

*Amended*

*Exhibit 10*

# Exhibit 10

## Claim 13 of U.S. Patent No. 10,000,000

"13. A mobile station served by a serving base station in an Orthogonal Frequency Division Multiplexing (OFDM)

13. A mobile station served by a serving base station in an Orthogonal Frequency Division Multiplexing (OFDM) communication system,

GM's Accused Products include vehicles equipped with components and/or 4G/LTE networks and services, including services sold and provided by GM

To the extent the preamble is considered a limitation, GM's Accused Product patent. *E.g.*,

The LTE specification (Series 36, Release 8) specifies user equipments (UE) information.

For clarity, release 8 of the 36 series 3GPP specifications was frozen in December 2009 and used as the basis for the first wave of LTE equipment. The LTE marketplace includes releases from Release 8 through Release 17. Though for ease of review releases cited below, the same or functionally identical content exists in each corresponding release.

LTE uses orthogonal frequency division multiplexing (OFDM) for downlink transmission.

## 4.2 General description of Layer 1

### 4.2.1 Multiple Access

The multiple access scheme for the LTE physical layer is based on Orthogonal Frequency Division Multiplexing (OFDM) with a cyclic prefix (CP) in the downlink, and on Single-Carrier Frequency Division Multiple Access (SC-FDMA) with a cyclic prefix in the uplink. To support transmission in paired and unpaired spectrum, two duplexing modes are supported: Frequency Division Duplex (FDD), supporting full duplex and half duplex operation, and Time Division Duplex (TDD).

The Layer 1 is defined in a bandwidth agnostic way based on resource blocks, allowing the LTE system to be used in various spectrum allocations. A resource block spans either 12 sub-carriers with a sub-carrier bandwidth of 15 kHz or 6 sub-carriers with a sub-carrier bandwidth of 7.5 kHz each over a slot duration of 0.5 ms.

*See e.g.*, 3GPP TS 36.201 V8.3.0 at pgs. 7-8.

LTE downlink transmission use OFDM.

"13. A mobile station served by a serving base station in an Orthogonal Frequency Division Multiplexing (OFDM)

## 5.1 Downlink Transmission Scheme

### 5.1.1 Basic transmission scheme based on OFDM

The downlink transmission scheme is based on conventional OFDM using a cyclic prefix. The spacing is  $\Delta f = 15$  kHz. 12 consecutive sub-carriers during one slot correspond to one downlink frequency domain, the number of resource blocks,  $N_{RB}$ , can range from  $N_{RB-min} = 6$  to  $N_{RB-max} =$

In addition there is also a reduced sub-carrier spacing  $\Delta f_{low} = 7.5$  kHz, only for MBMS-dedicated

In the case of 15 kHz sub-carrier spacing there are two cyclic-prefix lengths, corresponding to 2 symbols per slot respectively.

- Normal cyclic prefix:  $T_{CP} = 160 \times T_s$  (OFDM symbol #0),  $T_{CP} = 144 \times T_s$  (OFDM symbol #1-11)

See e.g., 3GPP TS 36.300 V8.12.0 at pg. 25

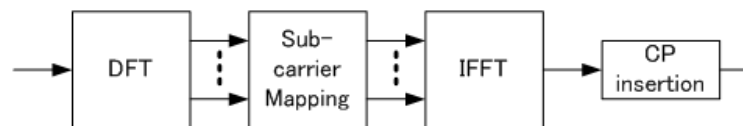
LTE uplink transmissions use discrete Fourier transform spread OFDM (DFT-S-SS)

"13. A mobile station served by a serving base station in an Orthogonal Frequency Division Multiplexing (OFDM)

## 5.2 Uplink Transmission Scheme

### 5.2.1 Basic transmission scheme

For both FDD and TDD, the uplink transmission scheme is based on single-carrier FDMA, OFDM.



**Figure 5.2.1-1: Transmitter scheme of SC-FDMA**

The uplink sub-carrier spacing  $\Delta f = 15$  kHz. The sub-carriers are grouped into sets of 12 consecutive sub-carriers corresponding to the uplink resource blocks. 12 consecutive sub-carriers during one slot correspond to one *resource block*. In the frequency domain, the number of resource blocks,  $N_{RB}$ , can range from 1 to 110.

There are two cyclic-prefix lengths defined: Normal cyclic prefix and extended cyclic prefix. There are six SC-FDMA symbol per slot respectively.

- Normal cyclic prefix:  $T_{CP} = 160 \times T_s$  (SC-FDMA symbol #0),  $T_{CP} = 144 \times T_s$  (SC-FDMA symbol #1-5)

See e.g., 3GPP TS 36.300 V8.12.0 at pgs. 27-28.

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.