

Establishment of LTE Patent Pool

Standardized technologies inevitably make use of numerous patented inventions. Consequently, in order to manufacture and sell products incorporating standardized technologies, manufacturers must acquire licenses from numerous patent owners. "Patent pools" can enable the comprehensive licensing of such numerous patents at a reasonable price. In October 2012, a patent pool for LTE standard patents was established.

Intellectual Property Department **Takuya Kosaka**
Christopher Kerr

1. Introduction

The importance of technological standardization cannot be overemphasized. Widespread use of technical standards, set cooperatively by industry, is beneficial to both industry and consumers. Nevertheless, since standards incorporate cutting-edge technologies, they inevitably make use of numerous patented inventions resulting from the technological developments of many companies. Consequently, to manufacture products conforming to a standard, it is necessary to obtain licenses to numerous essential patents^{*1}. In practice, the cost and effort required to obtain licenses from multiple patent owners around the world can be a market barrier for manufacturers (licensees). Equally, the cost

and effort associated with negotiating licenses with numerous licensees is also a burden for patent owners (licensors). Moreover, royalties may accumulate to unreasonably high levels that impede the rapid uptake and spread of a standard.

Patent pools can overcome these problems by simultaneously licensing multiple patent owners' essential patents through a common license administrator, and are conducive to spreading standards by:

- Making complicated patent licensing more efficient
- Making royalties more reasonable

Standardization of LTE commenced in 2005 by the 3GPP, an international standardization organization, and in March 2009, 3GPP

Release 8 was completed [1]. In response, in May the same year, three European and American license administrators (Via Licensing Corp., Sisvel S.p.A, MPEG LA, LLC) independently announced their intentions to facilitate the creation of patent pools to license LTE essential patents and issued patent calls. Thereupon, each license administrator held regular meetings with patent owners to collectively negotiate the pool licensing conditions. Subsequently, an LTE patent pool, administered by Via Licensing, was established and licenses were made available in October 2012. This article provides an overview of the LTE patent pool.

2. Pool Licensors

According to a report from the

©2013 NTT DOCOMO, INC.

Copies of articles may be reproduced only for personal, noncommercial use, provided that the name NTT DOCOMO Technical Journal, the name(s) of the author(s), the title and date of the article appear in the copies.

*1 **Essential patent:** A patent for which it is necessary to obtain a license from its owner to avoid infringement when manufacturing or selling a product conforming to a standard.

European mobile communications device industry group the Global mobile Suppliers Association (GSA), the number of operators that have launched commercial LTE network services had risen to 113 in 51 countries as of November 2, 2012. This number is forecasted to increase to 209 in 75 countries by the end of 2013. If operators that are testing technologies and engaged in trial deployment are also included, the number is 360 in 105 countries [2]. In addition, 83 manufacturers were selling 560 LTE user devices as of November 12, 2012 [3]. In the face of such dramatic growth of the LTE market, demand for LTE essential patent licenses is mounting.

At the time of writing this article (December 12, 2012) 12 companies had joined the patent pool as licensors (AT&T Intellectual Property II, L.P., China Mobile Communications Corp., Clear Wireless LLC, Deutsche Telekom AG, DTVG Licensing, Inc., Hewlett-Packard Company, KDDI Corp., NTT DOCOMO, INC., SK Telecom Co., Ltd, Telecom Italia S.p.A., Telefónica, S.A. and ZTE Corp.). Through the pool, manufacturers can obtain a license for all the LTE essential patents owned by these 12 companies via a single agreement. While it is difficult to accurately ascertain the proportion of the total number

of worldwide LTE essential patents the pool represents (patent capture rate), based on the results of a study by the Cyber Creative Institute of LTE essential patents declared to the European Telecommunications Standards Institute (ETSI)^{*2} [4], it can be estimated to be currently around 17%, and is expected to increase as new licensors join the pool.

3. License Conditions

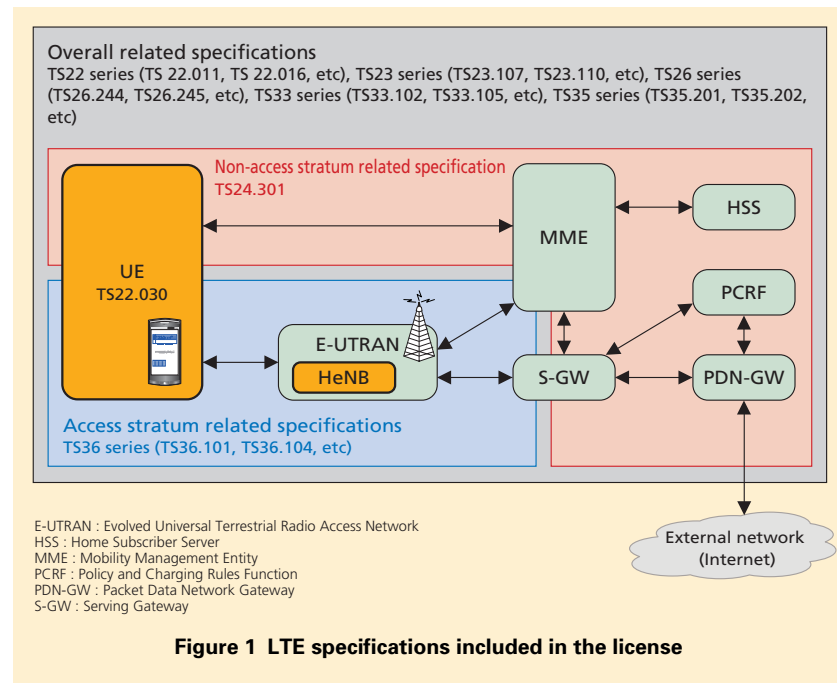
We now outline the key conditions of the pool license.

3.1 Licensed Products and Standards

The pool license covers terminals

(UE) and femtocell base stations^{*3} (Home eNodeB (HeNB)). Base station equipment other than HeNB and core network^{*4} equipment are not covered.

Figure 1 shows the LTE specifications included in the pool organized by associated functional element in the LTE architecture model. The specifications included represent all of the LTE and System Architecture Evolution (SAE)^{*5} related specifications (3GPP Releases 8 and 9) required to implement the LTE standard in a licensed product, and include access stratum specifications (TS36 series), non-access stratum specifications (TS24.301), a UE specific specification (TS22.030), as well as other over-



*2 **ETSI**: A standardization organization concerned with telecommunications technology in Europe.
 *3 **Femtocell base station**: A Super-Small Base Station (SSBS) designed for coverage of a few 10's of meters radius for residential or

small-shop applications.
 *4 **Core network**: A network comprising switching equipment, subscriber information management equipment, etc. A mobile terminal communicates with the core network via a radio access network.

all LTE and SAE related specifications (TS22, TS23, TS26, TS33 and TS35 series).

3.2 Royalties

Royalties are not calculated as a percentage of the product price, but are levied at a fixed amount (dollars/unit) regardless of the product price. Separate rates are set for the UE and HeNB product categories (The UE product category is further subdivided into two subcategories - General Terminal Products and Data Terminal Products). General Terminal Products (smart-phones, mobile phones, etc), Data Terminal Products (data cards, M2M devices, mobile wireless routers, etc) and HeNBs are levied at \$3.00/unit, \$1.50/unit and \$2.00/unit respectively, and are discounted in accordance with a licensee’s sales volumes up to a maximum discount of 20-30% (Figure 2). The rates have been carefully set taking into consideration factors such as market size and patent capture rate, to ensure that they are Reasonable And Non-Discriminatory (RAND)^{*5} as a whole, and, in principle, will not be changed regardless of increases or decreases in the number of patents licensed.

In addition, licensees pay an upfront fee of \$15,000 (licensees with 25 employees or less or sales of \$2

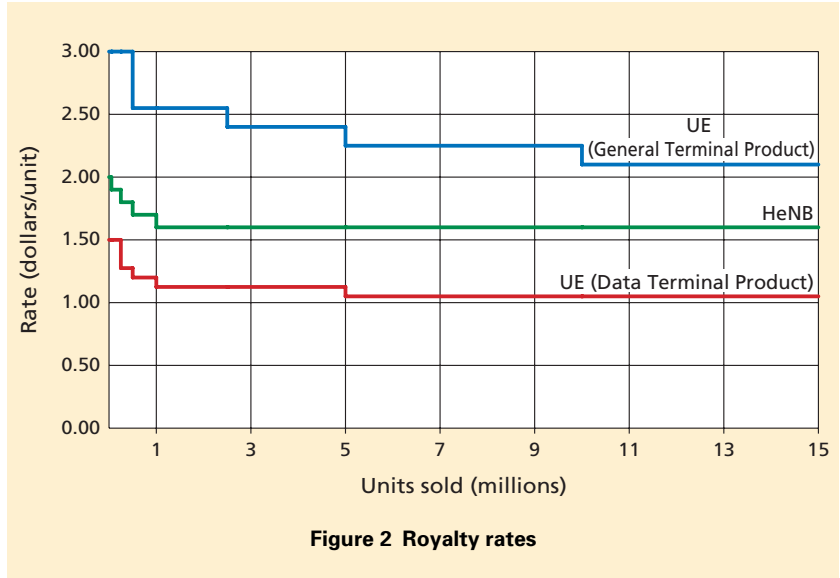


Figure 2 Royalty rates

million or less pay \$2,500).

To encourage early execution of license agreements, royalty payments for licensed products sold before October 15, 2012 will be waived for licensees executing by April 12, 2013.

3.3 Licensees with LTE Essential Patents

As a matter of course, if a pool licensor (e.g. Company A) practices another company’s essential patents, it must acquire a license from the owner of those essential patents (e.g. Company B). However, Company A may experience problems depending on whether or not Company B is also a pool licensor. Figure 3 illustrates the following three cases:

(1) Company B is a pool licensor and a pool licensee

Company A does not have a problem because it can acquire a license to Company B’s essential patents through the pool under the same licensing conditions as Company A’s essential patents are licensed to Company B through the pool.

(2) Company B is neither a pool licensor nor a pool licensee.

Since Company B is an outsider to the pool, Company A and Company B are free to negotiate outside the pool without restriction; Company A’s participation in the pool as a licensor will not affect license negotiations with Company B.

*5 SAE: The working name for the evolved GSM core network development series that the 3GPP is studying. It targets accommodation of E-UTRAN and is premised on all services being implemented over IP. The specifications studied by SAE are referred to as the

EPC.
*6 RAND: This is a term used by standardization organizations, etc in patent licensing policies, etc, and is an abbreviation that refers to licensing conditions as “Reasonable And Non-Discriminatory,” and is synonymous

with “FRAND” (Fair, Reasonable And Non-Discriminatory).

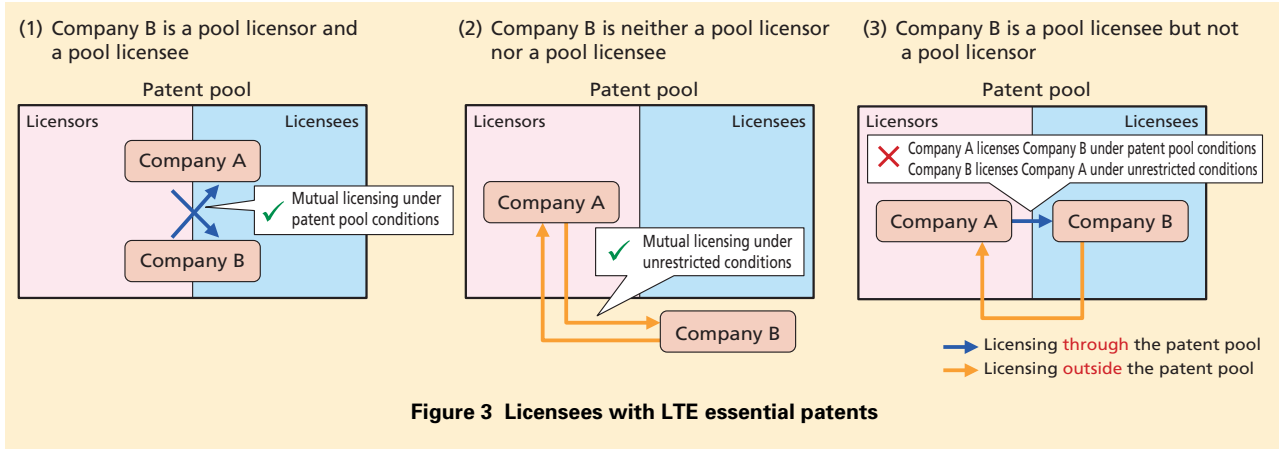


Figure 3 Licensees with LTE essential patents

(3) Company B is a pool licensee but not a pool licensor

In spite of the fact that Company B has acquired a license through the pool for Company A’s essential patents under RAND conditions, Company B may insist on licensing its essential patents to Company A under less favorable conditions (e.g. higher rates), and could file a lawsuit demanding a manufacturing injunction against Company A’s products, thus putting Company A at a considerable disadvantage.

To mitigate or eliminate the problem described in (3) above, patent pools typically place restrictions on licensees in their license agreements. In this regard, the current patent pool includes grant back and yanking provisions, as described below. Because the

imposition of restrictions on licensees through joint agreement by licensors may constrain competition in technology markets in violation of anti-trust laws, these provisions are carefully designed to not conflict with the anti-trust laws of major jurisdictions.

1) Grant back

If a licensee holds LTE essential patents, it is obliged to select (A) or (B) below, and grant licenses to the licensors and other licensees in the pool. This is called grant back. Similar mechanisms deployed in other patent pools have received approval from anti-trust authorities in Japan, the United States and Europe [5]-[7].

(A) Become a pool licensor

(B) Grant non-exclusive licenses under RAND conditions for its LTE essential patents to the pool licensors and other pool licensees

If the licensee selects (A), its LTE essential patents will be licensed through the pool, whereas if the licensee selects (B), its LTE essential patents are licensed under RAND conditions no less favorable than the conditions offered by the patent pool. In either case, licensors will not be disadvantaged.

Additionally, grant back also applies to LTE essential patents owned by the entire group of companies to which the licensee belongs including its subsidiaries, parent company and fellow subsidiaries.

2) Yanking

If a licensee (e.g. Company B), directly or indirectly, asserts its LTE essential patents against a licensor (e.g. Company A) or a supplier manufacturing licensed products for Company A, Company A is permitted to suspend the license granted to Company B to

Standardization

its LTE essential patents by withdrawing its LTE essential patents from the pool license with respect to Company B (Figure 4). This is called “defensive suspension” in the current patent pool, but it is generally referred to as “yanking.”

Yanking suspends the license granted from Company A to Company B. However, it does not affect licensees other than Company B (e.g. Company D). Licenses granted to Company B by licensors other than Company A (e.g. Company C) also remain unaffected. Basically, when a conflict arises between a certain licensor and a certain licensee, yanking enables the involved parties to mutual-

ly resolve their conflict on an equal footing outside the pool.

A Licensor is permitted to yank only when a licensee asserts its LTE essential patents; it is not permitted to yank when a licensee asserts non-LTE essential patents. Conflicts can arise with regard to whether or not an asserted patent is an LTE essential patent. To regulate this, if a licensee believes that a patent that it is asserting is not an LTE essential patent, the licensee can object to an invocation of yanking and request that an independent third-party evaluates whether or not the patent is an LTE essential patent. If, as a result of the evaluation, the claim of the licensee is found to be correct, i.e., the

asserted patent is not an LTE essential patent, the yanking is ruled invalid and the licensor is liable for the evaluation costs. Conversely, if the claim of the licensee is found to be incorrect, i.e., the asserted patent is an LTE essential patent, the patent is subject to grant back as outlined in the previous section (the licensee must select either (A) or (B) above), and the licensee is liable for the evaluation costs.

In addition, yanking is also permitted if after a licensor requests grant back from a licensee either of the conditions (a) or (b) below are satisfied and parties cannot reach an agreement within a certain period of negotiation.

- (a) The licensing conditions proposed by the licensee are not reasonable.
- (b) The royalty rate on a per-patent basis requested by the licensee is higher than the licensor’s per-patent share of the royalties in the pool.

Yanking is also permitted if LTE essential patents are asserted by any company in the entire group of companies to which the licensee belongs including its subsidiaries, parent company and fellow subsidiaries.

4. Conclusion

We have provided an overview of the LTE patent pool administered by

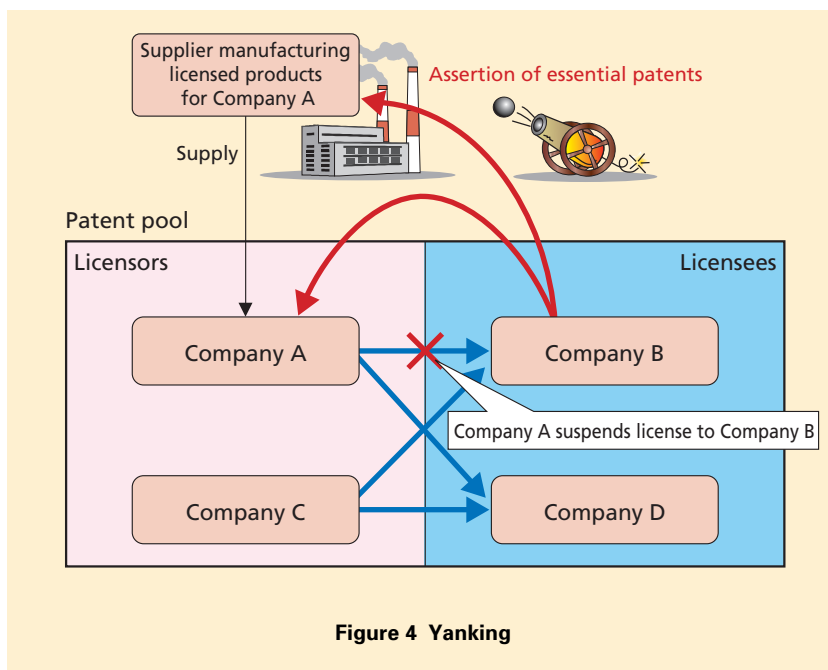


Figure 4 Yanking

Via Licensing. Patent pools function through the mutual participation of both licensors and licensees. Since the licensing conditions that licensors and licensees seek invariably conflict, often one party might be advantaged to the disadvantage of the other; however, the licensing conditions in this patent pool have been carefully designed to balance the needs of both licensors and licensees. As it attracts further licensors and licensees and its patent capture rate increases, it is expected to increasingly contribute to the accelerated uptake and widespread use of

LTE technology.

REFERENCES

[1] T. Nakamura et al.: "Activities and Contributions for Completion of the 3GPP LTE/SAE Standard Specifications," NTT DOCOMO Technical Journal, Vol. 11, No. 2, pp. 39-49, Sep. 2009.

[2] GSA: "Evolution to LTE report," Nov. 2012.

[3] GSA: "Status of the LTE Ecosystem," Nov. 2012.

[4] Cyber Creative Institute: "Evaluation of LTE essential patents declared to ETSI, Version 2.0," Oct. 2012. <http://www.cybersoken.com/research/pdf/te02EN.pdf>

[5] Japan Fair Trade Commission: "Concepts of anti-trust laws with regard to creation of patent pools accompanying standardization, Version 3, 3(3)," Jul. 2007 (in Japanese). <http://www.jftc.go.jp/dk/patent.html>

[6] U.S. Department of Justice: "Business Review Letter 02-04," p. 12, Nov. 2002. <http://www.justice.gov/atr/public/busreview/200455.pdf>

[7] European Commission: "Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements," Official Journal of the European Union, C 101, p. 40, 228, Apr. 2004. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2004:101:0002:0042:EN:PDF>