898 and additional data may utilize the same frequency or different frequencies. In other embodiments, optical, ultrasonic, inductive, or RF signal transmissions may be utilized to transfer the additional data from the stylus 1300 to the sensing device 830. For example, additional data may be wirelessly coupled from the stylus 1300 to the sensing device 830.” Kremin’361, at ¶0111. Additionally, Kremin’361, at ¶¶0124-0125 and Fig. 19A, disclose “a timing diagram 1900 for a host device configured to transmit stylus position data and force data during separate intervals, according to an embodiment of the invention.” “In an embodiment, the host utilizes the interval between the end of one stylus position scan to the beginning of the next stylus position scan to synchronize the host and stylus to provide robust data transfer and error-free stylus	Sundara-Rajan discloses a frequency ID, which a POSITA would understand to be a plurality of timeslots. Specifically, in Fig. 2, “the device 104 may transmit a frequency ID, illustrated as 202, to the stylus device 102 via the carrier frequency. In this example, the frequency ID may correspond to a frequency the computing device 104 desires to operate on. The stylus device 102 configures its operation according to the frequency corresponding to the frequency ID, illustrated as 204. The stylus device 102 then communicates with the computing device 104 using the frequency, illustrated as 206. The frequency ID, or other content, may be communicated between the computing device and the stylus device using a Bluetooth message, a WiFi message, an infrared message, electromagnetic (e.g., capacitive, inductive, resonance, radio frequency backscatter, etc.) message, or a haptic message.” Sundara-Rajan, at 4:37-4:50.

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	position tracking. By transmitting force data separately in time (e.g., time division multiplexing the stylus TX signal and force data), less time is available in the scan time 1930 for the host device to perform the synchronization and tracking operations. In an embodiment, an increased scan time (i.e., reduced system operating frequency) may be needed. It should be noted that high bit rates may be achieved with this method. In an embodiment, 16 bits are transferred per scan time interval. Alternatively, less or more than 16 bits may be transferred per scan time interval.” 	FIG. 2 
201f] transmit, to the first input device and during the timeslot specified in the upstream packet, a downstream packet comprising a status of the button using the frequency specified in the upstream packet.	Kremin’361 discloses a time division multiplexing (“TDM”) scheme, whereby “the stylus 1300 transmits the stylus TX signal 898 in one time slot, and transmits the additional data (e.g., force data, acceleration data) in another time slot, as described with respect to FIG. 19. Similarly, code division multiplying (CDM) may be used to transmit the stylus TX signal and the additional data. The stylus 1300 may transmit the stylus TX signal 898 using one code, and may transmit the additional data using another code. In an embodiment, the stylus TX signal 898 and additional data may utilize the same frequency or different frequencies. In other embodiments, optical, ultrasonic, inductive, or RF signal transmissions may be utilized to transfer the additional data from the stylus 1300 to the sensing device 830. For example,	Sundara-Rajan discloses that the stylus “may create an output sequence to be transmitted to the computing device based on the encoding scheme (i.e., FSK, BPSK or ASK), output pressure levels of the pressure sensor, buttons, and other components of the stylus device, illustrated as block 1906. The output sequence may be the data the stylus device is to transmit to the computing device encoded with the appropriate encoding scheme (i.e. the output bit patterns the stylus device is to transmit to the computing device).” Sundara-Rajan, at 17:36-17:44. <i>See also supra</i> regarding 20[e].

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	additional data may be wirelessly coupled from the stylus 1300 to the sensing device 830.” Kremin’361, ¶0111. Additionally, Kremin’361, at ¶¶0124-0125 and Fig. 19A, discloses “a timing diagram 1900 for a host device configured to transmit stylus position data and force data during separate intervals, according to an embodiment of the invention.” “In an embodiment, the host utilizes the interval between the end of one stylus position scan to the beginning of the next stylus position scan to synchronize the host and stylus to provide robust data transfer and error-free stylus position tracking. By transmitting force data separately in time (e.g., time division multiplexing the stylus TX signal and force data), less time is available in the scan time 1930 for the host device to perform the synchronization and tracking operations. In an embodiment, an increased scan time (i.e., reduced system operating frequency) may be needed. It should be noted that high bit rates may be achieved with this method. In an embodiment, 16 bits are transferred per scan time interval. Alternatively, less or more than 16 bits may be transferred per scan time interval.”  The diagram, labeled Fig. 19A, is a timing diagram 1900. It shows a horizontal axis for Time. A vertical arrow labeled 'TX Voltage' points to a shaded rectangular block labeled '1910'. To the right of this block is another shaded rectangular block labeled '1920'. A bracket below the horizontal axis, spanning from the start of block 1910 to the end of block 1920, is labeled 'Scan Time' with a reference numeral '1930'. Above the horizontal axis, there are two labels: 'Scan Stylus Position' and 'Force Data'. 'Scan Stylus Position' is positioned above block 1910, and 'Force Data' is positioned above block 1920. Both labels have arrows pointing to their respective shaded blocks. The entire diagram is labeled 'Fig. 19A' with a reference numeral '1900' at the bottom right. The stylus TX signal disclosed can contain button data. See <i>id.</i> ¶0048 (“In one embodiment, the stylus is configured to modulate additional data into the stylus TX signal, including,	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
	but not limited to, stylus tip force data, stylus button data, stylus acceleration, and stylus battery data.”).	
Claim 21		
21[pre] The active pen of claim 20, wherein the transceiver is further configured to:	<i>See supra</i> regarding 20[pre] and 20[c].	<i>See supra</i> regarding 20[pre] and 20[c].
21[a] receive, before receiving the current beacon signal, a prior beacon from the first input device,	Kremin’361 discloses an embodiment where “the transmitter 840 sends a synchronization signal 899, or timing data, whereby the stylus 850 generates the stylus TX signal 898 based on the synchronization signal 899 received by the receiver 855 from the transmitter 840. In an embodiment, the synchronization signal 899 has different signal characteristics than the TX signal generated and applied to the ITO 810 during finger position tracking.” Kremin’361, ¶10083.	Sundara-Rajan discloses that the “stylus device may communicate with more than one computing device and configure the stylus operation so that it can communicate and function with different touch controllers of the different computing devices. A method 1800 of configuring the stylus to the device is described with reference to FIG. 18. The method 1800 is an alternative method of configuring and reconfiguring the stylus to work with a particular computing device than those discussed above. In particular, method 1800 describes the use of a timer T1, that is a timer used to establish a time for matching a frequency between the stylus and device. When the stylus device 102 is in an active mode, illustrated as block 1802, the stylus device may enable a communication module, such as Bluetooth, WiFi, infrared (IR), haptic, etc., illustrated as block 1804, and establish a connection with the host computing device 104, illustrated as block 1806. The stylus device then determines whether the host computing device is a new host computing device, illustrated as block 1808.” Sundara-Rajan, at 16:44-17:26. Sundara-Rajan discloses the “prior beacon” when discussing the connection with a new host device. “If the host computing device is a new host computing device, the stylus device may

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	Fig. 8 Additionally, Kremin’361 discloses in Fig. 11 “a method 1100 of synchronizing a stylus to a host device.” <i>Id.</i> ¶0098. “The method 1100 begins with the host device starting the scanning process (block 1105). The sensing device generates a TX pulse sequence (block 1110). In an embodiment, the TX pulse sequence is a pulse train of TX signals. At block 1155, the carrier generator generates a carrier signal (e.g., 13.56 MHz RFID carrier frequency). The AM modulator modulates the carrier signal (block 1135) with the TX pulse sequence generated at block 1110. In other embodiments, the host device may implement other modulation schemes, as described in conjunction with FIG. 9A. A band pass filter filters the modulated TX signal (block 1140). It should be noted that other types of filters may be used including low pass, high pass, notch filters, and others as would be	receive a communication or message including data from the host computing device identifying the encoding scheme (i.e., FSK, BPSK or ASK), and update the encoding scheme of the stylus device, illustrated as block 1810, based on the communication from the host computing device. The stylus device may then set timer 1 (T1) (for example, to 1 second), illustrated as block 1812, and determine whether T1 has expired, illustrated as block 1814. If T1 has not expired, the stylus device may continue to poll T1. If T1 has expired, the stylus device may obtain a new output operating frequency from the host computing device, illustrated as block 1816. This may occur when the touch controller of the host computing device detects noise at a current or first operating frequency (which may be a first group of frequencies), and the touch controller may transmit data to change the stylus device's behavior to use a second operating frequency (which may be a second group of frequencies).” <i>Id.</i>

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103) appreciated by those of ordinary skill in the art. At block 1145, a matching network matches the impedance of the filter and antenna, and the transmit block wirelessly transmits the modulated TX signal to the stylus (block 1150).” <i>Id.</i> A POSITA would understand this to be a prior beacon.	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
21[b] wherein the prior beacon signal initiates a prior beacon period, and	FIG. 11 Kremin’361 discloses in Fig. 11 “a method 1100 of synchronizing a stylus to a host device.” <i>Id.</i> ¶0098. “The method 1100 begins with the host device starting the scanning process (block 1105),” and at block 1150, a modulated TX signal is transmitted to the stylus. <i>Id.</i> A POSITA would understand this to be a prior beacon. Kremin’361 discloses a TX pulse sequence generated by the host device, which is modulated by the host device and then transmitted to the stylus. Kremin’361, at ¶0098-0099. This initiates a prior beacon period.	FIG. 18 Sundara-Rajan discloses that the “stylus device may communicate with more than one computing device and configure the stylus operation so that it can communicate and function with different touch controllers of the different computing devices. A method 1800 of configuring the stylus

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	FIG. 11	to the device is described with reference to FIG. 18. The method 1800 is an alternative method of configuring and reconfiguring the stylus to work with a particular computing device than those discussed above. In particular, method 1800 describes the use of a timer T1, that is a timer used to establish a time for matching a frequency between the stylus and device. When the stylus device 102 is in an active mode, illustrated as block 1802, the stylus device may enable a communication module, such as Bluetooth, WiFi, infrared (IR), haptic, etc., illustrated as block 1804, and establish a connection with the host computing device 104, illustrated as block 1806. The stylus device then determines whether the host computing device is a new host computing device, illustrated as block 1808.” Sundara-Rajan, at 16:44-17:26. Sundara-Rajan discloses the “prior beacon” when discussing the connection with a new host device. “If the host computing device is a new host computing device, the stylus device may receive a communication or message including data from the host computing device identifying the encoding scheme (i.e., FSK, BPSK or ASK), and update the encoding scheme of the stylus device, illustrated as block 1810, based on the communication from the host computing device. The stylus device may then set timer 1 (T1) (for example, to 1 second), illustrated as block 1812, and determine whether T1 has expired, illustrated as block 1814. If T1 has not expired, the stylus device may continue to poll T1. If T1 has expired, the stylus device may obtain a new output operating frequency from the host computing device, illustrated as block 1816. This may occur when the touch controller of the host computing device detects noise at a current or first operating frequency (which may be a first group of frequencies), and the touch controller may transmit data to change the stylus

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
		device's behavior to use a second operating frequency (which may be a second group of frequencies).” <i>Id.</i> FIG. 18 <pre> graph TD 1802[Active Mode] --> 1804[Enable Communication Module] 1804 --> 1806[Establish Connection with Host] 1806 --> 1808{New Host Found?} 1808 -- No --> 1806 1808 -- Yes --> 1810[Update Payload Encoding Scheme] 1810 --> 1812[Set T1 for 1s] 1812 --> 1814{Has T1 Expired?} 1814 -- No --> 1812 1814 -- Yes --> 1816[Obtain New Output Freq. from Host] 1816 --> 1806 </pre> The active pen in Sundara-Rajan is unpaired prior to connection with a new host device. Sundara-Rajan, at 16:44-17:26; Fig. 18.
21[c] wherein the active pen is unpaired for at least a portion of the prior beacon period; and	A POSITA would understand that, at the beginning of the method disclosed in Fig. 11 of Kremin’361, the stylus is unpaired during the prior beacon period.	

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		Sundara-Rajan discloses a handshake packet periodically “transmitted by the touch controller.” In the time between transmissions, the touch controller listens for a stylus transmission that matches or acknowledges the requested operation. Once the correct stylus operation is detected, the touch controller may cease transmitting the handshake signals...” Sundara-Rajan, at 10:62-11:30.
21[d] send, in response to the prior beacon, an acknowledgment to trigger pairing with the first input device.	A POSITA would be motivated to combine Kremin’361 with Sundara-Rajan’s disclosure of an acknowledgment transmitted by the stylus to the host device. Sundara-Rajan is directed to communication methods between an active stylus and a computing device. Sundara-Rajan, Abstract. A POSITA would thus look to Sundara-Rajan’s specific disclosure of what is communicated between the stylus and the computing device (i.e., the contents of the upstream and downstream packets).	
Claim 22 22[pre] The active pen of claim 21, wherein the transceiver is further configured to:	<i>See supra</i> regarding 20[pre] and 20[c]; 21[pre]-21[d].	

Claim Elements U.S. Patent No. 9,977,519	Primary Reference: U.S. Patent Application Publication 2012/0105361 (“Kremin’361”) (35 U.S.C. § 103)	Secondary Reference: U.S. Patent No. 9,606,680 (“Sundara-Rajan”)
22[a] receive, from the first input device, a collision packet;	Kremin’361 discloses the use of “code division multiplexing” at ¶0111, which a POSITA would understand utilizes “collision packets.” <i>See, e.g., Ex. 1016, IEEE Std 802.3, 2000 Edition</i> , at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management enforces the collision by transmitting a bit sequence called jam.”).	
22[b] wait a random time interval in response to the collision packet; and	Kremin’361 discloses the use of “code division multiplexing” at ¶0111, which a POSITA would understand utilizes “collision packets.” <i>See, e.g., Ex. 1016, IEEE Std 802.3, 2000 Edition</i> , at 4 (“The interface between the MAC sublayer and the Physical Layer includes signals for framing (carrier sense, receive data valid, transmit initiation) and contention resolution (collision detect), facilities for passing a pair of serial bit streams (transmit, receive) between the two layers, and a wait function for timing.”); <i>id.</i> at 47 (“In the event of a collision, the transmitting station’s Physical Layer initially notices the interference on the medium and then turns on the collision detect signal. In half duplex mode, this is noticed in turn by the Transmit Media Access Management component of the MAC sublayer, and collision handling begins. First, Transmit Media Access Management	

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	enforces the collision by transmitting a bit sequence called jam.”).	
22[c] re-attempt pairing with the first input device after the random time interval.	See Kremin’361, at ¶0111 (“code division multiplexing”), Fig. 19; Ex. 1016, IEEE Std 802.3, 2000 Edition, at 4 (“wait function for timing”), 47.	