Appeal decision

Appeal No. 2015- 10491

USA
Appellant INTEL CORPORATION

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The case of appeals against an examiner's decision of refusal of Japanese Patent Application No. 2013-519871, entitled "Media Access Techniques for Multiple User Transmissions" (International Publication No. WO 2012-012420 published on January 26, 2012, National Publication of International Patent Application No. 2013-537739 published on October 3, 2013) has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

No. 1. History of the procedures

The patent application was originally filed on July 19, 2011 as an International Patent Application (priority claim under the Paris Convention: July 20, 2010, received by the foreign receiving office, United States). The history of the further procedures is as follows:

As of December 27, 2013: notice of reasons for refusal

April 14, 2014:	written opinion and written amendment were submitted
As of September 5, 2014:	notice of reasons for refusal
December 9, 2014:	written opinion and written amendment were submitted
As of January 27, 2015:	examiner's decision of refusal
June 3, 2015:	request for appeal and written amendment were submitted
As of July 17, 2015:	notice of reasons for refusal in reconsideration by examiners before appeal proceedings
November 30, 2015:	written opinion and written amendment were submitted
As of December 18, 2015:	reconsideration report
As of March 1, 2016:	notice of reasons for refusal by the body
June 7, 2016:	written opinion and written amendment were submitted

No. 2 The Invention

The invention according to claim 1 of this case (referred to as "the Invention" below) is acknowledged as specified by the matters described in claim 1 submitted on June 7, 2016 described as follows.

"A method comprising:

a step of selecting one or more of a plurality of destination devices from among the plurality of destination devices;

a step of initiating a first exchange with at least one of one or more selected destination devices, the step including a step of transmitting a message to at least one of one or more selected destination devices; and

a step of choosing between transmitting multi-user multiple input multiple output (MU-MIMO) wireless data to at least a number of destination devices from among one or more selected destination devices and initiating a backoff interval based on the result of the first exchange, in which the backoff interval includes a time before start of a second exchange."

No. 3 Cited Documents

1. Description of Cited Document 1

The following matters and the drawings are described in International Publication No. WO 2009-027931 (published on March 5, 2009, referred to as "Cited Document 1" below) which was cited in the reasons for refusal notified on March 1, 2016 by the body and which is a publication published before the priority date (the underlines are applied by the body).

(1) Page 6, Lines 6 to 19

"Accordingly, an enhanced MAC frame; i.e., the MU-RTS, is defined. This frame is different from the ordinary RTS frame because it has multiple recipient MAC addresses. This enables an improved way of communicating the list of identifications or addresses to the other transmission ends. Although the proposed enhanced MAC frame has specific fields which are only meaningful/understandable to MU devices, the frame can be transmitted in the legacy physical layer and has common fields that are understandable by all legacy devices. Therefore, legacy devices can decode the bits, interpret common fields, and initiate appropriate settings. The interpretation of the enhanced MAC frame may be a pure MAC process, so that no further information is required from the physical layer. Moreover, there is no need to change interpretation rules for corresponding existing or legacy MAC frames. In view of the fact that all other transmission ends can be at least partially interpreted by all other transmission ends, its transmission can be regarded as a broadcast transmission from the physical layer perspective. Consequently, legacy devices and procedures require little modifications."

(2) Page 10, Lines 5 to 7

"The following embodiments provide enhancements for multi-user support for IEEE 802.11 based networks by using MU-RTS and M-CTS frames for accessing the channel, and M-ACK for acknowledging the correctly received packets."

(3) Page 10, Lines 16 to 19

"Fig. 2 shows a four-way handshake procedure according to a first embodiment. The proposed MU-DCF is based on the conventional M-DCF, wherein the four-way handshake procedure is proposed to facilitate channel access with multiple users prior to data transmission."

(4) Page 10, Lines 22 to 25

"According to Fig. 2, the transmission is initiated, e.g., by the AP 10 by broadcasting an MU-RTS frame as shown in Fig. 3, which is a MAC frame including multiple receiver addresses used for addressing, e.g., three (R#l to R#3) of the four exemplary stations 21 to 24 shown in Fig. 1."

(5) Page 10, Lines 31 to 32

"After receiving the MU-RTS frame, the selection of stations (R#1to R#3) which are

present in the receiver list reply with an M-CTS frame."

(6) Page 11, Lines 3 to 20
"The above procedure can be programmed as a software routine based on the following pseudo code structure:

```
n is the position of the station in the receiver list in MU-RTS frame
after receiving MU-RTS, wait for SIFS
    while (the station still did not transmit its M-CTS)
    if (n=l)
        transmit M-CTS
        else
        if (the channel gets occupied){
            wait until the channel gets free
            n = n-1
            wait for RIFS
        }
        else{
        n = n-1
        wait for RIFS
        }"
```

(7) Page 11, Line 33 to Page 12, Line 9
"The transmitter (e.g. AP 10) receives none, some, or all of the M-CTS frames from the addressed subset of stations. From the received ones, it may read the information provided in the CAB field (or any other channel state information that could be included in M-CTS frame), and may create a MIMO frame from those packets destined only to stations which replied. This can be expressed by the following pseudo code structure:

```
if (# of M-CTS received > 0)
    create and transmit a MIMO frame from the packets for stations that
replied, optionally applying some scheduling strategy;
else
    start accessing the channel for the next transmission;"
```

(8) Part expressed by the pseudo code structure described in (7) (page 12, lines 5 to 9 in Cited Document 1)
"if (# of M-CTS received > 0)

create and transmit a MIMO frame from the packets for stations that replied, optionally applying some scheduling strategy;
else
start accessing the channel for the next transmission;"
The above description is a condition branch described in the if else statement, and it can be understood that the above description means as follows.

[Meaning of pseudo code]

When a single M-CTS has been received, a MIMO frame is created and transmitted from the packets for stations that replied, some scheduling strategies may be optionally applied, and an access is performed to the channel for the next transmission when there is no received M-CTS.

(9) Page 13, Lines 3 to 5
"Additionally, other options of IEEE 802.11e, such as transmission opportunities (TxOP), block acknowledgement (BA), or no acknowledgement, may also be combined with the above procedures, so as to further improve the performance."

2. Cited Invention 1

According to the description of Cited Document 1 above, it is acknowledged that the following invention (referred to as "Cited Invention 1" below) is described in Cited Document 1.

[Cited Invention 1]

"A method for multi-user support for IEEE 802.11 based networks by using MU-RTS and M-CTS frames for accessing the channel, including

a four-way handshake procedure for facilitating channel access with multiple users prior to data transmission,

the four-way handshake procedure includes that:

the transmission is initiated by the AP 10 by broadcasting an MU-RTS frame which is a MAC frame including multiple receiver addresses used for addressing, e.g., three (R#l to R#3) of the four exemplary stations 21 to 24;

after receiving the MU-RTS frame, the selection of stations (R#1to R#3) which are present in the receiver list in the MU-RTS frame reply with an M-CTS frame;

the AP 10 receives none, some, or all of the M-CTS frames from the addressed subset of stations; and

when a single M-CTS has been received, a MIMO frame is created and

transmitted from the packets for stations that replied, and an access is performed to the channel for the next transmission when there is no received M-CTS, and

regarding enhanced MAC frame; i.e., the MU-RTS frame:

the enhanced MAC frame is different from the ordinary RTS frame because it has multiple recipient MAC addresses;

although the enhanced MAC frame has specific fields which are only meaningful/understandable to MU devices, the frame can be transmitted in the legacy physical layer and has common fields that are understandable by all legacy devices, and therefore, legacy devices can decode the bits, interpret common fields, and initiate appropriate settings, and there is no need to change interpretation rules for corresponding existing or legacy MAC frames."

3. Cited Document 2

The following matters and the drawings are described in Japanese Unexamined Patent Application Publication No. 2008-278483 (published on November 13, 2008, referred to as "Cited Document 2" below) which was cited in the reasons for refusal notified on March 1, 2016 by the body and which is a publication published before the priority date (the underlines are applied by the body).

(10) Paragraph 0006

"[0006]

The IEEE 802.11e EDCA standard provides QoS differentiation by grouping traffic into four ACs; i.e., voice (VO), video (VI), best effort (BE), and background (BK). Each transmission frame from the upper layers bears a priority value (0 to 7), which is passed down to the MAC layer. Based on the priority value, the transmission frames are mapped into the four ACs at the MAC layer. The VO AC has the highest priority; the VI AC has the second highest priority; the BE AC has the third highest priority; and the BK AC has the lowest priority. Each AC has its own transmission queue and its own set of AC-sensitive medium access parameters - the arbitration interframe space (AIFS) interval, contention window (CW, CWmin and CWmax), and transmission opportunity (TXOP). Traffic prioritization uses the medium access parameters to ensure that a higher priority AC has relatively more medium access opportunities than a lower priority AC."

(11) Paragraphs 0009 to 0012

"[0009]

With these medium access parameters, EDCA works in the following manner:

[0010]

Before a transmitting station initiates any transmission, the transmitting station must first sense the channel idle (physically and virtually) for at least an AIFS time interval. If the channel is idle after the initial AIFS interval, then the transmitting station initiates an RTS transmission and awaits a CTS transmission from a receiving station.

[0011]

If a collision occurs during the RTS transmission or if CTS is not received, then the transmitting station invokes the backoff procedure using a backoff counter to count down a random number of backoff time slots selected between 0 and CW (initially set to CWmin). The transmitting station decrements the backoff counter by one as long as the channel is sensed to be idle. If the transmitting station senses the channel to be busy at any time during the backoff procedure, the transmitting station suspends its current backoff procedure and freezes its backoff counter until the channel is sensed to be idle for an AIFS interval again. Then, if the channel is still idle after the AIFS interval, the transmitting station resumes decrementing its remaining backoff counter.

[0012]

Once the backoff counter reaches zero, the transmitting station initiates an RTS transmission and awaits a CTS transmission from the receiving station. If a collision occurs during the RTS transmission or CTS is not received, then the transmitting station invokes another backoff procedure, possibly increasing the size of CW. That is, as stated above, after each, unsuccessful transmission, CW is essentially doubled until it reaches CWmax. After a successful transmission, CW returns to its default value of CWmin. During the transaction, the wireless station can initiate multiple frame transmissions without additional contention as long as the total transmission time does not exceed the TXOP duration."

4. Well-known art recognized based on Cited Document 2

The IEEE 802.11e EDCA standard is well known. In view of this, it can be acknowledged that the following well-known art (referred to as "well-known art 1" below) is described in Cited Document 2.

[Well-known art 1]

"The technique according to the IEEE 802.11e EDCA standard functions as follows:

Before a transmitting station initiates any transmission, the transmitting station must first sense the channel idle (physically and virtually) for at least an AIFS time interval; If the channel is idle after the initial AIFS interval, the transmitting station initiates an RTS transmission and awaits a CTS transmission from a receiving station;

If CTS is not received, the transmitting station invokes the backoff procedure using a backoff counter to count down a random number of backoff time slots selected between 0 and CW (initially set to CWmin); and

Once the backoff counter reaches zero, the transmitting station initiates a RTS transmission and awaits a CTS transmission from the receiving station."

No. 4 Comparison

1. Comparison between the Invention and Cited Invention 1

The Invention is compared with Cited Invention 1.

(1) The "station" and the "MU device" in Cited Invention 1 correspond to the "destination device" in the Invention.

(2) The "MU-RTS frame" and the "enhanced MAC frame" in Cited Invention 1 correspond to the "message" in the Invention.

(3) The transmission and reception of RTS and CTS in the "four-way handshake procedure" in Cited Invention 1 is to exchange the MU-RTS frame and the M-CTS frame between the AP 10 and the station. Therefore, the above transmission and reception correspond to the "first exchange" in the Invention.

(4) In the transmission and reception of RTS and CTS in the "four-way handshake procedure" in Cited Invention 1, "the transmission is initiated by the AP 10 by broadcasting the MU-RTS frame including multiple receiver addresses used for addressing, e.g., three (R#l to R#3) of the four exemplary stations 21 to 24". Therefore, Cited Invention 1 and the Invention are in correspondence in the following point. Both of them are methods including "a step of initiating a first exchange with at least one of one or more destination devices and including a step of transmitting a message to at least one of one or more destination devices."

(5) Since the "M-CTS frame" in Cited Invention 1 is obtained by the AP 10 as a result of the RTS transmission in the "four-way handshake procedure", the number of the

"M-CTS frames" received by the AP 10 corresponds to "the result of the first exchange" in the Invention.

(6) When "creating and transmitting the MIMO frame" in Cited Invention 1, the MIMO frame is transmitted to the stations; that is, the MU devices. Therefore, "creating and transmitting the MIMO frame" corresponds to "multi-user multiple input multiple output (MU-MIMO) wireless data transmission" in the Invention.

(7) In Cited Invention 1, the AP 10 selects to create and transmit the MIMO frame or to access the channel for next transmission based on whether the single M-CTS frame is received by the AP 10. Therefore, Cited Invention 1 and the Invention are in correspondence in that both of them include "a step of choosing between transmitting the multi-user multiple input multiple output (MU-MIMO) wireless data to at least a number of destination devices from among one or more destination devices or performing other operation based on the result of the first exchange."

2. Corresponding features

Therefore, the Invention corresponds to Cited Invention 1 in the following point.

[Corresponding feature]

"The method includes a step of initiating a first exchange with at least one of one or more destination devices and including a step of transmitting a message to at least one of one or more destination devices and a step of choosing between transmitting multi-user multiple input multiple output (MU-MIMO) wireless data to at least a number of destination devices from among one or more destination devices or performing other operation based on the result of the first exchange."

3. Different features

On the other hand, the Invention is different from Cited Invention 1 in the following points.

[The different feature 1]

The Invention includes "the step of selecting one or more of a plurality of destination devices." Whereas, in Cited Invention 1, it is not clear whether or not one or more destination devices are chosen from the plurality of destination devices.

[The different feature 2]

In The Invention, AP 10 chooses between transmitting the MU-MIMO wireless data and initiating the backoff interval including a time before start of the second exchange based on the result of the first exchange. Whereas, the MU-MIMO wireless data transmission or the other operation is chosen based on the result of the first exchange in Cited Invention 1, and to initiate a backoff interval including a time before start of the second exchange is not indicated as the other operation.

No. 5. Judgment by the body

1. Regarding [The different feature 1]

The MU-RTS frame in Cited Invention 1 includes multiple receiver addresses used for addressing, e.g., three (R#l to R#3) of the four exemplary stations 21 to 24. The stations (R#1 to R#3) for transmitting the M-CTS frame in response to the MU-RTS are selected from among the receiver list in the MU-RTS frame. That is, the addresses of the three stations to be the destinations are present in the MU-RTS frame in Cited Invention 1, and the station which has received the MU-RTS frame determines whether the MU-RTS frame is transmitted to the station itself based on whether the address of the station is included in the MU-RTS frame. When the MU-RTS frame is transmitted to the station itself, the M-CTS frame is returned. When the MU-RTS frame is not transmitted to the station itself, the M-CTS frame is not returned. According to the above, it can be understood that the transmission of the MU-RTS frame is performed by broadcasting in view of a physical layer and that the transmission of the MU-RTS frame is performed by multicasting to be transmitted to the designated destination in view of the MAC layer.

Accordingly, it is obvious that the three stations to be the destination should be selected from among the four stations in some way before the AP 10 transmits the MU-RTS frame.

Therefore, in Cited Invention 1, to provide a step for selecting a plurality of stations before the transmission of the MU-RTS frame is only the display of ordinary creativity by a person skilled in the art and is not special.

2. Regarding [The different feature 2]

In the well-known art 1 which is the technique according to the IEEE 802.11e EDCA standard, before a transmission, the transmitting station must first sense the channel idle. If the channel is idle, the transmitting station initiates an RTS

transmission and awaits a CTS transmission from a receiving station. If CTS is not received, the transmitting station invokes the backoff procedure using a backoff counter to count down a random number of backoff time slots selected between 0 and CW. When the backoff counter reaches zero, the transmitting station initiates a RTS transmission again and awaits a CTS transmission from the receiving station.

This is understood as an operation for giving up the data transmission in that time when CTS cannot be received in the first RTS transmission and for initiating the backoff procedure for next transmission. Also, in the backoff procedure, when the backoff time slots reaches zero, the RTS transmission is started again. Therefore, it can be said that the backoff time slot of the backoff procedure is set in a time before starting the RTS transmission again.

According to the above, a series of the operations from the first RTS transmission to the determination that the CTS cannot be received in the well-known art 1 corresponds to the "first exchange" in the Invention. A series of the operations for transmitting RTS again and awaiting the CTS transmission in the well-known art 1 corresponds to the "second exchange". Also, the backoff time slot in the well-known art 1 is set in a time before the operation for transmitting RTS again. Therefore, the backoff time slot "includes a time before start of the second exchange" as described in the Invention.

Thus, it can be said that the technical matters such as "to initiate a backoff interval including a time before start of the second exchange based on the result of the first exchange" according to [the different feature 2] are the technical matters included in the well-known art 1.

The enhanced MAC frame; that is, the MU-RTS frame in Cited Invention 1, is different from the normal RTS frame and has specific fields which are only meaningful/understandable to MU devices. Since the MAC frame can be transmitted in the legacy physical layer and has common fields that are understandable by all legacy devices, the legacy devices can decode the bits, interpret common fields, and initiate appropriate settings. There is no need to change interpretation rules for corresponding existing or legacy MAC frames (refer to (1) in "No. 3 Cited Document" "1. Description of Cited Document 1").

Here, since Cited Invention 1 is the multi-user support for IEEE 802.11 based networks, the MU-RTS frame in Cited Invention 1 should have backward compatibility relative to the known IEEE802.11 based RTS frames. It is obvious that a protocol related to the MU-RTS frame should have backward compatibility relative to the known

IEEE 802.11 based standard.

In addition, as described in (9) in "No. 3 Cited Document" "1. Description of Cited Document 1", it is indicated in Cited Document 1 that other options of IEEE 802.11e can be combined with the procedures.

Then, a person skilled in the art can easily conceive of the operation to start the RTS transmission again and await CTS transmission after initiating the backoff procedure and waiting for the backoff interval by employing the well-known art 1 according to the IEEE 802.11e EDCA standard in order to embody the operation to access the channel for next transmission when the M-CTS is not received in Cited Invention 1.

3. Effect

The effect achieved by the structure of the Invention can also be easily estimated by a person skilled in the art based on Cited Invention 1 and the well-known art 1.

4. Summary

Therefore, the Invention can be easily made by a person skilled in the art based on Cited Invention 1 and the well-known art 1.

No. 6. Closing

As described above, the Invention can be easily made by a person skilled in the art based on Cited Invention 1 described in Cited Document 1 and the well-known art 1. Therefore, the Appellant should not be granted a patent for the invention in accordance with the provisions of Article 29(2) of the Patent Act.

Therefore, the present application should be rejected without examining the invention according to other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

No. 7 Others

The following matters alleged by the Appellant in the written opinion submitted on June 7, 2016 are discussed.

1. "D. (2)" in the written opinion (point that the "backoff procedure" in the well-known art 1 is not the "backoff interval including a time before start of the second exchange" in the Invention)

The Appellant alleges in the written opinion that the correction such that "a step having the backoff interval including a time before start of the second exchange" is "within the matters described in the specifications based on the description such as FIGS. 5 to 12 and FIG. 13", and alleges that "the Appellant considers that the "backoff procedure" in the well-known art 1 is not the "backoff interval including a time before the start of the second exchange.""

The "second exchange" is discussed first.

The "second exchange" is not directly described herein. Also, the configuration which can be assumed as the "second exchange" cannot be found in FIGS. 5 to 12 and the descriptions related to them which are mentioned as grounds for correction.

On the other hand, in FIG. 13, a flow is described in which the exchange is started again (block 1306) after waiting for the backoff interval (block 1312) based on the result of the exchange (block 1308). Therefore, it can be understood that the "second exchange" means the block 1306 which is executed after the flow from the block 1308 via the block 1312 in FIG. 13.

Then, as described in "No. 5 Judgment by the body" "2. [The different feature 2]", the series of the operations for transmitting RTS again and awaiting the CTS transmission in the well-known art 1 corresponds to the "second exchange" in the Invention. Since the "backoff time slot" in the well-known art 1 is set in a time including a time before the series of operations performed by transmitting the RTS again, it can be said that the "backoff time slot" "includes a time before start of the second exchange" like the "backoff interval" of the Invention.

Therefore, the allegation of the applicant indicating that the "backoff procedure" in the well-known art 1 is not the "backoff interval including a time before start of the second exchange" in the Invention cannot be employed.

2. "D. (3)" in the written opinion (point that a person skilled in the art would not have arrived at the employment of the well-known art 1 to Cited Invention 1)

The Appellant alleges in the written opinion that "a purpose of the invention described in Cited Document 1 is 'to provide a more flexible multi-user transmission scheme which does not require much modifications of legacy devices and procedures' (paragraph 0016).

Therefore, when 'the operation for accessing the channel for next transmission when the M-CTS is not received in Cited Document 1 is assumed as an operation for initiating the backoff procedure and waiting for the backoff interval so as to conform to the IEEE 802.11e EDCA standard described in Cited Document 2 in terms of backward compatibility relative to the IEEE 802.11e standard', the purpose of the invention described in Cited Document 1 cannot be achieved. It is considered that a person skilled in the art does not conceive of applying the change to the invention described in Cited Document 1."

First, there is no paragraph 0016 in Cited Document 1. However, it seems that the Appellant refers to the following description in Cited Document 1.

Page 6, Lines 2 to 3

"It is an object of the present invention to provide a more flexible multi-user transmission scheme which requires less modifications of legacy devices and procedures."

However, the reason why the above purpose cannot be achieved when the well-known art 1 is applied to Cited Invention 1 cannot be understood based on the description of the written opinion.

Cited Invention 1 provides enhancements for multi-user support for IEEE 802.11 based networks to achieve the above purpose (refer to "(2)" in "No. 3 Cited Document" "1. Description of Cited Document 1"). Based on the above, it is obvious that the enhancements for IEEE 802.11 based multi-user support can be provided by applying the well-known art 1 relating to the technique of IEEE802.11e which is the IEEE 802.11 based network. It is considered that this is compatible with the purpose of the invention that is to provide a more flexible multi-user transmission scheme which requires less modifications of legacy devices and procedures.

In addition, in consideration of the indication about combination with the IEEE 802.11e (refer to "(9)" in "No. 3 Cited Document" "1. Description of Cited Document 1"), no disincentives to the combination of Cited Invention 1 and the well-known art 1

are found.

Therefore, the allegation of the Appellant indicating that a person skilled in the art does not conceive of the application of the well-known art 1 to Cited Invention 1 cannot be employed.

August 1, 2016

Chief administrative judge: SATO, Tomoyasu
Administrative judge: FURUICHI, Toru
Administrative judge: YOSHIDA, Takayuki