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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 14/741,816 and 25537, inventor Lalit R. Kotecha, and examiner ODEH, NADEEM N.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LALIT R. KOTECHA

Appeal 2018-008516
Application 14/741,816
Technology Center 3600

Before MICHAEL C. ASTORINO, BRUCE T. WIEDER, and
TARA L. HUTCHINGS, *Administrative Patent Judges*.

WIEDER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ seeks review under 35 U.S.C. § 134 from the Examiner's rejection of claims 1–16 and 21–24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as “Verizon Communications Inc. and its subsidiary companies.” (Appeal Br. 2.)

CLAIMED SUBJECT MATTER

Appellant's invention "relate[s] to a command and control interface for UAVs [unmanned aerial vehicles] that are controlled through a wireless network, such as a cellular wireless network." (Spec. ¶ 13.)

Claims 1, 9, and 21 are the independent claims on appeal. Claim 1 is illustrative. It recites:

1. A gateway device for a wireless network, the gateway device comprising processing circuitry to:

provide an interface, for operators of Unmanned Aerial Vehicles (UAVs) that are connected to the wireless network, to receive commands, from the operators, relating to control of the UAVs;

transmit the received commands, via the wireless network and to the UAVs, as network traffic that is assigned a priority level that is higher than voice traffic that is carried by the wireless network;

receive an emergency command, from a regulatory or public safety entity, the emergency command being associated with all UAVs, of the UAVs of the operators, that are within a particular geographic region;

verify, in response to reception of the emergency command, that the regulatory or public safety entity is authorized to issue the emergency command; and

override, in response to successful verification that the regulatory or public safety entity is authorized to issue the emergency command, the received commands, from the operators of the UAVs, to control all of the UAVs, of the UAVs of the operators, that are within the particular geographic region.

REJECTIONS²

Claims 1–3, 5–11, 13–16, and 21–23 are rejected under 35 U.S.C. § 103 as unpatentable in view of Levy (US 2016/0140851 A1, pub. May 19, 2016), Arwine (US 2016/0274578 A1, pub. Sept. 22, 2016), and Bjoern Dusza & Christian Wietfeld, *QDV – A QoS Enabled Packet Scheduling Scheme for Mobile WiMAX in UAV Swarms*, 2011 Proceedings of 20th Int’l Conference on Computer Communications and Networks (ICCCN) (2011) [hereinafter “Dusza”].

Claims 4, 12, and 24 are rejected under 35 U.S.C. § 103 as unpatentable in view of Levy, Arwine, Dusza, and Applicant’s admitted prior art [hereinafter “AAPA”], or alternatively RF Wireless World, *LTE Quality of Service | LTE QoS Class Identifier*, (Internet Archive, RF Wireless World Website (March 7, 2015)) [hereinafter “RF Wireless World”].

ANALYSIS

Obviousness is a legal conclusion involving a determination of four underlying facts.

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

² The rejection of claims 1 and 9 under 35 U.S.C. § 112(b) was withdrawn. (See Answer 4.)

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966)).

With regard to the scope and content of the prior art, the Examiner finds that Levy teaches:

receive an emergency command, from a regulatory or public safety entity, the emergency command being associated with all UAVs, of the UAVs of the operators, that are within a particular geographic region (see at least: Levy, Paragraphs [0045], [0047], [0058], [0060], [0064], [0077]-[0081], [0085], [0099], [0136], [0140], [0144]-[0146], [0153], [0157], [0178]; wherein the emergency command from a regulatory or public safety entity is from the control server or a human pilot); and
override the received commands, from the operators of the UAVs, to control all of the UAVs, of the UAVs of the operators, that are within the particular geographic region (see at least: Levy, Paragraphs [0040]-[0041], [0045], [0064], [0146], [0153]-[0157]).

(Final Action 8 (emphasis omitted).)

By way of background, Levy teaches “systems and methods for drone navigation and, more specifically, . . . systems and methods for remote drone navigation and/or control.” (Levy ¶ 2.) Levy teaches that “the geographical air space is divided into zones.” (*Id.* ¶ 82.) Levy teaches

receiving details of a requested route from at least one of the drone and a ground based drone operator; calculating at least one flight route through the geographical air space based on the flight risk map, the at least one flight route calculated to have a total low risk of flight based on the flight safety scores of respective zones of the geographical air space

(*Id.* ¶ 10; *see also id.* ¶ 107, Final Action 8.) Levy describes a flight risk map as a map that “may cover the environmental air space available for

drone flying. The map includes zones, each zone associated with [a] risk of flying the drone through the respective zone.” (Levy ¶ 70.)

Levy teaches that “[a] central server monitors and/or controls drones flying or attempting to fly through the geographical air space” (*Id.* ¶ 43; *see also* Final Action 3.) Levy also teaches that “[t]he central server may directly control the drone, by a computer, or manually by a pilot.” (Levy ¶ 45; *see also* Final Action 8.) Levy teaches that

[t]he current and/or estimated location of the drone may be compared with the flight risk map to determine when the drone is located within, or estimated to fly into a certain zone having an unacceptable risk level. . . . The comparison with the flight risk map may be made, for example, in a case when the flight risk map has been updated based on dynamic conditions, without yet updating the corresponding flight plan.

(Levy ¶ 144, *see also* Final Action 8.) Levy teaches that “the flight risk of the zone the drone is flying within (or expected to reach) may be dynamically adjusted from low risk to high risk, such as due to an unexpected presence of a police helicopter chasing a suspect, sudden onset of a storm, and a terrorist attack.” (Levy ¶ 145; *see also* Answer 11.) Levy teaches that

when the drone is located within or estimated to fly into an unacceptable zone, the server takes action to prevent or correct the situation. The server may send a command to the drone to perform, for example, one or more of:

- Hover in place. . . .
- Perform an emergency landing. . . .
- Change flight route.

(Levy ¶¶ 146–49; *see also* Final Action 8.)

Appellant argues that “Levy does not describe or suggest a regulatory or public safety entity that provides UAV commands to a gateway.”

(Appeal Br. 8.)

The Examiner finds that Levy teaches

receiving an emergency command, from a regulatory or public safety entity, the emergency command being associated with all UAVs, of the UAVs of the operators, that are within a particular geographic region (see at least: Levy, Fig. 3B, and Paragraphs [0077]-[0078], [0099]), wherein the emergency command includes policy updates initiated by a flight authorization authority that would affect scores or risks associated with a particular geographic region or zone, weather information, air traffic control information, and/or information about sudden changes in conditions of certain geographic locations due to a terrorist attack or sudden adverse weather conditions (see at least: Levy, Paragraphs [0099]-[0102], [0136], [0145]).

(Advisory Action 2, mailed Dec. 13, 2017.)

As an initial matter, we construe the claim term “commands.”

Appellant points to no definition or special meaning for the term “commands” in the Specification. Applying plain meaning, we determine that under a broadest reasonable interpretation, “command” includes “an order given by one in authority.” (*See* dictionary.com/browse/command, def. 11 (last visited December 12, 2019).) Additionally, we note that claim 1 recites “receive commands, from operators, relating to control of the UAVs.” In other words, “commands,” as used in claim 1, need not directly control a UAV, they need only relate to the control of the UAV.

Claim 1 recites “receive an emergency command, . . . the emergency command being associated with all UAVs, of the UAVs of the operators, that are within a particular geographic region.” Based on the Examiner’s findings quoted above, a received dynamic update of a zone in the flight risk

map corresponds to a received emergency command. (*See* Advisory Action 2.) We agree. In other words, Levy teaches that a received dynamic update to a zone can be an order/command to change the flight risk designation of the zone. And, as discussed above, a change in a flight risk designation of a zone can result in a command being sent to the drone to, e.g., perform an emergency landing or change its flight route. Thus, the order/command to change the flight risk of a zone relates to the control of a UAV in that zone.

As noted above, Levy teaches that the dynamic update of a zone in the flight risk map may occur “due to an unexpected presence of a police helicopter chasing a suspect, sudden onset of a storm, and a terrorist attack.” (Levy ¶ 145; *see also* Advisory Action 2.) Although Levy does not specifically state that the source of the update is “from a regulatory or public safety entity,” Levy’s disclosure of the source being related to, e.g., “a police helicopter chasing a suspect, sudden onset of a storm, and a terrorist attack” (Levy ¶ 145), supports the Examiner’s finding that the command is received from a regulatory or public safety entity.³ Therefore we do not find Appellant’s argument persuasive of error.

Appellant also argues that Levy does not describe or suggest that “the received emergency command, as recited in claim 1, is associated with all UAVs, of the UAVs of the operators, that are within a particular geographic region.” (Appeal Br. 8 (emphasis omitted); *see also id.* at 10.)

³ Appellant does not point to any definition or special meaning for the term “a regulatory or public safety entity.” In reaching our determination, we apply a plain meaning and give the term its broadest reasonable interpretation, e.g., the type of entity that would issue a warning regarding a police helicopter involved in a chase.

We disagree. As discussed above, the received emergency command applies to a geographic zone in the flight risk map. Thus, the command is associated with all UAVs within that geographic zone in the flight risk map.

Appellant also argues that

[t]he prohibited flight regions of Levy appear to be predefined areas, such as a region corresponding to an airport or high rise building. In contrast to the predefined regions of Levy, the particular geographic region recited in claim 1 is associated with a command received from a regulatory or public safety entity.

(Appeal Br. 9.)

As discussed above, the received emergency command applies to a dynamic update to a geographic zone in the flight risk map, and the update may be related to, e.g., police activity, weather, or a terrorist attack. (*See* Levy ¶ 145.) Thus, the relevant flight regions are not limited to “predefined areas, such as a region corresponding to an airport or high rise building.” (*See* Appeal Br. 9.) Therefore, we do not find Appellant’s argument persuasive of error.

Appellant further argues that “[n]othing in Levy describes or suggests the use of an override control from a regulatory or public safety entity.”

(Appeal Br. 10.)

However, claim 1 recites “override, in response to successful verification that the regulatory or public safety entity is authorized to issue the emergency command, the received commands from the operators of the UAVs” Claim 1 does not recite an override control from a regulatory or public safety entity. Because Appellant’s argument is not commensurate with the scope of the claim, we do not find it persuasive of error.

Appellant also argues that

paragraphs 0047, 0058-0061, and 0064 [of Levy] relate to a control center that navigates drones through an air space, including the use of high and low risk zones to perform the navigation. Controlling drones via a control center, however, as described by Levy, is a significantly different concept than the gateway device of claim 1, which transmits commands from UAV operators to UAVs, and overrides the commands from the UAV operators when the emergency command, as recited in claim 1, is received from a regulatory or public entity.

(*Id.* at 11.)

As noted above, Levy teaches “receiving details of a requested route from at least one of the drone and a ground based drone operator; calculating at least one flight route through the geographical air space based on the flight risk map.” (Levy ¶ 10.) Levy also teaches that “[t]he central server may directly control the drone, by a computer, or manually by a pilot.” (*Id.* ¶ 45.) In other words, Levy teaches that a drone may be controlled by a pilot/operator through the central server, i.e., control commands from the pilot to follow the flight route are transmitted to the drones through the control center. As also discussed above, Levy teaches that

when the drone is located within or estimated to fly into an unacceptable zone, the server takes action to prevent or correct the situation. The server may send a command to the drone to perform, for example, one or more of:

- Hover in place. . . .
- Perform an emergency landing. . . .
- Change flight route.

(Levy ¶¶ 146–49; *see also* Final Action 8.) Thus, Levy teaches that a server associated with the control center may take action to override the control commands of the pilot/operator, e.g., when a dynamic update is received

adjusting the flight risk of a zone. (*See Levy ¶¶ 145–46.*) In view of the above, we do not find Appellant’s argument persuasive of error.

Appellant does not separately argue claims 2–3, 5–11, 13–16, and 21–23. Therefore, they fall with claim 1. *See 37 C.F.R. § 41.37(c)(1)(iv).*

Appellant also does not separately argue claims 4, 12, and 24. They likewise fall with claim 1. *See id.*

CONCLUSION

The Examiner’s rejections of claims 1–16 and 21–24 are affirmed.

Specifically:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5–11, 13–16, 21–23	103	Levy, Arwine, Dusza	1–3, 5–11, 13–16, 21–23	
4, 12, 24	103	Levy, Arwine, Dusza, RF Wireless World	4, 12, 24	
4, 12, 24	103	Levy, Arwine, Dusza, AAPA	4, 12, 24	
Overall Outcome			1–16, 21–24	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See 37 C.F.R. § 1.136(a)(1)(iv).*

AFFIRMED

Notice of References Cited	Application/Control No.	Applicant(s)/Patent Under Patent Appeal No.	
	Examiner	Art Unit	Page 1 of 1

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command

 [*kuh-mand, -mahnd*] [SHOW IPA](#) 

SEE SYNONYMS FOR *command* ON [THESAURUS.COM](#)

verb (used with object)

- 1 to direct with specific authority or prerogative; order:
The captain commanded his men to attack.
- 2 to require authoritatively; demand:
She commanded silence.
- 3 to have or exercise authority or control over; be master of; have at one's bidding or disposal:
The Pharaoh commanded 10,000 slaves.
- 4 to deserve and receive (respect, sympathy, attention, etc.):
He commands much respect for his attitude.
- 5 to dominate by reason of location; overlook:
The hill commands the sea.
- 6 to have authority over and responsibility for (a military or naval unit or installation); be in charge of.

[SEE LESS](#)

verb (used without object)

- 7 to issue an order or orders.
- 8 to be in charge; have authority.
- 9 to occupy a dominating position; look down upon or over a body of water, region, etc.

[SEE LESS](#)

noun

- 10 the act of commanding or ordering.
- 11 an order given by one in authority:
The colonel gave the command to attack.
- 12 *Military.*
 - a an order in prescribed words, usually given in a loud voice to troops at close-order drill:
The command was "Right shoulder arms!"
 - b the order of execution or the second part of any two-part close-order drill command, as *face* in *Right face!*

- c (*initial capital letter*) a principal component of the U.S. Air Force:
Strategic Air Command.
 - d a body of troops or a station, ship, etc., under a **commander**.
- 13 the possession or exercise of controlling authority:
a lieutenant in command of a platoon.
- 14 expertise; mastery:
He has a command of French, Russian, and German.
- 15 *British.* a royal order.
- 16 power of dominating a region by reason of location; extent of view or outlook:
the command of the valley from the hill.
- 17 *Computers.*
- a an electric impulse, signal, or set of signals for initiating an operation in a computer.
 - b a character, symbol, or item of information for instructing a computer to perform a specific task.
 - c a single instruction.

[SEE LESS](#)

adjective

- 18 of, relating to, or for use in the exercise of command:
a command car; command post.
- 19 of or relating to a commander:
a command decision.
- 20 ordered by a sovereign, as if by a sovereign, or by the exigencies of a situation:
a command performance.

[SEE LESS](#)

SEE FEWER DEFINITIONS

