

APEX STANDARDS

Historical Construction & Systematic Bridging for SEPs, CRs and TS Section Clauses

Change requests provide extensive documentation regarding the evolution of features within a focal TS and Section Clause, as well as across versions and releases. Beginning with a particular version, a new feature can be added, or, an old feature can be removed from the same TS and Section Clause. Due to faults or inefficiency, a feature may be retained, but its procedure may be modified. Patents declared essential to the implementation of a feature initially, may therefore, become more or less so when a feature enters, leaves, or is changed.

This Case Study illustrates a systematic approach for tracing the effects of these changes on the status of Standard Essential Patents (SEP).

Tracking Affected Clauses across Change Requests (CR)

3GPP uses Change Requests to develop improved versions of Technical Specifications (TS) following their initial publication, allowing for addition, removal, correction or enhancement of a feature. A CR is categorized based on the nature of the change, as: F, A, B, C, or D (Fig 1).

Due to market demands, interoperability, standardization, competitive patenting, security, or other strategic requirements, a 3GPP member organization submits a CR via a responsible Working Group (WG) either on its own, or on behalf of multiple entities under aligned interests. As the WG deliberates and determines that the CR merits pursuit, it is advanced to the Plenary of its Technical Specification Group (TSG). Finally, the 3GPP management integrates it with other relevant CRs, and publishes a new version on the ETSI website following TSG approval.

Historical Construction via CR-Section Clause Reverse Lookup

TS, CR No., Revision No., and Current Version are indicated in a CR. "Clauses Affected" is the field used to track the influence of a CR (Fig 2). To see how a TS' Section Clause evolves over time, one scans the historical archive of CRs and collect those that list the targeted Section Clause in the "Clauses Affected" field.

As depicted in Fig 3, once the affecting CRs are gathered, sorted, and understood, we may begin to map them to the Section Clause across versions. This permits examination of a feature's maturity by knowing when the feature enters the Section Clause. Thus, the life cycle of a feature can be observed. As such, feature continuity can be learned: when a feature is carried over to the next version, is it a verbatim copy or is it substantially

Use one of the following categories:
F (correction)
A (mirror corresponding to a change in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Figure 1. TR 21.900. CR Categories

rephrased? Or, if a feature is partially adopted, how does it differ in the next version from that of the historical versions (which answers a popular question: can a 4G SEP also qualify as a 5G SEP)?

A Systematic Approach to Pinpoint Section Clause Essentiality and Assess a SEP's Invalidity Risk

SEP inventors, attorneys, researchers, investors and stakeholders develop domain expertise over the course of distinct professional careers, which inevitably results in a lack of a holistic view and leads to SEP evaluations being performed on a case by case basis, in isolation, or deemed unaffordable. Consequently, the potential for essentiality is disguised, rendered ambiguous by

3GPP TSG-RAN2 104 Spokane, USA, 12th - 16th Nov 2018				R2-1816451
CR-Form-v11.2				
CHANGE REQUEST				
38.331	CR	0524	rev	Current version: 15.3.0
Title:		Correction to configuration of firstPDCCH-MonitoringOccasionOfPO		
Source to WG:		Samsung Electronics,		
Source to TSG:		R2		
Work item code:		NR_newRAT-Core	Date: 2018-11-01	
Category:		F	Release: Rel-15	
Clauses affected:		6.3.2		

Figure 2. R2-1816415. Proposed by Samsung and categorized as a corrective (F) Change Request (CR), the TDoc pertains to 5G's TS 38.331 Version 15.3.0 and affects clause 6.3.2.

blanket declarations in which no version is indicated, or simply disregarded.

With historical construction, a professional can verify SEP's strengths and weaknesses, which informs high-stakes decision making. Fig 3 demonstrates how one may determine if a SEP has a prior art by tracing upstream via the TDocs and TS Section Clauses (backward in time). Tracing downstream, on the other hand, enables inference and prioritization of patent essentiality evaluation (forward in time). █

Apex Standards enables the SEP community to acquire comprehensive perspectives in breadth and in depth, undertake synergistic research, and conduct accurate evaluations. To learn more, visit

www.apexstandards.com

References

- [1] 3GPP TR 21.900
- [2] Apex Standards ETSI TS/TR Section Search www.apexstandards.com/apex.etsi.tr.pdf
- [3] Apex Standards 3GPP TDoc Search www.apexstandards.com/apex.3gpp.tdoc.pdf

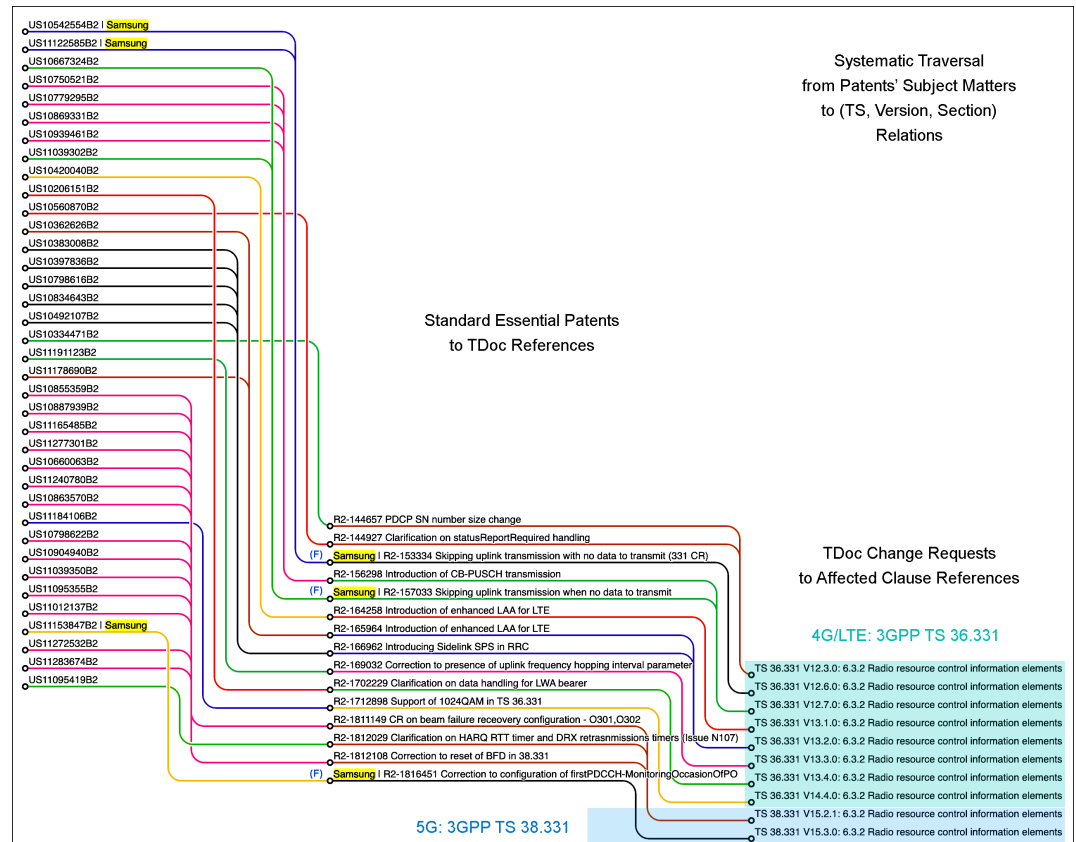


Figure 3. Historical Construction. Focusing on the section titled "6.3.2 Radio resource control information elements," which outlines the antenna characteristics of UE, we see that there are material changes across certain versions. On the right-most side, Section 6.3.2, the changes took effect starting as early as version 12.3.0, followed by 12.6.0, 12.7.0, ..., and, 14.4.0, under 3GPP 4G/LTE's TS 36.331. As of versions 15.2.1 and 15.3.0, the changes started to fall under 5G's TS 38.331. Tracing back, we identify pivotal TDoc contributions that led to these changes by scanning through all change requests (CR) that pertain to TS 36.331 or TS 38.331, specifying the "Current version" x.y.z numbers, and listing "6.3.2" in the "Clauses affected" field, sorted by time. We notice that some changes are influenced by a single TDoc, while others are influenced by several. Throughout the evolution of change, we observe Samsung's positions over time. Samsung proposed three corrective changes (CR-F), R2-153334, which was incorporated into 4G's 12.6.0, R2-157033, which was incorporated into 12.7.0, and R2-1816451, which was incorporated into 5G's 15.3.0. On the left-most side, Samsung's patents, US10542554B2 and US1122585B2, refer to Samsung's TDoc, R2-153334, which is incorporated into TS 36.331 V12.6.0 Sec 6.3.2, while another recent Samsung patent, US1153847B2, refers to another Samsung's TDoc, R2-1816451, which is incorporated into TS 38.331 V15.3.0 Sec 6.3.2.