

(Press Release)

February 6, 2019

Cyber Creative Institute Co., Ltd.

5th Floor Gotanda First Bldg.

2-8-1, Nishi Gotanda, SHinagawa-ku, Tokyo, Japan

Cyber Creative Institute analyzes "Application trend of ETSI standard essential patent (5G-SEP) candidates contributing to realization of 5 G and proposal trend of contributions for standards"

~ Fairly evaluate companies focusing levels before standards are fixed ~

Abstract

Cyber Creative Institute Co., Ltd., which conducts comprehensive investigation of ICT technology including mobile wireless, devised a method for extracting patent applications bearing in mind the standard specifications under consideration by way of focusing on the technologies unique to 5G, and evaluated and analyzed the company's focusing degree to 5G technologies together with the trends of 3GPP contributions on a fair basis. The extracted applications should be 5G-SEP candidates.

Cyber Creative Institute Co., Ltd. has decided to contribute to the business strategy of carriers and vendors providing 5G services and technologies, and users using 5G services by publishing the results of the evaluation and analysis before the standards are decided.

Key evaluation results are as follows;

- In the trend of the extracted applications, the top three companies are SAMSUNG, HUAWEI, QUALCOMM, the same as Evaluation LTE essential patents Version 3.0 (2013). In domestic companies, NTT DOCOMO is ranked sixth (the top in career).

- In the trends of 3GPP contributions for 5G technologies, the top three companies are HUAWEI, ERICSSON, NOKIA. In domestic companies, NTT DOCOMO is ranked ninth (the top in career).

Background

< Necessity of new analysis method >

The 5th generation mobile radio communication system (hereinafter abbreviated as 5G), which is the next generation communication standard, is currently being studied vigorously at the 3rd Generation Partnership Project (3GPP) which is a standards organization. The study results are approved as the ITU-R Recommendations, and Rel. 15, where 5G can be implemented, is nearly completed in September 2018 and FINAL is assumed to be June 2019. Since Rel. 15 is still under consideration, it will lack of fairness to evaluate only for patents declared in ETSI in November last year because there are companies and patents that have not declared yet due to differences in thinking on leading declarations by leading companies.

Meanwhile, in addition to conventional high-speed and large capacity requirements, 5G has been working on super low latency for automobile and medical industries, multi terminal connection for smart city and social infrastructure maintenance. The expectation for grasping standardization trends and standard essential patent (hereinafter abbreviated as SEP) trends is growing even outside the telecommunications industry.

Under such circumstances, Cyber Creative Institute secured fairness, devised a new evaluation method to analyze trends of patent application targets that become 5G-SEP candidates with respect to technology unique to 5G, and analyzed trends of patent applications related to technologies that are important in 5G and the company's focusing degree to 5G-SEP.

Below is a summary of the results.

< Importance of Standard Required Declaration Patent >

Each company is required to submit IPR declarations to the standardization bodies of each country / region that it should license its own patents under the FRAND¹ terms in order for technologies related to the patents to be adopted as standards. The 5G standards currently in progress at 3GPP are requested to ITU-R

¹ Fair, Reasonable And Non-Discriminatory

as Recommendations for approval when the discussion within 3GPP converges. After approved by ITU-R, they will be enacted as standards by each country / regional standardization organization (ETSI, ARIB, TTC etc.). Each company having a patent application conforming to the 5G standards will satisfy the requirement that technology concerning the patent application be adopted as a standard by declaring its own patent application as SEP on each standardization organization. However, declarations as SEP can be carried out by each company's own judgment, but evaluation of whether it is truly standard mandatory is required separately for each evaluation.

< Study Method >

The evaluation method invented by Cyber Creative Institute judges for patent applications to 15 technical areas indispensable for utilization in 5G whether it is a technology realizing 3GPP's 5G standards which are advanced in discussion. As a result, it is possible to judge the possibility of compliance with the 5G standard for patent applications for which the standard mandatory declaration to a standardization organization, such as ETSI, has not been implemented.

Points of the survey results

(1) The number of patent applications in the survey area and the number of applications for 5G-SEP candidate

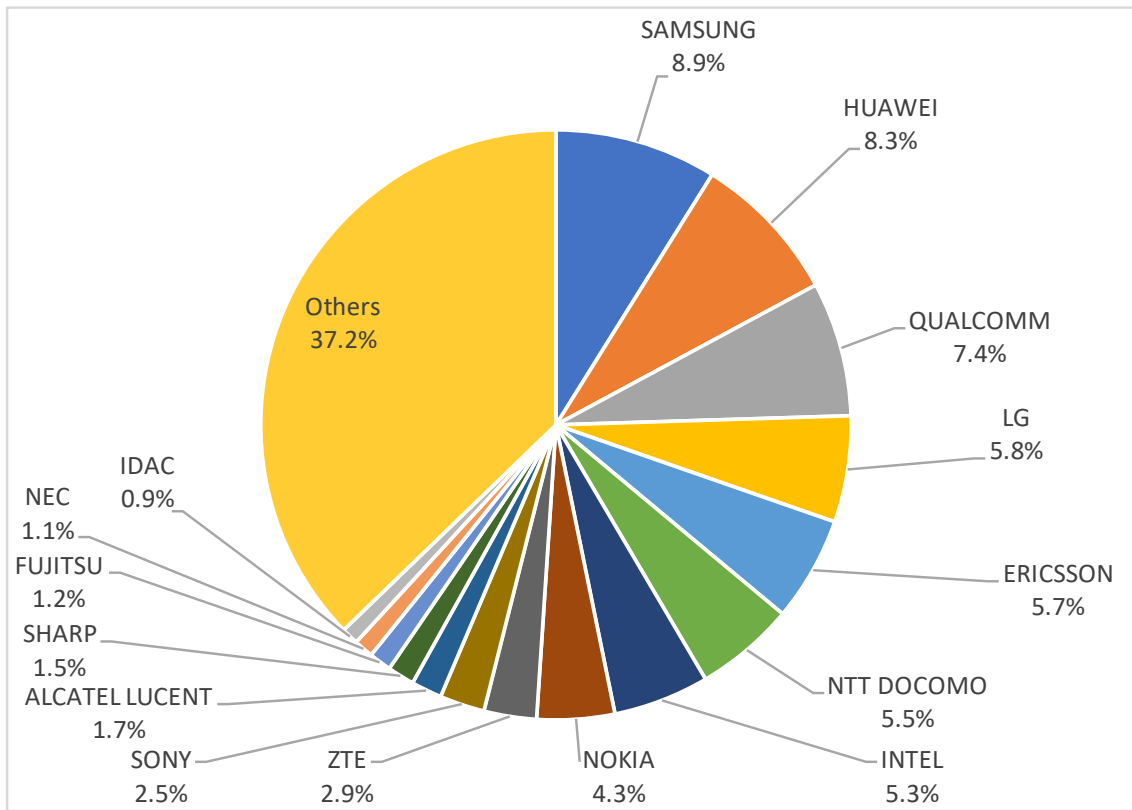
The number of patent families to be surveyed was about 30,000, among which about 7,300 patent families judged to be 5G-SEP candidates. (24.7%)

(2) Transition of 5G-SEP candidate

The number of patent families whose priority claim year is 2016 was about 3,700, which is a half of 5G-SEP candidates.

(3) Top 5G-SEP candidate application companies

The top three companies are SAMSUNG, HUAWEI, QUALCOMM, the same as Evaluation LTE essential patents Version 3.0 (2013). In domestic companies, NTT DOCOMO is ranked sixth (the top in career).



(4) 5G's attention technology (Ultra-low latency)

There are 650 patent applications with the main issue of very low delay. Apply 90% in 2 years of 2015 and 2016.

(5) Focus area of major companies' 5G technology

SAMSUNG focuses on beam control, OFDM, and CSI feedback.

HUAWEI focuses on network slicing, nonorthogonal access control, and MIMO.

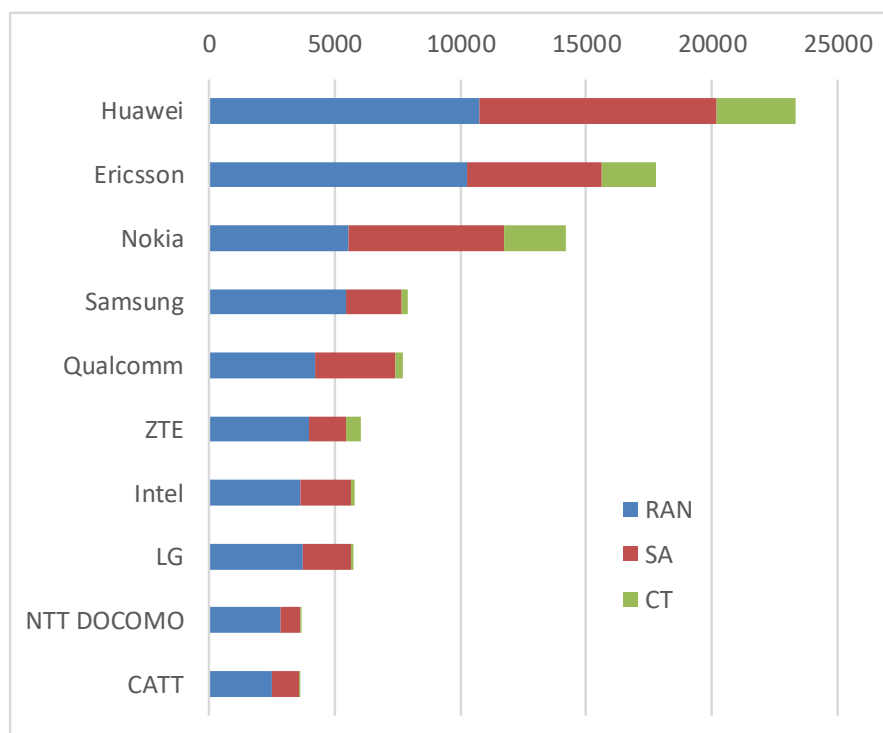
QUALCOMM focuses on radio resource management, frame composition, and synchronization.

NTT DOCOMO, with the largest number of applications in Japanese companies, focuses on multi connection, Duplex, and cell selection.

(6) Contributions to standardization

The number of contributions for 5G in 3GPP is about 120,000 from March 2016 to June 2018. Each of the top three companies including HUAWEI, ERICSSON and

NOKIA submitted more than 10,000 contributions. In domestic companies, NTT DOCOMO is the ninth place (leading as a carrier).



For an overview of the survey results, please see URLs below. A summary of the report is posted.

<https://www.cybersoken.com/file/5G-SEP-JP.pdf>

<https://www.cybersoken.com/file/5G-SEP-ENG.pdf>

Overview

Patents surveyed: Patent applications to 15 technical areas indispensable for utilization in 5G

Search system: Derwent Innovation

Patents searched: World patent publication

Analysis unit: INPADOC family base

survey target period: January 1, 2013 issue date to June 30, 2018 issue date

Contributions surveyed: Contributions to RAN, SA and CT meetings in 3GPP

Survey target: Public information on 3GPP web site

survey target period: January 1, 2016 to June 30, 2018

Service menu

(1) Survey report sales

Overall trend survey

Trend survey by technology classification (Low latency, V2X, Network slicing, etc.)

Survey on application trend of companies of interest (Focusing technology, Compared with competitors, etc.)

Survey report sales (excerpt):

(2) Detailed analysis data sales

Patent publication number, technical classification, outline of the patent, and presence or absence of the SEP declaration for each surveyed patent

They are summarized by technology unit, applicant unit, etc. and sold as a list

(3) Individual requirements can be consulted

■ Corporate information

(1) Corporate Name: Cyber Creative Institute Co. Ltd. (<https://www.cybersoken.com>)

(2) President: Kensaku Kinoshita

(3) Headquarter:

5th Fl., Gotanda First Bldg. 2-8-1, Nishi-Gotanda, Shinagawa-ku, Tokyo, JAPAN

(4) Established: April 2001

(5) Main business contents: The following business related to ICT

1. Research & Survey Services

2. Intellectual Property Services

3. Engineering Services

4. Education & Training Services

(6) Capital: 30 million JPY

■ Contact

Cyber Creative Institute Co. Ltd.

Intellectual Property Business Division 5G SEP survey team

Responsible person: Kenji Nakanishi

Tel.: +81-3-3490-3186

Email: contacts@cybersoken.com