PATROLL Winning Submission

U.S. Patent No. 10,833,908

U.S. Patent No. 10,833,908 ("*Neo Wireless*" or the "patent-at-issue") was filed on June 16, 2020 and claims the benefit of U.S. Provisional Pat. App. No. 60/540,586, filed on January 30, 2004, and of U.S. Provisional Pat. App. No. 60/540,032, filed on January 29, 2004. Claim 11 of the patent-at-issue is generally directed to a method performed by a mobile station, the method comprising transmitting, to a base station, a first uplink signal within a frequency band, wherein the first uplink signal is an orthogonal frequency division multiplexing (OFDM) signal and utilizes a frame format comprising a plurality of timeslots each comprising a plurality of OFDM symbols. A random access signal is also transmitted to the base station followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station. The time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols. A response message is then received from the base station.

The primary reference, JP2003259414A ("*Sony*"), was filed on March 5, 2002 and claims priority on the same date. The patent generally relates to a mobile communication system in which congestion is lessened in the vicinity of cell boundary. A mobile station detects the strength and frequency of an interference wave to a receiving signal from a base station. When the detection results exceed specified threshold levels, strength and frequency of the interference wave are detected over a specified period determined by random numbers. If the strength and frequency of the interference wave exceed the threshold levels even after elapsing the period determined by random numbers, any one of switching the frequency channel or stopping transmission is effected. If the strength and frequency of the interference wave do not reach the threshold levels within the period determined by random numbers, both switching of the frequency channel and stopping of transmission are interrupted to sustain communication with the base station.

A sample claim chart comparing claim 11 of *Neo Wireless* to *Sony* is provided below.

US10833908 ("*Neo Wireless*")	**A. JP2003259414A** ("*Sony*")
11.pre. **A method performed by a mobile station, the method comprising**: 11.a. **transmitting, to a base station, a first uplink signal within a frequency band**,	**A. JP2003259414A** "**FIG. 12 shows an example of a frame structure of a signal used for communication between a mobile station and a base station. The transmission unit is from a broadcast phase, a downlink phase, an uplink phase, and a random access phase. It is configured. This transmission unit is called a MAC frame, and its time length is 2 ms**." *Sony* at par. 0004 of the translation document "Then, **the mobile station receives the broadcast phase, thereby receiving information on which timing in the MAC frame may be transmitted, and transmits an uplink signal according to this instruction**. The random access phase is used to convey this request when the mobile station first requests connection to the base station." *Sony* at par. 0010 of the translation document "**FIG. 17 shows the frequency structure of an OFDM symbol, and 53 subcarriers are distributed at a frequency interval of 312.5 kHz. However, since no subcarrier is arranged in the baseband of 0 Hz, the occupied frequency band is 16.5625 MHz (= 312.5 kHz × 53). In the OFDM symbol (indicated by a thick arrow) in which information is modulated, the pilot subcarriers are 312.5 kHz × (−21), 312.5 kHz × (−7), 312.5 kHz × 7, and 312.5 kHz × 21. It is arranged at the frequency position**. The complex amplitude of the pilot subcarrier is a known value in transmission / reception." *Sony* at par. 0012 of the translation document "**Communication between the base station and the mobile station is performed according to the above MAC frame configuration and OFDM symbols**." *Sony* at par. 0013 of the translation document
11.b. **wherein the first uplink signal is an orthogonal frequency division multiplexing (OFDM) signal and utilizes a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols**;	**A. JP2003259414A** "**FIG. 12 shows an example of a frame structure of a signal used for communication between a mobile station and a base station. The transmission unit is from a broadcast phase, a downlink phase, an uplink phase, and a random access phase. It is configured. This transmission unit is called a MAC frame, and its time length is 2 ms**." *Sony* at par. 0004 of the translation document

(cont.) 11.b. **wherein the first uplink signal is an orthogonal frequency division multiplexing (OFDM) signal and utilizes a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols**;	"Then, **the base station determines at what timing information is transmitted to each mobile station, and schedules the allocation slot. A signal in the broadcast phase informs which mobile station information is transmitted at which timing in the MAC frame**." *Sony* at par. 0007 of the translation document "FIG. 14 shows an example of a downlink burst. For example, **two OFDM symbols are concatenated following the preamble**. Although the details of this OFDM symbol will be described later, **this OFDM symbol is referred to as a "time slot". In FIG. 14, although there are only two time slots, the number is increased or decreased depending on the communication capacity, the number of users, and the like. Each mobile station is notified in the broadcast phase of what time slot to use**." *Sony* at par. 0008 of the translation document "Then, **the mobile station receives the broadcast phase, thereby receiving information on which timing in the MAC frame may be transmitted, and transmits an uplink signal according to this instruction**. The random access phase is used to convey this request when the mobile station first requests connection to the base station." *Sony* at par. 0010 of the translation document "FIG. 16 shows the structure of an OFDM symbol. One OFDM symbol is set to have a time length of 3.2 μs, and a guard time of 0.8 μs (or 0.4 μs) is added before that to transmit one OFDM symbol. It is said that. Since **one MAC frame is composed of 500 OFDM symbols**, the time length of one MAC frame is 2 ms (= (0.8 μs + 3.2 μs) × 500) as described above. In addition, the base station and the mobile station transmit and receive frames at intervals of 2 ms." *Sony* at par. 0011 of the translation document "**Communication between the base station and the mobile station is performed according to the above MAC frame configuration and OFDM symbols**." *Sony* at par. 0013 of the translation document "[List of abbreviations used in this specification] APC: Access Point Controller CCH: Common Control Channel GPS: Global Positioning System MAC: Message Authentication Code **OFDM: Orthogonal Frequency Division Multiplexing**" *Sony* at par. 0066 of the translation document

11.c. **transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station,**	**A. JP2003259414A** "**FIG. 12 shows an example of a frame structure of a signal used for communication between a mobile station and a base station. The transmission unit is from a broadcast phase, a downlink phase, an uplink phase, and a random access phase. It is configured. This transmission unit is called a MAC frame, and its time length is 2 ms**." *Sony* at par. 0004 of the translation document "**This broadcast phase is used when the base station delivers control information to each mobile station. Also, initial acquisition of the mobile station is performed by receiving this broadcast burst**." *Sony* at par. 0006 of the translation document "Then, **the mobile station receives the broadcast phase, thereby receiving information on which timing in the MAC frame may be transmitted, and transmits an uplink signal according to this instruction. The random access phase is used to convey this request when the mobile station first requests connection to the base station**." *Sony* at par. 0010 of the translation document "**FIG. 16 shows the structure of an OFDM symbol. One OFDM symbol is set to have a time length of 3.2 μs, and a guard time of 0.8 μs (or 0.4 μs) is added before that to transmit one OFDM symbol**. It is said that. Since one MAC frame is composed of 500 OFDM symbols, the time length of one MAC frame is 2 ms (= (0.8 μs + 3.2 μs) × 500) as described above. In addition, the base station and the mobile station transmit and receive frames at intervals of 2 ms." *Sony* at par. 0011 of the translation document "**FIG. 17 shows the frequency structure of an OFDM symbol, and 53 subcarriers are distributed at a frequency interval of 312.5 kHz. However, since no subcarrier is arranged in the baseband of 0 Hz, the occupied frequency band is 16.5625 MHz (= 312.5 kHz × 53)**. In the OFDM symbol (indicated by a thick arrow) in which information is modulated, the pilot subcarriers are 312.5 kHz × (−21), 312.5 kHz × (−7), 312.5 kHz × 7, and 312.5 kHz × 21. It is arranged at the frequency position. The complex amplitude of the pilot subcarrier is a known value in transmission / reception." *Sony* at par. 0012 of the translation document "**Communication between the base station and the mobile**

(cont.) 11.c. **transmitting, to the base station, an random access signal followed by a guard period in only a portion of the frequency band, wherein the random access signal includes a sequence associated with the base station**,	**station is performed according to the above MAC frame configuration and OFDM symbols**." *Sony* at par. 0013 of the translation document "**When the mobile station starts up, it scans the frequency channel and selects the strongest signal, and first receives the broadcast phase transmitted from the base station. Then, since the position of the random access phase is known by receiving the broadcast phase, the mobile station next transmits a communication request signal to the base station in the random access phase**. When the base station accepts the communication request, the base station transmits time slot information used by the mobile station for information transmission / reception in the broadcast phase." *Sony* at par. 0014 of the translation document
11.d. **wherein a time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols**; and	**A. JP2003259414A** "**FIG. 12 shows an example of a frame structure of a signal used for communication between a mobile station and a base station. The transmission unit is from a broadcast phase, a downlink phase, an uplink phase, and a random access phase. It is configured. This transmission unit is called a MAC frame, and its time length is 2 ms**." *Sony* at par. 0004 of the translation document "**FIG. 16 shows the structure of an OFDM symbol. One OFDM symbol is set to have a time length of 3.2 μs, and a guard time of 0.8 μs (or 0.4 μs) is added before that to transmit one OFDM symbol. It is said that. Since one MAC frame is composed of 500 OFDM symbols, the time length of one MAC frame is 2 ms (= (0.8 μs + 3.2 μs) × 500) as described above**. In addition, the base station and the mobile station transmit and receive frames at intervals of 2 ms." *Sony* at par. 0011 of the translation document
11.e. **receiving, from the base station, a response message**.	**A. JP2003259414A** "When the mobile station starts up, it scans the frequency channel and selects the strongest signal, and first receives the broadcast phase transmitted from the base station. Then, since the position of the random access phase is known by receiving the broadcast phase, the mobile station next transmits a communication request signal to the base station in the random access phase. **When the base station accepts the communication request, the base station transmits time slot information used by the mobile station for information transmission / reception in the broadcast phase**." *Sony* at par. 0014 of the translation document