

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,

Petitioner,

v.

INTELLECTUAL VENTURES II LLC,

Patent Owner.

Case No. IPR2025-00221
U.S. Patent No. 11,664,889

Patent Owner Demonstratives

Claim 1 of the '889 Patent

1. A first user equipment (UE) comprising :

a transmitter;

a receiver; and

a processor, operatively coupled to the transmitter and the receiver,

wherein:

the receiver and the processor are configured to receive a control message over a physical control channel in a first time slot, wherein the first time slot also includes a downlink shared channel, wherein the control message has power control bits for a plurality of UEs, wherein the plurality of UEs include the first UE,

the processor is further configured to extract power control information for the first UE from the control message, and

the transmitter and the processor are configured to transmit a signal over a physical control channel to a base station in a second time slot at a transmission power level based on the extracted power control information.

Claim 1 of the '889 Patent Requires The Combination Of All Of The Following Interrelated Features

- (i) “a control message” that “has power control bits for a plurality of UEs” that “include the first UE,”
- (ii) the control message is transmitted in a time slot that “also includes a downlink shared channel,” and
- (iii) the UE transmits a signal over a physical control channel to the base station based on power control information extracted from the control message that was transmitted in the timeslot that included the downlink shared channel.

POR, 22, 25-26.

The Petition Relied Exclusively On Dateki For Elements [1.2]-[1.6]

As its sole reference for Ground 1, the Petition relies on Dateki. Dateki relates to a wireless communication apparatus for “controlling transmission power according to transmission power control information.” EX1005, 1:10-13. The Petition (at 3-43) relies *exclusively* on Figure 6 of Dateki for Elements [1.2] - [1.6]; accordingly, the overview of Dateki presented below focuses on the disclosure associated with that figure. POR, 27.

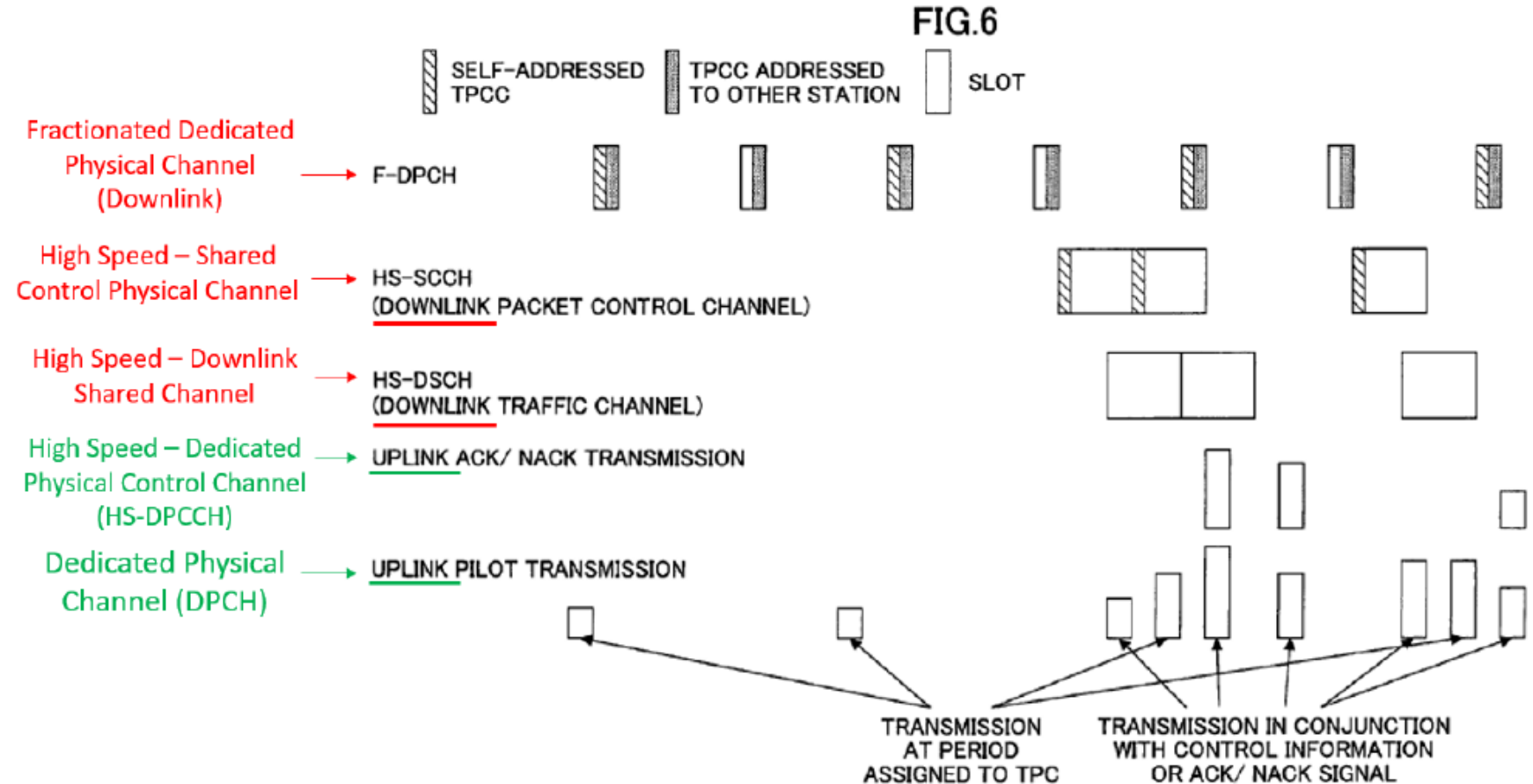
Elements [1.2]-[1.6] collectively require:

- (i) “a control message” that “has power control bits for a plurality of UEs” that “include the first UE,”
- (ii) the control message is transmitted in a time slot that “also includes a downlink shared channel,” and
- (iii) the UE transmits a signal over a physical control channel to the base station based on power control information extracted from the control message that was transmitted in the timeslot that included the downlink shared channel.

Proposed Mapping Of Figure 6 Of Dateki To Control Message And Downlink Shared Channel

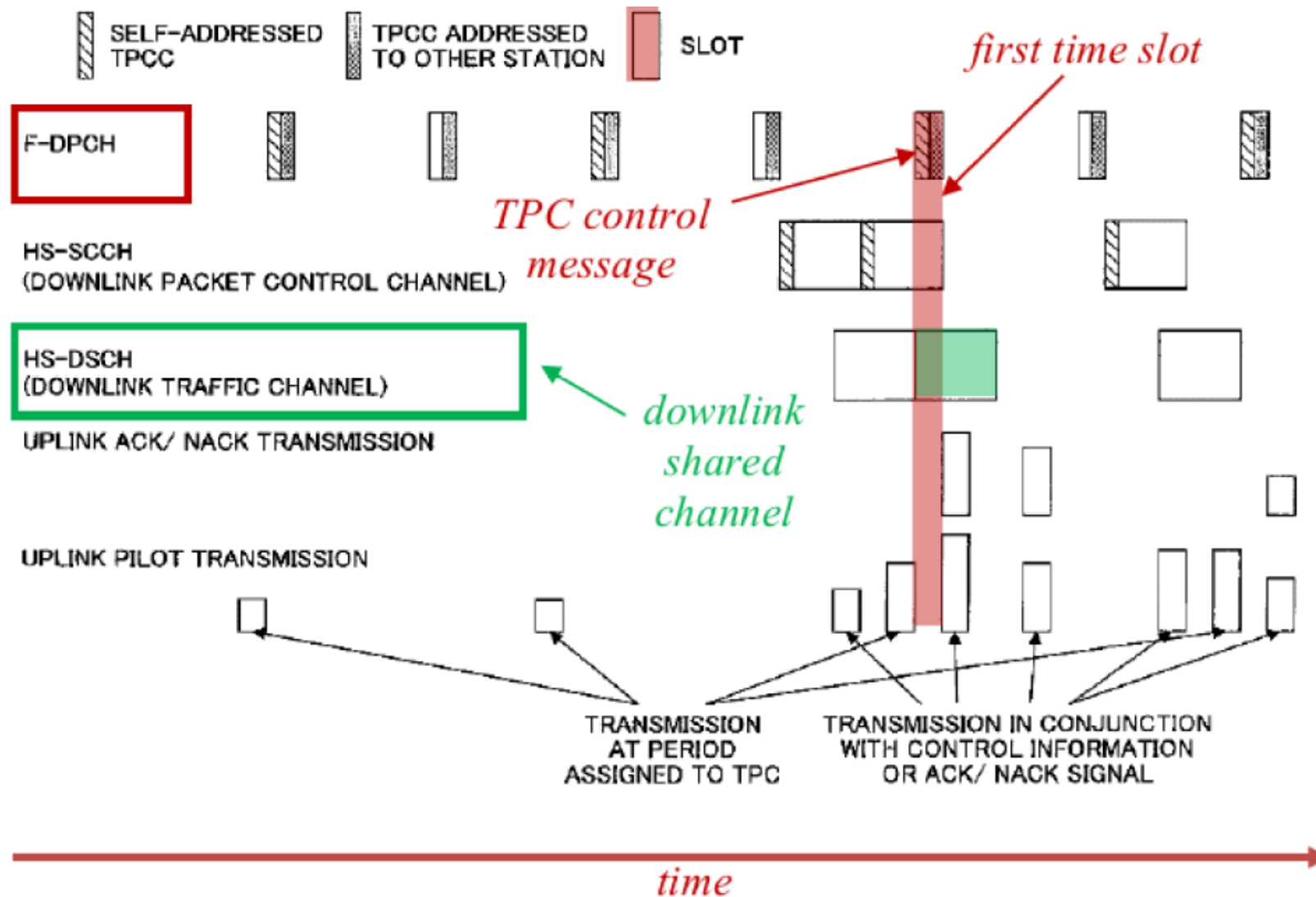
The Petition maps "the control message" recited in the claims to power control information transmitted on the F-DPCH.

The Petition maps the "downlink shared channel" in the claims to the High Speed - Downlink Shared Channel (HS-DSCH).



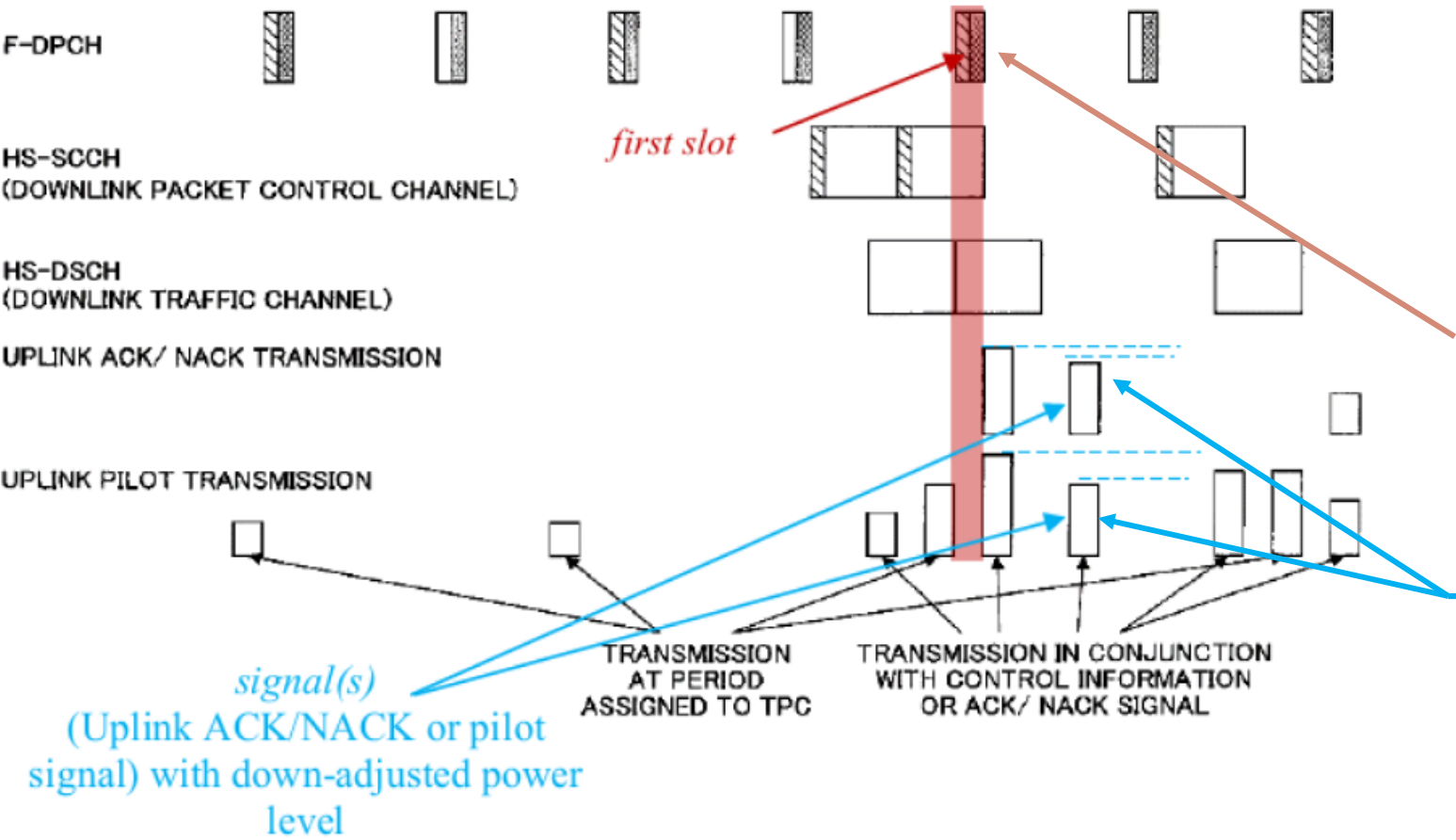
POR, 30, 50

Proposed Mapping Of Figure 6 Of Dateki To Control Message And Downlink Shared Channel Sharing A Timeslot



Since the claims require that “the control message” share a time slot with “a downlink shared channel,” the Petition mapped the “first time slot” to the only instance in Figure 6 where transmission of power control information on the F-DPCH happens to overlap in time with the transmission of data traffic on the downlink over the HS-DSCH. POR, 53.

Proposed Mapping Of Dateki To Transmission Of Signal Based On
Power Control Information Extracted From Control Message

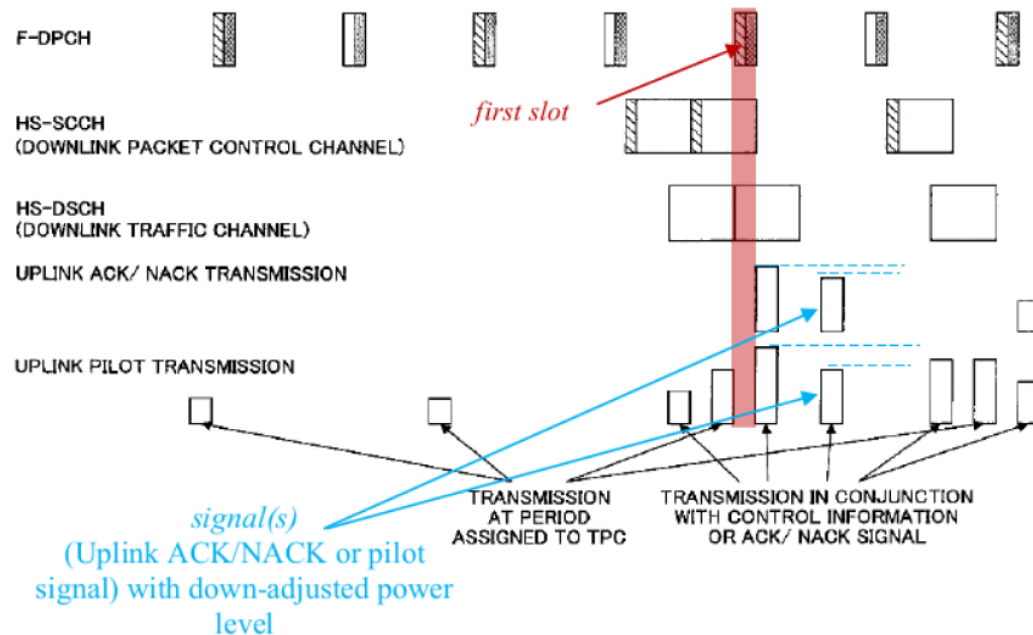


The Petition needed to prove that Dateki taught use of the power control information in this overlapping power control message to down-adjust the power level of this uplink ACK/NACK or pilot signal.

Pet., 41-42; POR, 53-55.

The Petition Presented No Citation To Dateki's Evidencing Usage Of The Power Control Information In The Overlapping Power Control Message To Adjust The Power Level Of The Identified Uplink ACK/NACK Or Pilot Signal

The Petition's Showing On This Point Was Limited To A Conclusory Statement From Petitioner's Declarant



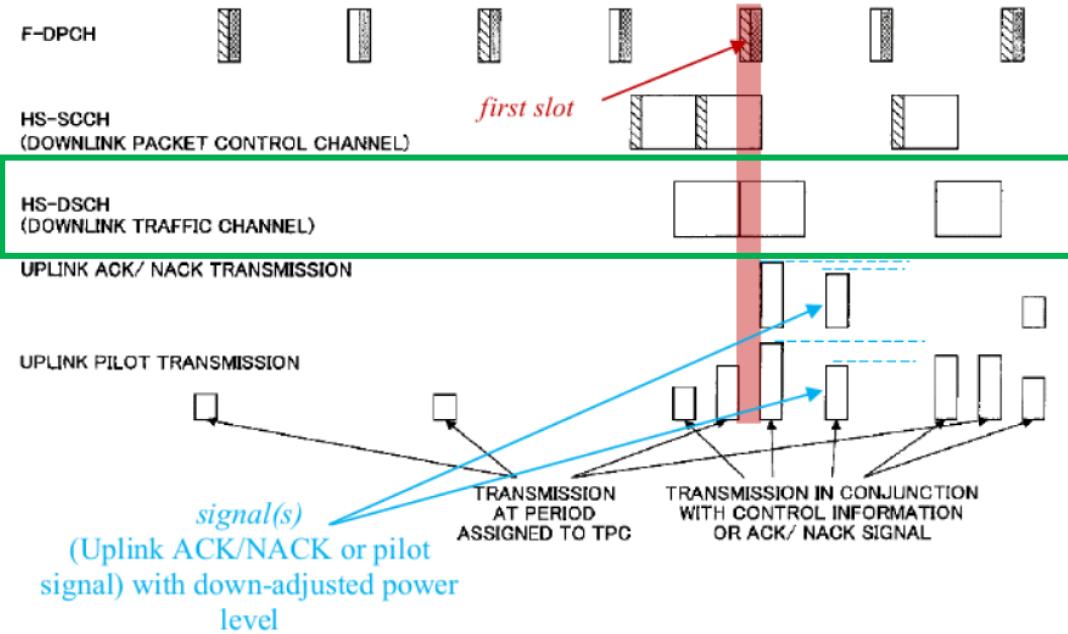
With respect to its assertion that *the second uplink ACK/NACK signal, or the pilot signal transmitted therewith* [pointed to by the blue arrows above] is transmitted *based on first power control information (TPCC1) received over the F-DPCH*, the Petition (and Petitioner's expert) state only the following:

As shown in annotated FIG. 6 above, the height of the second ACK/NACK signal and second pilot signal changes after the UE receives and extracts the TPCC information from the F-DPCH. Thus, the second uplink ACK/NACK signal, or the pilot signal, (*a signal*) is transmitted *based on the extracted power control information*. EX1003, ¶106. Pet., 41-42.

This assertion is not grounded in the teachings of Dateki and makes little sense.

POR, 54.

Dateki Discloses That Power Control Information Sent On The HS-SCCH Rather Than The Overlapping Power Control Message On The F-DPCH To Adjust The Power Level Of The Identified Uplink ACK/NACK Or Pilot Signal



“It is noted that the reception of the HS-PDSCH and the transmission of the ACK/NACK signal are conducted in conjunction with the reception of the HS-SCCH, and thereby, in either case, the known signal is transmitted in conjunction with the reception of the HS-SCCH.” Ex. 1001, 12:61-65 and 12:48 (equating “known signal” with “pilot signal”).

“According to the present embodiment, in transmitting the ACK/NACK signal, for example, the second transmission power control information TPCC2 that is previously received via the HS-SCCH may be used to swiftly control the transmission power to a desired level.” *Id.*, 13:57-62.

“When a mobile [sic, base] station receives the third (from the left) pilot signal, the mobile [sic, base] station may generate the second (from the left) TPC bit in the HS-SCCH based on the third pilot signal, and thereby, accurate transmission power control may be conducted upon transmitting the first ACK signal.” *Id.*, 13:66-14:3.

The Reply Does Not Cure The Petition's Deficient Mapping Of Figure 6 of Dateki To Elements [1.2]-[1.6]

The Reply fails to engage with Dateki's disclosure of Figure 6 which explicitly states that the "second from left TPC in the HS-SCCH" – rather than the power control message identified by the Petitioner on the F-DPCH in the "first slot" – provides for "accurate transmission power control of the first ACK signal" as well as the pilot signal transmitted at the same time. POR, 51-56; Sur-Reply, 3.

This express disclosure from Dateki cannot be squared with the assertion in the Reply "that power control bits in the F-DPCH channel are always for power control," because Dateki does not say that the intervening F-DPCH bits transmitted in the "first slot" are used to control the transmission power of "the first ACK signal." POR at 38-39, 45-48, 55-57; Sur-Reply, 4.

The Reply Does Not Cure The Petition's Deficient Mapping Of Figure 6 of Dateki To Elements [1.2]-[1.6]

The Reply also fails to engage with the following express disclosure of Figure 6 of Dateki:

It is noted that the reception of the HS-PDSCH and *the transmission of the ACK/NACK signal are conducted in conjunction with the reception of the HS-SCCH*, and thereby, in either case, *the known signal is transmitted in conjunction with the reception of the HS-SCCH*. Ex. 1005, 12:61-65 (emphasis added).

Sur-Reply, 4-5.

Dateki's Figure 5 (yellow) Does Not Operate "Very Similarly" To Figure 6 (green)

11 transmission power control. Then, processes such as coding, modulation and amplification are conducted by the high frequency processing unit 42, after which the processed signal is transmitted via the antenna 41. According to an embodiment, the transmission power control unit 38 is configured to increment the transmission power P_{tx} by +1 dB when the transmission power control information TPCC extracted by the TPCC extracting unit 37 is greater than 0 ($TPCC > 0$), and the transmission power control unit 38 is configured to decrement the transmission power P_{tx} by -1 dB when the transmission power control information TPCC is less than 0 ($TPCC < 0$). In this way, the transmission power control unit 38 is arranged to input a value to the multiplying unit 43 according to the updated transmission power P_{tx} . It is noted that the transmission power control information TPCC may be arranged to use plural bits so that transmission power control may be conducted in plural stages (i.e., so that transmission power may be increased or decreased in plural stages).

FIG. 5 is a diagram illustrating a transmission power control operation according to a first embodiment of the present invention. In this drawing, a dedicated channel DCH, a control channel CCH, a traffic channel TCH, an uplink ACK/NACK signal transmission, and an uplink pilot signal transmission are shown. In the present embodiment, the uplink pilot signal is successively transmitted irrespective of the uplink ACK/NACK transmission. It is noted that in the present drawing, the transmission power levels are represented by the relative heights of the indicated signals. Given that transmission power control information TPCC transmitted by the dedicated channel DCH is referred to as first transmission power control information, and the transmission power control information TPCC transmitted by the control channel CCH is referred to as second transmission power control information, the first transmission power control information includes a slot that is made up of TPCC addressed to a present mobile station (self-addressed TPCC) and TPCC addressed to another mobile station, and a slot that does not include a self-addressed TPCC. In other words, first transmission power control information TPCC that is addressed to the present mobile station is transmitted at relatively long periodic intervals which transmission period may be set in advance at the transmission side. The self-addressed TPCC that is transmitted by the control channel CCH, namely, the second transmission power control information, is transmitted in accordance with the packet transmission period, which is arranged to be shorter than the transmission period of the first transmission power control information.

As can be appreciated from the above descriptions, when packet transmission is not conducted, the first transmission power control information is transmitted at relatively long periodic intervals, and accordingly, transmission power control is conducted at relatively long periodic intervals. When packet transmission is conducted, the second transmission power control information is transmitted according to the packet transmission period, and thereby, transmission power control may be conducted at a faster pace. Thus, when packet transmission is not conducted, unnecessary transmission power control processes are omitted so that the power consumption rate may be reduced. On the other hand, when packet transmission is conducted, the first transmission power control information and the second transmission power control information are transmitted so that high-pace transmission power control may be conducted with regard to state changes such as fading occurring in the wireless propagation path.

FIG. 6 is a diagram illustrating a transmission power control process according to a second embodiment of the present

12 invention. According to the present embodiment, F-DPCH (Fractional Dedicated Physical Channel) is used. The F-DPCH is made up of slots including at least a TPC bit and a pilot signal. In this drawing, a HS-SCCH (Shared Control Physical Channel) (downlink packet control channel), a HS-PDSCH (High Speed Downlink Shared Channel) (downlink traffic channel), an uplink ACK/NACK transmission (the transmission channel corresponding to a HS-DPCCH), and an uplink pilot transmission (the transmission channel corresponding to a DPCH) are shown.

The TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH.

The F-DPCH corresponds to a channel that is capable of transmitting a slot including plural TPC bits addressed to differing mobile stations. In the illustrated example, TPC bits addressed to two mobile stations are temporally multiplexed. It is noted that in this example, the transmission period of the TPC bits addressed to one mobile station (i.e., indicated as self-addressed TPC bits) is set to two slots. That is, the self-addressed TPC bit is not included in every other slot. Also, the transmission period of the TPCC addressed to another mobile station is also set to two slots in this example; however, it is noted that differing transmission periods may be set for the respective mobile stations.

The frames of the HS-SCCH are also configured to transmit TPC bits to mobile stations that are subject to control data transmission. It is noted that in the present drawing, HS-SCCH transmission to one mobile station is illustrated.

The mobile station receiving the HS-SCCH receives the HS-PDSCH and packet data, and transmits the reception result as a response signal (e.g., ACK/NACK signal) via the HS-DPCCH. According to the present example, the HS-PDSCH is received three times, and the ACK/NACK signal is transmitted after the elapse of a predetermined time from the channel reception timing, taking into account factors such as reception processing delay.

The pilot signal is transmitted in conjunction with the transmission period of the first transmission power control information (self-addressed TPCC), and is transmitted before the transmission timing of the first transmission power control information. It is noted that such a transmission power control may be realized by a control unit (not shown) according to the timing of inputting the pilot symbol to the diffusion unit 46 of the wireless communication apparatus shown in FIG. 4, for example.

That is, a self-addressed TPCC is periodically transmitted, and in order to generate such transmission power control information, a known signal (pilot signal) is transmitted from the mobile station before the self-addressed TPCC is transmitted (i.e., prior to the TPCC transmission by a predetermined time period so as to be in time for the TPC bit generation).

The pilot signal is also transmitted in conjunction with the transmission of control information and ACK/NACK signals that are transmitted via the HS-SCCH.

That is, when a mobile station recognizes that data is being transmitted to itself via the HS-SCCH, or when it receives data addressed to itself via the HS-PDSCH, it transmits a known signal (pilot signal) upon transmitting an ACK signal or a NACK signal.

It is noted that the reception of the HS-PDSCH and the transmission of the ACK/NACK signal are conducted in conjunction with the reception of the HS-SCCH, and thereby, in other case, the known signal is transmitted in conjunction with the reception of the HS-SCCH.

According to the present embodiment, the wireless communication apparatus as is shown in FIG. 3 that may corre-

13 spond to a base station receives a pilot signal, conducts SIR estimation on the pilot signal at the SIR estimating unit 25, generates transmission power control information TPCC at the TPCC generating unit 26, and transmits the transmission power control information TPCC via the F-DPCH as first transmission power control information TPCC at relatively long periodic intervals (transmission period of the present mobile station). Also, in a case where packet transmission is conducted, the transmission power control information is transmitted via the HS-SCCH as second transmission power control information TPCC at a shorter periodic cycle. In this embodiment, transmission power control may be realized without having to transmit the pilot signal on a continual basis, and thereby, the power consumption rate for transmitting the pilot signal may be reduced. Also, in a case where data are transmitted via the HS-PDSCH, transmission power control may be conducted through transmission of an ACK/NACK signal before the transmission period of the first transmission power control information TPCC based on the transmission power control information TPCC that is previously transmitted via the HS-SCCH. Thereby, transmission power may be suitably controlled to quickly respond to the transmission quality such as the SIR of the wireless propagation path.

In a preferred embodiment, a predetermined number of pilot signals of a predetermined length are transmitted at a transmission period that is shorter than the transmission period of the first transmission power control information TPCC. When packet data are transmitted, it is likely that more data to be transmitted remain, and thereby, according to the present embodiment, preparation may be made for the transmission of the next data transmission in accordance with the transmission schedule.

Also, it is noted that the pilot transmission other than that in conjunction with the HS-SCCH transmission may be arranged to be conducted at a transmission period that is shorter than the transmission period of the first transmission power control information TPCC via the F-DPCH. When pilot signals are received and processed to realize SIR estimation, the estimation accuracy may be improved by increasing the number of pilot signals although increasing the pilot signal transmission leads to an increase in the power consumption for transmitting the pilot signal. Accordingly, in one embodiment, the transmission period for the first transmission power control information may be arranged to be relatively long to reduce power consumption, and the transmission period for transmitting the pilot signal may be adjusted to a shorter period in order to avoid degradation of the estimation accuracy.

In another embodiment, the first transmission power control information TPCC1 transmitted via the F-DPCH, and the second transmission power control information TPCC2 transmitted via the HS-SCCH may be arranged to represent different transmission power control levels. In such a case, the second transmission power control information TPCC2 is arranged to be greater than the first transmission power control information TPCC1 ($TPCC1 < TPCC2$). According to the present embodiment, in transmitting the ACK/NACK signal, for example, the second transmission power control information TPCC2 that is previously received via the HS-SCCH may be used to swiftly control the transmission power to a desired level.

It is noted that in the illustrated example of FIG. 6, the leftmost TPC bit in the HS-SCCH is generated based on the most recently received pilot signal before this TPC bit (i.e., the second pilot signal from the left in FIG. 6). When a mobile station receives the third (from the left) pilot signal, the

14 mobile station may generate the second (from the left) TPC bit in the HS-SCCH based on the third pilot signal, and thereby, accurate transmission power control may be conducted upon transmitting the first ACK signal.

Also, in the illustrated example of FIG. 6, there is an interval between the second TPC bit and the third TPC bit in the HS-SCCH; however, since a predetermined number of the pilot signals at predetermined lengths are arranged to be transmitted in conjunction with the HS-SCCH transmission in the present embodiment, the TPC bit may be generated based on a pilot signal being transmitted at a shorter period compared to the transmission period of the first transmission power control information (e.g., the third TPC bit in the HS-SCCH is generated based on the sixth pilot signal). It is noted that in a preferred embodiment, the base station may recognize the transmission timing of the first transmission power control information TPCC1 addressed to plural mobile stations, and define and store a time period T that is shorter than the transmission period of the first transmission power control information TPCC1 for the respective mobile stations so that a HS-SCCH and/or a HS-PDSCH addressed to a mobile station may be transmitted to this mobile station before the time period T elapses from the transmission timing of the first transmission power control information TPCC1.

It is noted that the channel HS-PDSCH corresponds to a shared channel, and thereby, data addressed to plural mobile stations may be transmitted via this channel. According to the present embodiment, the HS-PDSCH is arranged to prioritize data transmission to a mobile station at which the elapsed time from a transmission timing of the first transmission power control information TPCC1 is not so long. According to such an arrangement, transmission power control may be effectively realized without including transmission power control information in the HS-SCCH. In one embodiment, the transmission power control information may be omitted for a first HS-SCCH (e.g., a HS-SCCH of which transmission timing interval with respect to a previous HS-SCCH is longer than the transmission period of the first transmission power control information TPCC1), and the transmission power control information may be included in a next HS-SCCH of which the transmission timing interval with respect to a previous HS-SCCH is shorter than the transmission period of the first transmission power control information TPCC1.

In this embodiment, the transmission period of the pilot signal for a mobile station is arranged to be shorter in response to receiving a first HS-SCCH, and accordingly, transmission power control may be conducted at shorter intervals. Also, it is noted that in FIG. 6, some of the pilot signals are transmitted in conjunction with the transmission timing of the ACK/NACK signals. By transmitting the ACK signal, the NACK signal, and the pilot signal in sync with the transmission of an uplink signal, transmission efficiency may be realized. Arranging the transmission timing of the pilot signal transmitted in conjunction with the HS-SCCH to be in accordance with the transmission timing of the pilot signal may be one way of improving the transmission efficiency.

It is noted that application of the present invention is not limited to the W-CDMA scheme or the OFDM scheme; rather, the present invention may be equally applied to wireless communication apparatuses and mobile wireless communication systems using other various wireless communication schemes.

Further, the present invention is not limited to the specific embodiments described above, and variations and modifications may be made without departing from the scope of the present invention.

After Dateki concludes its discussion of Figure 5 at 11:65, Dateki begins its discussion of Figure 6 which spans *four columns* of the reference, from 11:65-14:58. If Figure 5 operated “very similarly” to Figure 6 as the Reply suggests, Dateki would have been able to follow its discussion of Figure 5 with a brief description of Figure 6 focusing on the differences between the two “very similar” embodiments. Sur-Reply, 9-10.

The Reply Impermissibly Attempts To Pivot To Figure 5 of Dateki For Elements [1.2]-[1.6]

- In Ground 1, the Petition relied solely on Figure 6 of Dateki for all of the elements of claim 1 and, as such, it was Petitioner's burden to demonstrate that Figure 6 of Dateki disclosed or taught all of the elements of the claim arranged in the same manner set forth in the claim.
- Having failed to do so, the Reply impermissibly attempts to cherry-pick features from Figure 5 of Dateki to modify the embodiment of Figure 6.
- However, there is not even the allegation – let alone evidence -- that Dateki contemplated this hindsight-driven mixing and matching of features from different embodiments.

(Sur-Reply, 10)

The Reply Impermissibly Attempts To Pivot To Figure 5 of Dateki For Elements [1.2]-[1.6]

- It is undisputed that Figure 5 of Dateki fails to disclose a “downlink shared channel” in as required by Claim 1. Sur-Reply, 6.
- It is also undisputed that Figure 5 lacks the fractionated dedicated physical control channel (F-DPCH) depicted in Figure 6 of Dateki which the Petition relied on for its mapping of Element [1.2].
- In connection with Figure 5 only, Dateki states:

On the other hand, when packet transmission is conducted, the first transmission power control information and the second transmission power control information are transmitted so that high-packet transmission power control may be conducted with regard to state changes such as fading occurring in the wireless propagation path. Ex. 1001, 11:59-65.

Dateki says nothing of the sort with respect to Figure 6.

- The Reply (at 8) alleges that “Dateki’s *FIG. 6 and the corresponding text* show that TPCC information is provided on **both** channels to quickly adjust transmission power when HS-SCCH is active.” In support of this false assertion, the Reply (at 8) again cites to Dateki at 11:59-63 – which is part of Dateki’s description of *Figure 5* -- which does not even include an HS-SCCH.

The Reply Impermissibly Attempts To Pivot To Figure 5 of Dateki For Elements [1.2]-[1.6]

- The Reply (at 10) alleges that “Dateki is also clear that the UE uses both TPCC1 and TPCC2 to adjust the mobile station’s transmission power for uplink signals during packet transmission (when HS-SCCH is active).”
- In support of this erroneous assertion, the Reply (at 10-11) quotes Dateki at 6:61-7:4 – which is not part of Dateki’s description of Figure 6. In contrast to Petitioner’s allegation that “both TPCC1 and TPCC2 [are used] to adjust the mobile station’s transmission power for uplink signals during packet transmission (when *HS-SCCH is active*)” --the quoted passage makes no mention of an HS-SCCH such as that used in the embodiment of Figure 6 and is untethered to Dateki’s discussion of Figure 6, which does not occur until much later in the reference.
- Moreover, the quoted passage only speaks of the fact that TPCC1 and TPCC2 are transmitted at certain times, but does not say that they are both used when the HS-SCCH is active to adjust the mobile station’s transmission power as alleged in the Reply.
- Finally, even if the subject statement applied to Figure 6 (to be clear, it does not), the fact that power control information is transmitted on both channels at different times does not demonstrate that the power level of the particular signals identified in the Petition, i.e., the second ACK/NACK signal and its corresponding pilot signal in Figure 6, are based on information sent on the F-DPCH as opposed to the HS-SCCH.

The Reply Impermissibly Attempts To Pivot To Figure 5 of Dateki For Elements [1.2]-[1.6]

- The Reply (at 11) alleges that “Dateki explains that the purpose of sending TPC commands on two channels is to allow for faster, more frequent power level adjustments during packet transmission.”
- For support, the Reply cites to Dateki at 11:56-65, which again is part of Dateki’s description of Figure 5 rather than Figure 6.
- Moreover, even if the subject statement applied to Figure 6 (to be clear, it does not), the passage would not demonstrate that the power level of the second ACK/NACK signal and its corresponding pilot signal in Figure 6 is based on information sent on the F-DPCH in the “first slot,” given that the first ACK/NACK signal (and its corresponding pilot signal) following transmission of such information sent on the F-DPCH in the “first slot” was not based on the information sent on the F-DPCH in the “first slot.”

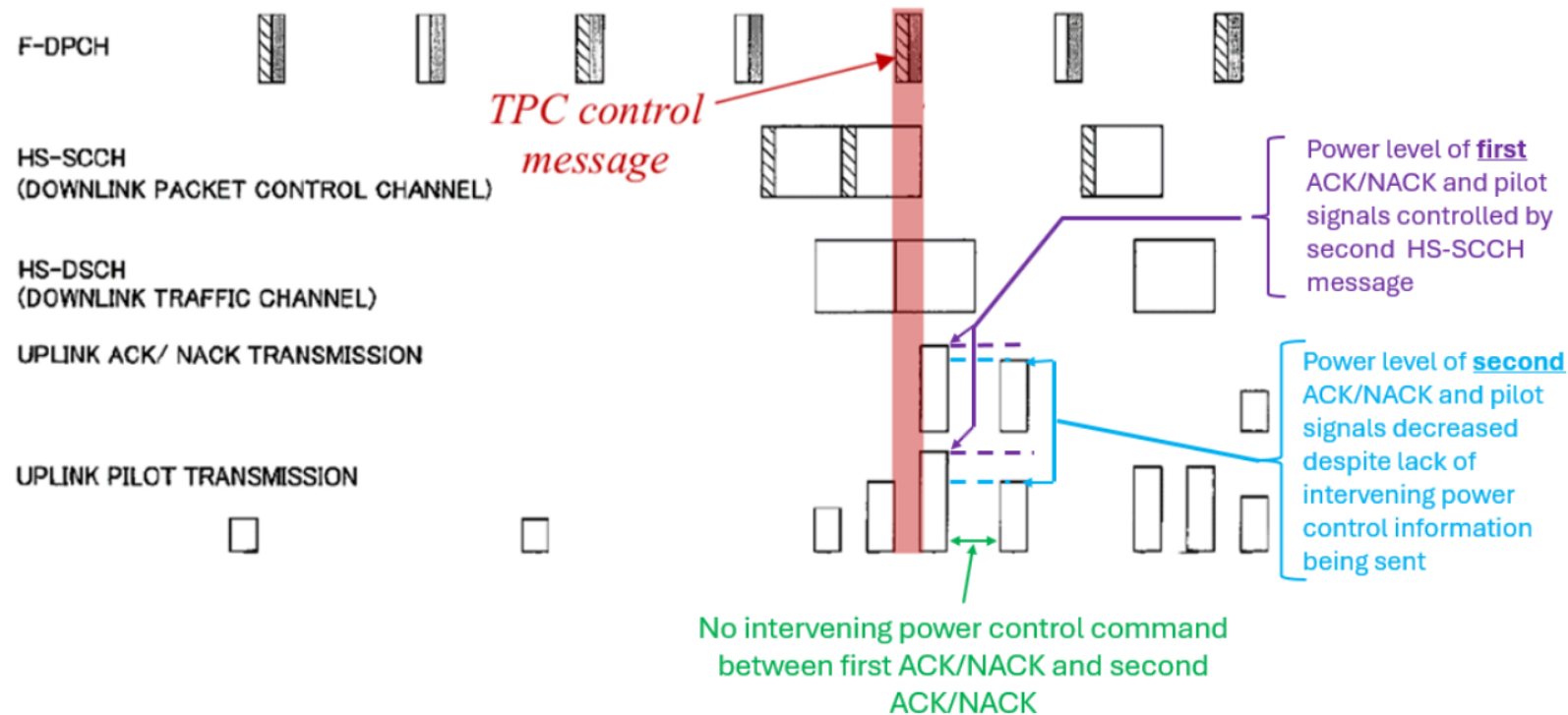
(Sur-Reply, 8-9)

The Reply Fails To Explain How Figure 6 Of Dateki Could Operate Without Plural-Stage Power Control Messages

- Dateki discloses that the transmission of TPCC2, “may be arranged to use plural bits so that transmission power control may be conducted in plural stages (i.e., so that transmission power may be increased or decreased in plural stages).” POR, 37-40; Ex. 1005, 11:15-18 (emphasis added).
- Using “plural bits” from *one* power control message to increase/decrease transmission power in “plural stages” means, for example, that power control bits from one power control message (e.g., a TPCC2 message sent on the HS-SCCH) are used by the mobile station to adjust the transmission power in stages over multiple subsequent transmissions. POR, 37-40; Ex. 2017, ¶87.

The Reply Fails To Explain How Figure 6 Of Dateki Could Operate Without Plural-Stage Power Control Messages

The Reply faults Patent Owner's position with respect to the use of plural-stage power control commands in Figure 6 of Dateki, but fails to explain how the system of Figure 6 could have known to adjust downward the power level of the second ACK/NACK (and its corresponding pilot signal) (in blue) despite the lack of any intervening power control information being sent between the first ACK/NACK and second ACK/NACK in the absence of a prior power control message that carried sufficient information to increase/decrease transmission power in "plural stages."



Dateki Discloses Plural Stage Power Control Commands In Connection With The Embodiment of Figure 6

- The Reply (at 16) alleges that “nowhere does Dateki suggest that any plural stage TPC commands are transmitted in FIG. 6.” That is incorrect.
- In connection with Figure 6, Dateki discloses that “transmission power control may be realized by a control unit (not shown)” according to “the wireless communication apparatus shown in FIG. 4.” Ex. 1005, 12:41-45 (emphasis added).
- Dateki’s description of “the wireless communication apparatus” of Figure 4 in turn expressly disclosed that “the transmission power control information TPCC may be arranged to use plural bits so that transmission power control may be conducted in plural stages (i.e., so that transmission power may be increased or decreased in plural stages). *Id.*, 11:14-18.
- By expressly tying transmission power control in the embodiment of Figure 6 to “the wireless communication apparatus shown in FIG. 4,” which included an explicit disclosure of plural stage TPC commands, Dateki not only suggested – but expressly disclosed – the use of plural stage TPC commands in the embodiment of Figure 6.

(Sur-Reply, 14).

Dr. Lomp Did Not Admit That Dateki Does Not Give Enough Information
To Explain How Plural Stage TPC Commands Work

- The Reply (at 17) falsely alleges that “Dr. Lomp admitted that Dateki does not give enough information to explain how a plural stage TPC command would work in the context of Dateki.” Dr. Lomp said no such thing.
- For completeness, Patent Owner set forth in the Sur-Reply (at 15-16) Dr. Lomp’s deposition from 46:8-49:13 (which includes the portions cited in the Reply).
- A review of that testimony demonstrates that Dr. Lomp never “admitted that Dateki does not give enough information to explain how a plural stage TPC command would work” or testified to *anything of the kind*.

(Sur-Reply, 16)

Patent Owner Never Alleged That Dateki's Plural Stage Power Control Commands Carry Contradictory Instructions

- The Reply (at 19) argues through Petitioner's declarant that it "is nonsensical because it implies that a single TPC command carries contradictory instructions to both increase and decrease power."
- Patent Owner never alleged that "a single TPC command carries contradictory instructions to both increase and decrease power," but instead that a plural stage TPC command functioned to increase power in stages or decrease power in stages.
- The notion that the plural stage TPC command would include "contradictory instructions" is a strawman that Petitioner manufactured.

(Sur-Reply, 17)

Dateki Expressly Discloses That The Phrase “TPC Bit” Is Shorthand For Power Control Information In General

- The Reply (at 17-19) argues that the power control commands described in connection with Figure 6 cannot be plural stage TPC commands (requiring more than one bit to transmit) because Dateki refers to each TPC command as a “TPC bit.”
- However, Dateki makes clear in conjunction with Figure 6 that it uses the phrase “TPC bit” as shorthand for transmission power control information in general. From Dateki:

The TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH. Ex. 1005, 12:11-12 (emphasis added).

(Sur-Reply, 17-18)

Dateki Expressly Discloses That The Phrase “TPC Bit” Is Shorthand For Power Control Information In General

- In connection with Figure 6 Dateki separately refers to the power control messages as “TPCC” which stands for a Transmission Power Control Command, indicating that Dateki also uses “TBC bit” synonymously with TPCC. Ex. 1005, 13:3-21 (discussing transmission of “TPCC” over both the F-DPCH and HS-SCCH) and 8:38-39 (defining “TPCC” as “transmission power control information”).
- By tying the transmission power control in the embodiment of Figure 6 to “the wireless communication apparatus shown in FIG. 4,” Dateki separately makes clear in connection with Figure 6 that “TPCC may be arranged to use plural bits so that transmission power control may be conducted in plural stages.” Ex. 1005, 11:13-18 (emphasis added) and 11:14-18 (tying transmission power control in the embodiment of Figure 6 to “the wireless communication apparatus shown in FIG. 4” which included an explicit disclosure of plural stage TPCC).

(Sur-Reply, 18)

Petitioner's "Single Bit" Theory Fails To Explain How Figure 6 Of Dateki Works

- The Reply's theory that each TPC command in Figure 6 is somehow implicitly limited to a single bit is fails to explain the operation of the system actually depicted in Figure 6 because the only way that the system of Figure 6 could have known to adjust downward the power level of the second ACK/NACK and pilot signals despite lack of any intervening power control information being sent between the first ACK/NACK and second ACK/NACK is through the use of a prior plural stage power control message that carried sufficient information (or bits) to increase/decrease transmission power in "plural stages."
- Petitioner – who bears the burden of proof -- does not even attempt to explain how the system of Figure 6 would could have possibly known how to adjust downward the power level of the second ACK/NACK and pilot signals despite lack of any intervening power control information being sent between the first ACK/NACK and second ACK/NACK if each power control command in Figure 6 was limited to a single bit.

(Sur-Reply, 19)

Dependent Claim 3

3. The first UE of claim 1 wherein the transmitter and the processor are further configured to transmit data over a physical shared channel in a third time slot and the transmitter and the processor are further configured to not transmit the signal over the physical control channel at a same time that data over a physical shared channel is transmitted.

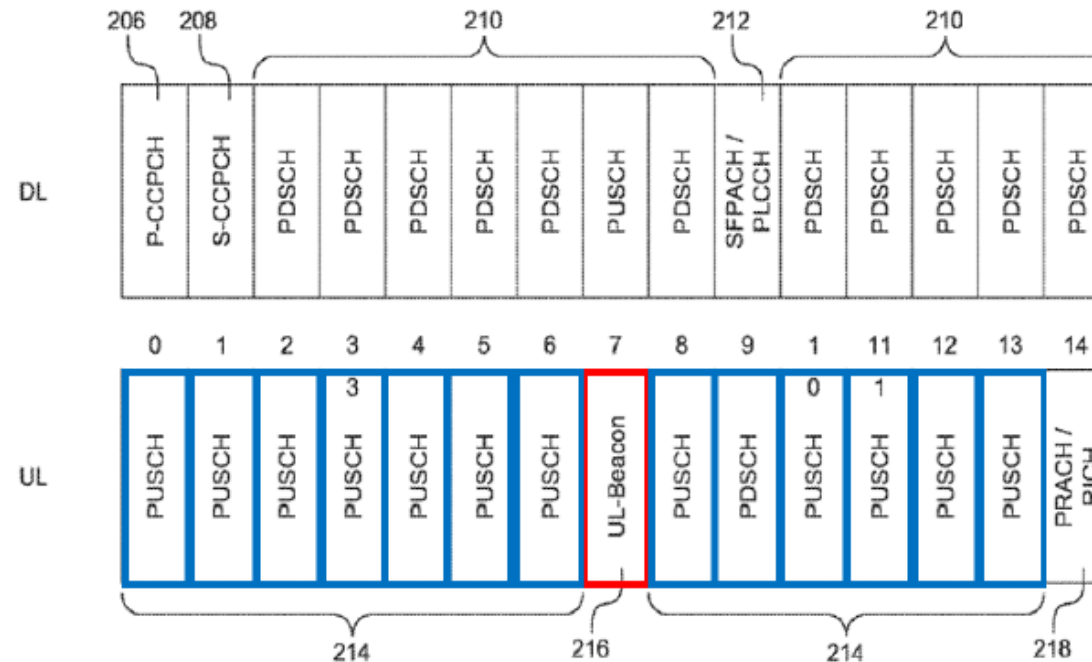


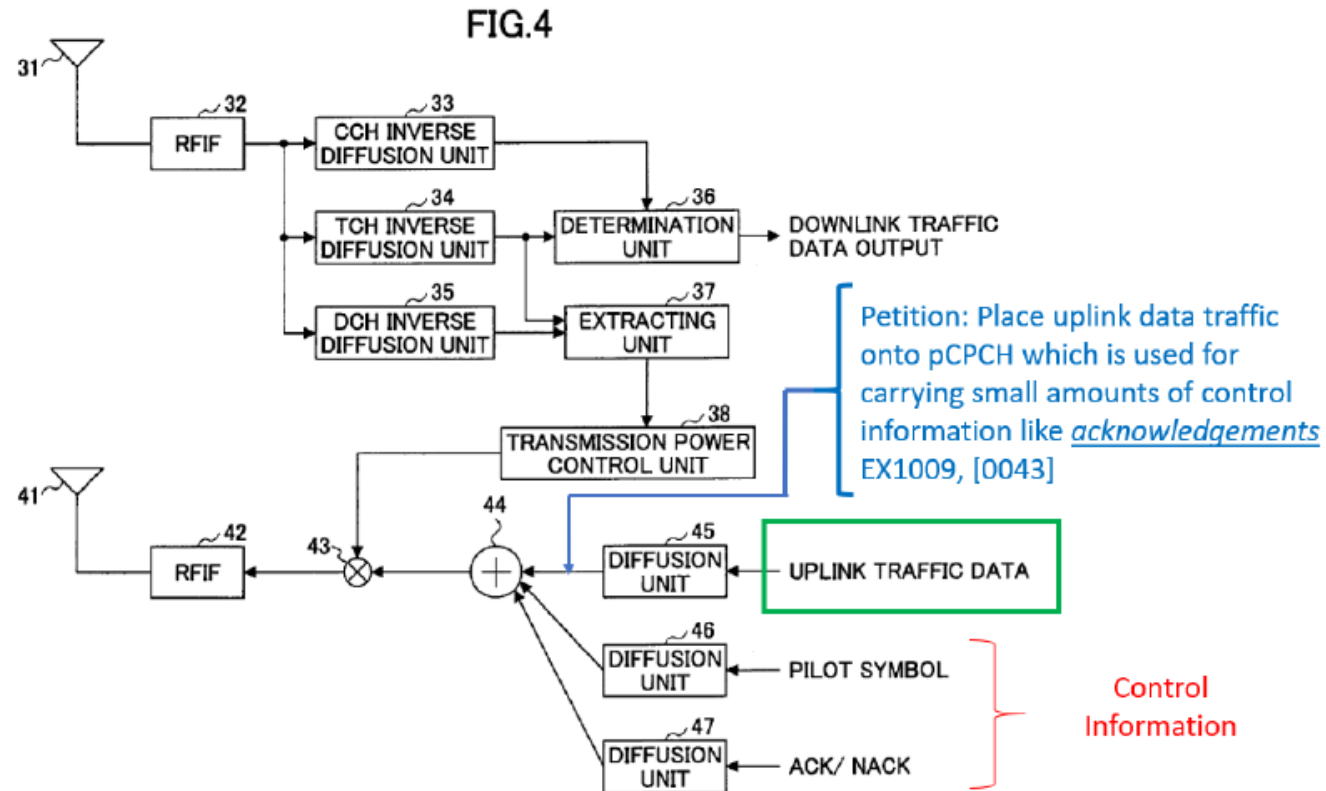
Figure 2 depicts an example where the UE does “not transmit the signal over the physical channel [the UL-Beacon in the red box] at a same time that data over a physical shared channel [the data traffic transmitted using the PUSCH in the blue boxes] is transmitted.” (POR, 23)

Dependent Claim 3

3. The first UE of claim 1 wherein the transmitter and the processor are further configured to transmit data over a physical shared channel in a third time slot and the transmitter and the processor are further configured to not transmit the signal over the physical control channel at a same time that data over a physical shared channel is transmitted.

- The Petition (at 52) alleged that Dateki teaches *uplink traffic data*. However, Dateki failed to disclose transmission of such uplink traffic data “over a physical shared channel” as recited in dependent claim 3.
- In an attempt to fill this gap, the Petition (at 53) argued that a POSITA would have found it obvious for Dateki’s uplink data traffic “to be transmitted using Mate’s pCPOCH channel (physical shared channel) because pCPOCH is another part of the comprehensive 3-GPP-standardized UMTS protocols in which Dateki is based.” POR, 58.
- To demonstrate obviousness, it was Petitioner’s burden to demonstrate that a POSITA would have motivated to use Mate’s pCPOCH channel (physical shared channel) to transmit Dateki’s uplink data traffic. Sur-Reply, 19-20.
- Moreover, since Claim 3 depends from Claim 1, the Petitioner was further required to demonstrate that a POSITA would have been motivated to use Mate’s pCPOCH channel to carry Dateki’s uplink traffic data in the context of the system disclosed in Figure 6 of Dateki, which the Petition mapped to claim 1. *Id.*, 20.

The Petition's Proposed Use Of Mate's pCPCH To Carry Data Traffic In The System Of Figure 6 Of Dateki



(POR, 61)

The Petition's Proposed Use Of Mate's pCPCH To Carry Data Traffic In The System Of Figure 6 Of Dateki

- The Petition's proposed use of Mate's pCPCH channel to implement Dateki's uplink data traffic would not have been appealing to a POSITA.
- In the 3GPP-standardized UMTS protocols at the time of Dateki, the purpose of an uplink data traffic channel (as disclosed in Dateki) was to efficiently transport data traffic (referred to as "user data") at data rates between 2-9 kbits/s. Ex. 2016, 26, 48; Ex. 2017, ¶119.
- By contrast, Mate explains that its pCPCH is limited to carrying small amounts of control information on the uplink. Ex. 1009, [0043].
- A POSITA would have understood that Mate's pCPCH, which was designed to carry small amounts of control information, was not suitable for implementing a data traffic channel for carrying data traffic (or user data) at the data rates (2-9 kbits/s) specified in the standard. Ex. 2017, ¶119.

(POR, 61)

The Petitioner's Purported Motivation Why A POSITA Would Have Used Mate's pCPCH To Carry Data Traffic In Dateki Is Deficient

- The Petitioner's purported motivation for using Mate's pCPCH to implement Dateki's data channel is limited to the allegation that Mate's "pCPCH is another part of the comprehensive 3GPP-standardized UMTS protocols in which Dateki is based." Petition, 53; POR, 61.
- The fact that both Mate's pCPCH and Dateki's uplink channel are both part of the vast 3GPP standard does not explain why a POSITA would have been motivated to use Mate's pCPCH (designed for carrying small amounts of control information) to implement a data traffic channel for carrying data traffic at the data rates (2-9 kbits/s) specified in the standard. POR, 61-62.
- Establishing that prior art references are within the same field of endeavor (or otherwise "analogous") is only a threshold admissibility inquiry; it does not itself supply the motivation to combine. *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1358–60 (Fed. Cir. 2020); *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); and *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1360 (Fed. Cir. 2019).

The Reply Did Not Cure The Deficiency In The Petition Which Failed To Explain Why A POSITA Would Have Used Mate's pCPOCH To Carry Data Traffic In Dateki Is Deficient

- Instead of articulating a reason to combine as it was required to do, the *Petitioner simply criticized* Patent Owner's explanation why a POSITA would not have been motivated to use Mate's pCPOCH to carry data traffic in Figure 6 of Dateki. This approach is flawed, because *Petitioner must show* why the references would have been combined, and the Petition's reliance on the references both being directed to the standard fails to provide the required explanation.
- The criticisms in the Reply are also misplaced.
- The Reply criticizes Patent Owner's arguments, alleging that they impose requirements "not required by the claims." Reply, 1. However, *the requirement of a motivation to combine is distinct from the claim language itself*, and one would not expect the rationale for a motivation to combine to be recited in the claim language. The Petitioner chose its theory of obviousness, and is required to prove it, regardless of whether the motivation to combine proposed in the Petition is recited in the claim language.

(Sur-Reply, 20)

The Reply Did Not Cure The Deficiency In The Petition Which Failed To Explain Why A POSITA
Would Have Used Mate's pCPCH To Carry Data Traffic In Dateki Is Deficient

- In Figure 6 of Dateki, the mobile station transmits the uplink ACK/NACK on “a transmission channel corresponding to HS-DPCCH” – which is a “*High Speed-Dedicated Physical Control Channel*.” Ex. 1005, 2:21-22, 12:7-8, 12:30-32.
- Given that Dateki already has a high-speed control channel for transmitting control information, there would have been no need to supplement Dateki's high-speed control channel with an additional control channel like Mate's pCPCH, which was limited to carrying small of amounts of control information. Ex. 1009, [0043].
- Given that Figure 6 of Dateki already had ample capacity to carry control information on the uplink, the POR turned to whether a POSITA would have been motivated to add Mate's pCPCH to Figure 6 of Dateki for carrying uplink user data (rather than control data).
- While the Reply quarrels with the precise amount of bandwidth that would have been required to support such a data traffic channel, the Reply does not dispute the basic problem that Mate's pCPCH would have lacked sufficient capacity to implement a channel for carrying user data.
- Moreover, Dateki's embodiment in Figure 6 is focused on *high-speed* communications. The fact that Mate's pCPCH is *severely limited* in terms of data rate makes it unsuitable for the *high-speed* framework of Figure 6 of Dateki.

Dependent Claim 4

4. The first UE of claim 1 wherein the transmitter and the processor are further configured to transmit the signal over the physical control channel when time synchronized and to transmit a signal over a random access channel when not time synchronized.

The claim language affirmatively requires operation of the the first UE in each of two states: a state “when time synchronized” and separately in a state “when not time synchronized.”

Logic dictates that a that transmits signals will be either synchronized or not synchronized, there is no third alternative.

Petitioner’s proposed construction allows the UE to transmit a signal over a physical control channel when the UE is not time synchronized. This position effectively re-writes claim 4 to say:

4. The first UE of claim 1 wherein the transmitter and the processor are further configured to transmit the signal over the physical control channel when time synchronized or not time synchronized and to transmit a signal over a random access channel when not time synchronized.

Sur-Reply, 22-23.

Dependent Claim 4

- The Reply (at 3-4) argues that the claims do not require a step of transitioning from one channel to another, which is incorrect.
- Claim 4 depends from claim 1, which is where the antecedent for “the signal over the physical channel” in claim 4 is introduced.
- Claim 1 recites that “the transmitter and the processor are configured to transmit a signal over a physical control channel” and claim 4 adds a further requirement that such transmission occurs at a point in time “when time synchronized.”
- Claim 4 separately requires that, at some other point in time “when not time synchronized,” the UE must transmit over a random access channel.
- As a matter of logic, the only way for a single UE to perform one action at a point in time “when time synchronized” and to perform a different action at another point in time “when time not synchronized” is if the UE transitions between a synchronized state and a non-synchronized state at some point.

(Sur-Reply, 23)

Dependent Claim 4

- The Reply does not dispute that Chitrapu (and Dateki) lack any teaching of what happens when a synchronized UE transmitting a signal over a physical control channel information (as required by the combination of claim 1 and 4) transitions to a non-synchronized state.
- The Reply pivots to a new argument that Dr. Kotzin previously testified “the UE moving out of an RRC connected state when it loses synchronization is consistent with 3G cellular technologies at the time.” Reply, 24.
- That is misleading, because what Dr. Kotzin actually said was that “[t]he ‘889 Patent’s description of the UE moving out of an RRC connected state when it loses synchronization is consistent with 3G cellular technologies at the time. Ex. 1003, ¶48.
- The Petitioner cannot fill a gap in the disclosures of the relied on references by alleging that a UE moving back to the idle state due to losing synchronization was “well-known” where the only alleged support for that is the challenged patent’s own teaching.

(Sur-Reply, 25)