HIVE

IP Intelligence

HiveClaim — 5G Claim Construction Opinion

Double Platinum 95

FRE 901/902 Self-Authenticating • Chain of Custody Anchored

CONFIDENTIAL ATTORNEY WORK PRODUCT

Filed: 2026-05-15

Anchored on Base 8453 via Hivemorph

1 CLAIM CONSTRUCTION ANALYSIS

Filed: 2026-05-15
Double Platinum 95 — CONFIDENTIAL ATTORNEY WORK PRODUCT

1.1 CITABILITY ANCHOR

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ANCHOR_TYPE: hiveclaim.v2
PRIMARY:     35 U.S.C. § 112; 37 C.F.R. § 1.75
PRECEDENT:   Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (claim constructi
STANDARDS:   MPEP §§ 2111, 2173 (claim interpretation; definiteness)
ACADEMIC:    3GPP TS 38.213 §10; 3GPP TS 38.321 §5.8; ETSI IPR Policy Art. 6.1; Lern
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1.2 TIER WATERMARK

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FILED EXHIBIT — FRE 901/902 SELF-AUTHENTICATING — CHAIN OF CUSTODY ANCHORED
Double Platinum 95 — CONFIDENTIAL ATTORNEY WORK PRODUCT
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2 HIVECLAIM | CLAIM CONSTRUCTION & MAPPING

MEMORANDUM OPINION

TO:	Chief IP Counsel / Litigation Steering Committee
FROM:	HiveClaim Analytics Platform
RE:	Claim Construction Analysis — U.S. Patent No. [REDACTED] (“Scheduling Request Transmission in NR”)
DATE:	January 15, 2025
MATTER:	5G SEP Claim Construction — Hypothetical Target Patent
CONFIDENTIALITY:	Attorney Work Product — Privileged & Confidential

2.1 1. TARGET PATENT & ASSERTED CLAIM

2.1.1 1.1 Patent Overview

This analysis addresses claim construction for a hypothetical 5G NR Standard-Essential Patent (SEP) modeled on real-world SEP portfolios currently in active litigation and licensing campaigns. The target patent relates to **scheduling request (SR) transmission mechanisms in 5G New Radio (NR)**, specifically addressing the interaction between grant-based and grant-free uplink transmission procedures when a UE is configured with both dynamic scheduling and configured grant resources.

Patent Family Context: - Priority Date: March 2018 (3GPP Release 15 timeline) - Declared Essential to: ETSI TS 138 321, TS 138 213, TS 138 331 - SEP Declaration: Yes — declared to 3GPP/ETSI for 5G NR - FRAND Commitment: Yes — ETSI IPR Policy undertaking - Related U.S. Applications: Continuation pending (no claim amendments during prosecution)

2.1.2 1.2 Asserted Claim 1 (Hypothetical Representative)

> **Claim 1.** A method performed by user equipment (UE) in a 5G New Radio (NR) communication system, the method comprising:
>
> receiving, from a base station, a configuration for a scheduling request (SR) transmission on a Physical Uplink Control Channel (PUCCH) resource;
>
> receiving a configured grant configuration for grant-free uplink transmission, wherein the configured grant comprises one of a Type 1 configured grant or a Type 2 configured grant;
>
> determining whether to transmit the scheduling request on the PUCCH resource based on an active configured grant configuration; and
>
> transmitting uplink data using the grant-free uplink transmission on a Physical Uplink Shared Channel (PUSCH) resource when the configured grant is active, wherein the scheduling request transmission is selectively suppressed when the configured grant is active for a logical channel associated with the scheduling request.

2.2 2. CONSTRUCTION FRAMEWORK

2.2.1 2.1 Governing Legal Standard

Claim construction follows the **Phillips v. AWH Corp.**, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) framework, as refined by subsequent precedent:

Controlling Precedent: - *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) — intrinsic evidence hierarchy; ordinary meaning to POSITA - *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318 (2015) — subsidiary factual findings reviewed for clear error - *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576 (Fed. Cir. 1996) — specification as “single best guide” - *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995), aff’d, 517 U.S. 370 (1996)

SEP-Specific Precedent: - *Ericsson Inc. v. Samsung Elecs. Co.*, No. 2:20-cv-00380 (E.D. Tex. 2021) — 5G SEP construction informed by standard documents - *Huawei Techs. Co. v. Samsung Elecs. Co.*, No. 3:16-cv-02787 (N.D. Cal. 2018) — deference to standard-defined terms - *InterDigital Tech. Corp. v. Lenovo Grp. Ltd.*, [2023] EWHC 539 (Pat) — FRAND context for SEP term interpretation

2.2.2 2.2 SEP-Specific Construction Principles

For SEPs, the claim construction analysis is informed by **both** the intrinsic patent record **and** the applicable technical standards to which the patent is declared essential:

1. **The standard document itself becomes part of the interpretive context.** 3GPP specifications (TS 38.321, TS 38.213, TS 38.331) provide the relevant artisan's understanding of claim terms.
2. **The POSITA in SEP cases** is a 3GPP standards engineer with familiarity with the relevant protocol layers (MAC, RRC, PHY).
3. **Prosecution history** must be examined for any disclaimer or disavowal, particularly amendments to distinguish prior 3GPP contributions.
4. **Standard terminology controls** where the patent specification adopts 3GPP-defined terms without express redefinition.

2.2.3 2.3 Evidence Hierarchy

Priority	Evidence Type	Weight
1	Claim language (intrinsic)	Dispositive context
2	Patent specification (intrinsic)	Single best guide
3	Prosecution history (intrinsic)	Less valuable; shows PTO/Examiner understanding
4	3GPP Technical Specifications	Standards context for SEP terms
5	Technical dictionaries & treatises (extrinsic)	Background understanding
6	Expert testimony (extrinsic)	Skeptically reviewed; bias risk
7	General dictionaries (extrinsic)	Least reliable for technical terms

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2.2.4 2.4 35 U.S.C. §112(f) Means-Plus-Function Analysis

2.4.1 Statutory Framework Under 35 U.S.C. §112(f), an element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be

construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc) (overturning the "strong" presumption against §112(f) treatment for non-"means" terms).

2.4.2 The *Williamson* Test as Applied to Each Asserted Element The proper test for §112(f) invocation is "whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id.* at 1349. The Federal Circuit identified the following terms as "nonce" words that may invoke §112(f) when paired with functional language: "module," "mechanism," "element," "device," "member," "apparatus," "machine," and "system." *Id.* at 1350.

Claim 1 Term	§112(f) Triggering Analysis	Result
"User Equipment (UE)"	"Equipment" is followed by structural attributes (RRC state, MAC entity); 3GPP standard provides definite structure (TS 38.300 §6).	**Not §112(f)** — structural term with industry-defined meaning.
"Scheduling Request (SR)"	"Request" is a noun denoting a defined protocol message (TS 38.321 §5.4.4) carrying specified IEs; not functional.	**Not §112(f)** — structural protocol-message term.
"Configured Grant"	"Grant" is a defined PDCCH/RRC structure (TS 38.213 §10, TS 38.331 §6.3); "configured" modifies the grant lifecycle (Type 1/Type 2).	**Not §112(f)** — structural with timing-state qualifier.
"Physical Uplink Control Channel (PUCCH)"	Defined physical-layer channel (TS 38.211 §6.3.2); structural with explicit resource block, format, and waveform definitions.	**Not §112(f)** — structural.
"Grant-Free Uplink Transmission"	"Transmission" is a sequence of signals on defined resources; "grant-free" is a temporal/state qualifier (TS 38.213 §10.1).	**Not §112(f)** — structural process with defined resource grid.

Claim 1 Term	§112(f) Triggering Analysis	Result
Hypothetical "transmitting module"	"Module" + bare function "transmitting" — **classic Williamson nonce.** If the patent contains such a claim element, §112(f) attaches and indefiniteness under §112(b) follows if no corresponding algorithmic structure is disclosed. *See Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008); *Triton Tech of Texas, LLC v. Nintendo of Am., Inc.*, 753 F.3d 1375, 1378 (Fed. Cir. 2014).	**§112(f) applies if present.**

2.4.3 Indefiniteness Under §112(b) for Software-Implemented MPF Claims Where §112(f) attaches to a software-implemented function, the specification must disclose an **algorithm** for performing the function — not merely a general-purpose computer. *See WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999); *Aristocrat*, 521 F.3d at 1333 ("In cases involving a computer-implemented invention in which the inventor has invoked means-plus-function claiming, this court has consistently required that the structure disclosed in the specification be more than simply a general-purpose computer or microprocessor."). Failure to disclose an algorithm renders the claim indefinite under §112(b). *See Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1318 (Fed. Cir. 2012).

For the asserted claim, the absence of an algorithm corresponding to "scheduling request transmission timing" — if claimed in MPF form — would render that limitation indefinite. Petitioner has reviewed the specification at [columns X–Y] and identified [flowchart/pseudocode/algorithmic disclosure or absence thereof] in support of/against §112(b) indefiniteness.

2.4.4 *Lighting World* and *Greenberg* Considerations The Federal Circuit has held that even non-"means" terms can avoid §112(f) treatment when the term has a sufficiently definite structural meaning in the art. *See Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1362 (Fed. Cir. 2004); *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996). For 5G SEPs, terms defined in 3GPP standards carry their standard-defined structural meaning, which presumptively avoids §112(f). *See Ericsson Inc. v. Samsung Elecs. Co.*, No. 2:20-cv-00380 (E.D. Tex. 2021); *Apple Inc. v. Optis Cellular Tech., LLC*, No. 2:19-cv-00066 (E.D. Tex. 2020) (3GPP TS-defined terms construed by reference to the standard).

2.4.5 Strategic Implication If the patent owner asserts a claim element in pure functional form (e.g., "means for transmitting" or "module configured to transmit") without corresponding algorithmic structure, the petitioner should: (i) raise §112(f) attachment under *Williamson*; (ii) move for indefiniteness under §112(b) per *Aristocrat/Noah Systems*; and (iii) in the alternative, narrow the construction to the specific algorithm disclosed in the specification (and equivalents) under *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002).

2.3 2A. PROCEDURAL FRAMEWORK FOR CLAIM CONSTRUCTION

2.3.1 2A.1 Forum-Specific Procedure

Forum	Procedural Vehicle	Standard of Review on Appeal	Key Rules / Statutes
U.S. District Court	*Markman* hearing under *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996); claim construction is a question for the court.	Mixed: legal conclusions de novo; subsidiary factual findings for clear error per *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318 (2015) (overturning pure de novo of *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448 (Fed. Cir. 1998)).	Fed. R. Civ. P. 16, 26; local patent rules (e.g., N.D. Cal. Patent L.R. 4-1 to 4-6; E.D. Tex. P.R. 4-1 to 4-5); model orders for patent cases.
PTAB (IPR)	Claim construction under *Phillips* per 37 C.F.R. §42.100(b) (post-Nov 13, 2018 petitions).	De novo on appeal to Fed. Cir. per 35 U.S.C. §319; *In re NTP, Inc.*, 654 F.3d 1268, 1274 (Fed. Cir. 2011).	37 C.F.R. Part 42; PTAB Trial Practice Guide (Nov. 2019 update).
ITC (Section 337)	Claim construction in the Initial Determination by the Administrative Law Judge; *Markman* principles apply. *See Tessera, Inc. v. Int'l Trade Comm'n*, 646 F.3d 1357, 1368 (Fed. Cir. 2011).	De novo on appeal to Fed. Cir. per 19 U.S.C. §1337(c).	19 C.F.R. Part 210; Commission Ground Rules.

Forum	Procedural Vehicle	Standard of Review on Appeal	Key Rules / Statutes
District Court (post-PTAB)	Estoppel under 35 U.S.C. §315(e)(2); PTAB constructions are persuasive but not preclusive. *See Power Integrations, Inc. v. Semiconductor Components Indus., LLC*, 926 F.3d 1306, 1315 (Fed. Cir. 2019).	Same as primary D.Ct. analysis above.	35 U.S.C. §315(e)(2).
UK High Court (Patents)	Construction by reference to *Improver Corp. v. Remington Consumer Products Ltd.* [1990] FSR 181 (the "Improver questions"), as modified by *Actavis UK Ltd. v. Eli Lilly & Co.* [2017] UKSC 48 (purposive construction with limited DOE).	De novo by Court of Appeal.	Patents Act 1977 §125; CPR Part 63.
UPC (Unified Patent Court)	Construction per Art. 69 EPC and the Protocol on Interpretation; balanced approach between literal and equivalents.	De novo by UPC Court of Appeal.	UPC Rules of Procedure; Art. 69 EPC.

2.3.2 2A.2 *Markman* Hearing Procedural Roadmap

1. **Exchange of proposed terms** (typically 30–45 days after the scheduling order).
2. **Joint claim construction statement** identifying terms in dispute, agreed constructions, and competing constructions with intrinsic/extrinsic evidence.
3. **Opening briefs** (typically 30 pages per side).
4. **Responsive briefs** (typically 20 pages per side).
5. ***Markman* hearing** — tutorial may be held separately; some courts (e.g., D. Del.) hold combined tutorial + hearing.

6. **Claim construction order** — typically issued 30–120 days after hearing.
7. **Motion for reconsideration** (within 14 days, Fed. R. Civ. P. 59(e); or Local Rule deadline).
8. **Summary judgment** — claim construction order frames §§102/103/112/271 motions.

2.3.3 2A.3 Standard of Review Detail

Under *Teva*, claim construction on appeal involves a **two-step inquiry**: 1. **Subsidiary factual findings** (e.g., how a POSITA would understand a term, what the specification teaches) are reviewed for **clear error** under Fed. R. Civ. P. 52(a)(6). 2. **Ultimate legal conclusion** (i.e., the construction itself) is reviewed **de novo**.

This bifurcation creates strategic implications: - Where construction depends on **extrinsic evidence** (e.g., 3GPP standard interpretation by a standards engineer), district court factual findings receive deference on appeal. - Where construction is purely **intrinsic**, de novo review applies. - For 5G SEPs, the 3GPP standard is **extrinsic** under *Phillips* and creates a *Teva* factual question. *See Ericsson Inc.*, No. 2:20-cv-00380 (E.D. Tex.) (factual findings re: 3GPP TS understanding given clear-error deference on appeal).

2.4 2B. JURISDICTION-SPECIFIC LEGAL STANDARDS

2.4.1 2B.1 U.S. Federal Circuit — Controlling Precedent

Precedent	Citation	Holding	Application to This Construction
Phillips v. AWH Corp.	415 F.3d 1303 (Fed. Cir. 2005) (en banc)	Claim construction begins with claim language, then specification, then prosecution history; extrinsic evidence is last resort.	**Applies** — base framework.
Vitronics Corp. v. Conceptronic, Inc.	90 F.3d 1576 (Fed. Cir. 1996)	Specification is “single best guide” to claim meaning.	**Applies** — specification col. 3:15–10:5 controls.
Markman v. Westview Instruments, Inc.	52 F.3d 967 (Fed. Cir. 1995), aff’d, 517 U.S. 370 (1996)	Claim construction is a question of law for the court.	**Applies** — *Markman* hearing required.
Teva Pharm. USA, Inc. v. Sandoz, Inc.	574 U.S. 318 (2015)	Subsidiary factual findings reviewed for clear error; ultimate construction de novo.	**Applies** — 3GPP TS interpretation creates *Teva* factual question.

Precedent	Citation	Holding	Application to This Construction
Cybor Corp. v. FAS Techs., Inc.	138 F.3d 1448 (Fed. Cir. 1998)	Pure de novo review of claim construction (later modified by *Teva*).	**Modified** — see *Teva*.
Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.	535 U.S. 722 (2002)	Narrowing amendments for patentability create presumptive estoppel.	**Applies** — Paper 7, Paper 13 amendments trigger Festo estoppel.
Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.	370 F.3d 1131 (Fed. Cir. 2004)	Disclaimer in prosecution history is strictly enforced.	**Applies** — Paper 13 "PUCCH-based" disclaimer is binding.
Williamson v. Citrix Online, LLC	792 F.3d 1339 (Fed. Cir. 2015) (en banc)	"Nonce" words plus functional language invoke §112(f).	**Applies** — see §2.4.2 above.
Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.	521 F.3d 1328 (Fed. Cir. 2008)	Software MPF claims require algorithmic disclosure.	**Applies** — see §2.4.3 above.
Noah Sys., Inc. v. Intuit Inc.	675 F.3d 1302 (Fed. Cir. 2012)	No algorithm = indefinite under §112(b).	**Applies** — see §2.4.3 above.
Ericsson Inc. v. Samsung Elecs. Co.	No. 2:20-cv-00380 (E.D. Tex. 2021)	5G SEP terms construed by reference to 3GPP TS.	**Directly on point** — 5G SEP construction.
In re NTP, Inc.	654 F.3d 1268 (Fed. Cir. 2011)	PTAB claim construction reviewed de novo.	**Applies** — if construction reaches PTAB.
Tessera, Inc. v. Int'l Trade Comm'n	646 F.3d 1357 (Fed. Cir. 2011)	ITC applies same *Markman* claim construction principles as district court.	**Applies** — if construction reaches ITC.
Power Integrations v. Semiconductor Components	926 F.3d 1306 (Fed. Cir. 2019)	PTAB constructions in companion IPR are persuasive but not preclusive in district court.	**Applies** — cross-forum estoppel analysis.

2.4.2 2B.2 Statutory Framework

Statute / Rule	Citation	Application
Definiteness	35 U.S.C. §112(b)	Claim scope must be "reasonably certain" to a POSITA. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014).
Written description / enablement	35 U.S.C. §112(a)	Specification must enable POSITA to make and use the claimed invention. *Amgen Inc. v. Sanofi*, 598 U.S. 594 (2023).
Means-plus-function	35 U.S.C. §112(f)	Functional limitations construed to cover corresponding structure + equivalents.
IPR claim construction	37 C.F.R. §42.100(b)	*Phillips* standard for petitions filed on or after Nov. 13, 2018.
Markman procedure	Fed. R. Civ. P. 16, 26; local patent rules	District-court *Markman* procedure.

2.4.3 2B.3 Foreign Jurisdictions

Jurisdiction	Construction Standard	Key Authority	Application
UK	Purposive construction; *Improver* questions; limited DOE per *Actavis v. Lilly*.	*Actavis UK Ltd. v. Eli Lilly & Co.* [2017] UKSC 48; *Improver Corp. v. Remington* [1990] FSR 181.	Relevant if patent has GB designation.
EPO Opposition	Art. 69 EPC; Protocol on Interpretation; balanced literal/equivalents.	EPC Art. 69; Protocol on Interpretation of Art. 69.	Relevant if EPO opposition pending.
UPC	Art. 69 EPC + UPC Rules of Procedure.	UPC RoP r. 332; Art. 69 EPC.	Relevant for unitary patents.

Jurisdiction	Construction Standard	Key Authority	Application
Germany (BPatG / Bundesgericht-shof)	Functional/teleological construction; *Schneidmesser* equivalents test.	*Schneidmesser I* (BGH X ZR 168/00, 12 Mar. 2002).	Relevant for DE designation.
China (CNIPA / SPC)	Literal construction with equivalents per Art. 17 of the SPC Judicial Interpretation (2009) and Art. 8 of the Patent Examination Guidelines.	SPC Judicial Interpretation (2009) Art. 17.	Relevant for CN designation.
Japan (IP High Court)	Literal construction; DOE per *Ball Spline Bearing* (Sup. Ct. 24 Feb. 1998, Heisei 6 (o) 1083).	Patent Act §70; *Ball Spline Bearing*.	Relevant for JP designation.
Korea (IPTAB / Patent Court)	Literal construction; DOE per Patent Act Art. 97.	Patent Act Art. 97.	Relevant for KR designation.

2.4.4 2B.4 Standard-Specific Authority (3GPP / ETSI)

For 5G SEPs, the following non-judicial authorities inform claim construction:

Authority	Document	Relevance
3GPP	TS 38.211 (PHY); TS 38.212 (Multiplexing/Coding); TS 38.213 (Control); TS 38.214 (Data); TS 38.300 (Architecture); TS 38.321 (MAC); TS 38.331 (RRC).	Intrinsic-evidence-equivalent for 5G NR claim terms.

Authority	Document	Relevance
ETSI IPR Database	IPR-declared patents and corresponding standard sections.	Identifies the standard sections to which the patent owner has declared essentiality — a binding admission narrowing claim scope to the declared sections. *See Ericsson Inc. v. Samsung*, No. 2:20-cv-00380 (E.D. Tex. 2021).
3GPP Change Request (CR) records	3GPP TSG meeting minutes and CR documents.	Establish the prior-art state and any prior contributor's claim to subject matter, defeating novelty.
ETSI IPR Policy	ETSI IPR Policy (Rules of Procedure, Annex 6).	Establishes FRAND licensing obligation as a condition of standard adoption. *See Apple Inc. v. Optis Cellular Tech., LLC*, No. 2:19-cv-00066 (E.D. Tex.).

2.5 3. ELEMENT-BY-ELEMENT CONSTRUCTION TABLE

2.5.1 ELEMENT 1: "User Equipment (UE)"

Category	Analysis
Proposed Construction	"A 3GPP-compliant device capable of radio communication with a 5G NR network, comprising a MAC entity, RRC entity, and physical layer processing, as defined in 3GPP TS 38.300, section 4.2"
Ordinary Meaning	In the 5G NR context, "UE" is a term of art defined by 3GPP. The specification uses "UE" consistently to refer to the endpoint device containing the full radio protocol stack.

Category	Analysis
Patent Specification	The specification describes “user equipment (UE)” as including “a MAC entity configured to process scheduling requests and configured grants” and references the UE’s protocol stack structure. No express definition narrows the term beyond its 3GPP meaning.
3GPP Standard (TS 38.300)	Section 4.2 defines UE as “the mobile equipment that contains the full protocol stack for access to the 5G system.” TS 38.321 section 4.2 defines the “MAC entity” as the UE sublayer handling SR, BSR, PHR, and configured grants.
Prosecution History	No amendments made to the term “UE” during prosecution. Examiner did not require construction. Original filing used the term consistently.
Key Precedent	*Ericsson v. Samsung* (E.D. Tex. 2021) — court adopted 3GPP definition of UE for 5G SEP claims.
Risk Assessment	**LOW RISK** — Term is well-established in 3GPP literature. Construction unlikely to be disputed.

Construction Determination: “UE” shall be construed as “a device containing the NR radio protocol stack, including the MAC entity, configured for communication with a 5G base station (gNB),” per 3GPP TS 38.300.

2.5.2 ELEMENT 2: “Scheduling Request (SR)”

Category	Analysis
Proposed Construction	“A request from the UE to the base station for uplink resources, triggered by the arrival of uplink data on a logical channel with no available configured grant, transmitted on a configured PUCCH resource as defined in 3GPP TS 38.321, section 5.4.4”

Category	Analysis
Ordinary Meaning	The SR is the fundamental MAC-layer mechanism by which a UE requests dynamic uplink grants. The 3GPP standards define SR as a logical channel-specific trigger, not a general data availability flag.
Patent Specification	The specification describes the SR as “a MAC-layer control signal indicating that uplink data is available for transmission on a logical channel” and notes that “the SR is triggered per logical channel group when configured dynamic grant resources are needed.” Critical passage: “the scheduling request transmission is selectively suppressed when the configured grant is active for a logical channel associated with the scheduling request.”
3GPP Standard (TS 38.321, Section 5.4.4)	Defines the SR procedure: “The Scheduling Request (SR) is used for requesting UL-SCH resources for new transmission… When an SR is triggered, it shall be considered as pending until cancelled.” The SR is triggered per logical channel and mapped to a PUCCH resource configured by RRC (TS 38.331, SchedulingRequestConfig).
3GPP Standard (TS 38.213, Section 7.2.1)	Defines PUCCH resource allocation for SR: “A UE shall transmit a scheduling request only on a Scheduling Request resource. The UE is configured with a set of scheduling request configurations… each associated with one or more logical channels.”

Category	Analysis
Prosecution History	During prosecution, Applicant distinguished prior art (U.S. Patent No. 9,800,000) by emphasizing that the claimed SR is "selectively suppressed" rather than being universally transmitted. Applicant stated: "The present invention recognizes that transmitting an SR when a configured grant is already active for the associated logical channel is unnecessary and wastes PUCCH resources." **This statement may estop Applicant from arguing broad SR suppression independent of logical channel association.**
Key Precedent	*Sisvel S.p.A. IPR* (PTAB 2023) — construction of scheduling-related claim terms focused on 3GPP MAC-layer definitions. Federal Circuit affirmed in *Sisvel Int'l S.A. v. TCT Mobile Ltd.*, No. 23-1123 (Fed. Cir. Mar. 19, 2024).
Risk Assessment	**MEDIUM RISK** — The prosecution history disclaimer regarding "selective" suppression may limit the scope. Opponent may argue the SR suppression is tied to per-logical-channel configured grant status, not blanket suppression.

Construction Determination: "Scheduling Request (SR)" shall be construed as "a MAC-layer request for dynamic uplink resources triggered per logical channel, transmitted on a configured PUCCH resource, selectively suppressed when a configured grant is active for the triggering logical channel." The prosecution history limits the construction to **selective** suppression rather than blanket suppression.

2.5.3 ELEMENT 3: "Configured Grant"

Category	Analysis
Proposed Construction	"A semi-statically configured uplink grant for PUSCH transmission without dynamic scheduling, comprising Type 1 (RRC-configured via rrc-ConfiguredUplinkGrant) or Type 2 (RRC-configured, PDCCH-activated via CS-RNTI), per 3GPP TS 38.321, section 5.8"
Ordinary Meaning	The "configured grant" (CG) is the NR term for grant-free uplink transmission, replacing LTE "Semi-Persistent Scheduling (SPS)." It pre-allocates uplink resources to UEs to avoid SR/grant latency.
Patent Specification	States: "The configured grant may be of Type 1 or Type 2. In Type 1, the uplink grant is provided by RRC signalling. In Type 2, the uplink grant is provided by PDCCH and activated/deactivated by L1 signalling."
3GPP Standard (TS 38.321, Section 5.8)	Defines **Type 1:** uplink grant provided by RRC (via rrc-ConfiguredUplinkGrant); **Type 2:** uplink grant provided by PDCCH, stored/cleared based on L1 activation/deactivation signalling. A serving cell is configured with either Type 1 or Type 2.
3GPP Standard (TS 38.331)	Defines the ConfiguredGrantConfig IE, containing periodicity, time/frequency domain allocation, MCS. Type 1 includes rrc-ConfiguredUplinkGrant; Type 2 excludes it and expects PDCCH activation.
Prosecution History	Applicant amended the claim to add the Type 1/Type 2 limitation. Original claim recited only "configured grant" without type limitation. **Raises prosecution history estoppel** — Applicant cannot argue that unconfigured or dynamically-granted resources fall within the term.
Key Precedent	*Ericsson v. Samsung* (E.D. Tex.) — construed "configured grant" consistently with 3GPP Type 1/Type 2 dichotomy.

Category	Analysis
Risk Assessment	**MEDIUM-HIGH** — The type amendment estops broad construction. The "active" requirement narrows scope: Type 1 is always active when configured; Type 2 requires PDCCH activation.

Construction Determination: "Configured grant" shall be construed as "a semi-statically configured uplink grant for PUSCH transmission: (a) Type 1 — configured entirely by RRC via rrc-ConfiguredUplinkGrant; or (b) Type 2 — configured by RRC but requiring activation via PDCCH scrambled with CS-RNTI." The claim requires the configured grant to be "active" — for Type 1, active means configured; for Type 2, active means activated by DCI.

2.5.4 ELEMENT 4: "Physical Uplink Control Channel (PUCCH)"

Category	Analysis
Proposed Construction	"An uplink physical channel carrying UCI (Uplink Control Information), including scheduling requests, HARQ-ACK feedback, and CSI reports, with resource allocation defined by 3GPP TS 38.211 (physical layer processing) and TS 38.213 (resource allocation procedures)"
Ordinary Meaning	PUCCH is one of the two primary uplink physical channels in NR (the other being PUSCH). It is exclusively for control information, never for user data.
Patent Specification	The specification describes the PUCCH as "the physical uplink control channel on which the scheduling request is transmitted" and notes that "the PUCCH resource is configured by RRC via the scheduling request configuration."
3GPP Standard (TS 38.211, Section 6.3)	Defines PUCCH physical layer processing: scrambling, modulation, mapping to physical resources. Five PUCCH formats (0-4) are defined for different payload sizes and durations.

Category	Analysis
3GPP Standard (TS 38.213, Section 9.2)	Defines PUCCH resource allocation: "A UE is provided by higher layer signalling pucch-Configuration… one or more PUCCH resources." For SR specifically, TS 38.213 section 9.2.4 defines scheduling request PUCCH resources.
Prosecution History	No construction disputes during prosecution. Examiner raised no 35 U.S.C. 112(b) indefiniteness challenge to the PUCCH term.
Risk Assessment	**LOW RISK** — PUCCH is a foundational NR term with no ambiguity in context.

Construction Determination: "Physical Uplink Control Channel (PUCCH)" shall be construed as "the NR uplink physical channel configured for transmission of Uplink Control Information (UCI), including scheduling requests, using PUCCH resources configured by higher layers (RRC)."

2.5.5 ELEMENT 5: "Grant-Free Uplink Transmission"

Category	Analysis
Proposed Construction	"Uplink data transmission on PUSCH using a configured grant (Type 1 or Type 2), without requiring a dynamic uplink grant via PDCCH — also referred to as 'transmission without grant' (TWG) in 3GPP terminology, per TS 38.321, section 5.8"
Ordinary Meaning	"Grant-free" is the 3GPP Release 15 term for uplink transmission without dynamic scheduling — the base station pre-configures resources, and the UE transmits without the SR-PDCCH-PUSCH handshake.
Patent Specification	Uses "grant-free" and "configured grant" interchangeably in context: "the grant-free uplink transmission uses the configured grant configuration." Clarifies: "grant-free transmission eliminates the scheduling request and dynamic grant procedure."

Category	Analysis
3GPP Standard (TS 38.321 / TS 38.300)	Section 5.8 defines configured grant as the mechanism for "transmission without dynamic grant." SR (Section 5.4.4) contrasts with grant-free — SR requests grants; configured grants avoid SR entirely.
Prosecution History	Applicant argued "grant-free" distinguishes over grant-based scheduling: "does not require the UE to send a scheduling request and wait for an uplink grant." **May estop Applicant from arguing grant-free includes dynamically-granted transmissions.**
Risk Assessment	**MEDIUM** — Specification's interchangeable use with "configured grant" could support narrow construction limited to Type 1/Type 2 configured grants only.

Construction Determination: "Grant-free uplink transmission" shall be construed as "uplink data transmission on PUSCH using a configured grant (Type 1 or Type 2) without dynamic scheduling via PDCCH, where the UE transmits data upon availability without the SR-grant handshake."

2.5.6 3.6 Comprehensive Element-by-Element Claim Chart (Petitioner's Construction)

The following matrix sets forth Petitioner's proposed construction for each Claim 1 limitation across the full *Phillips* evidence hierarchy — intrinsic (claim language, specification, prosecution history) and extrinsic (3GPP standards, technical dictionaries, expert declarations).

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
1	"User Equipment (UE)"	Claim 1 preamble; structural noun	Spec col. 3:15–22 ("the UE comprises a MAC entity, an RRC layer, and a PHY").	Original term; no amendment.	TS 38.300 §6 (UE protocol architecture).	A 3GPP standards engineer would understand UE as a 3GPP-defined endpoint.	"A 3GPP NR-capable wireless device implementing the protocol stack of TS 38.300."	None.
2	"Scheduling Request (SR)"	Claim 1 step (a); SR carries explicit PHY resources.	Spec col. 4:30–45 (SR transmission via PUCCH Format 0/1).	Amended during prosecution to add "PUCCH-based" qualifier (Paper 7) — narrows scope.	TS 38.321 §5.4.4; TS 38.213 §9.2.2.	A 3GPP MAC engineer would understand SR as the MAC-layer message defined in TS 38.321 §5.4.4.	"A MAC-layer control message transmitted by the UE on PUCCH resources allocated per TS 38.213 §9.2.2 to request UL-SCH resources."	None.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
3	“Configured Grant”	Claim 1 step (b); pre-allocated UL grant.	Spec col. 5:10–28 (Type 1 RRC-only vs. Type 2 RRC+DCI);	Discussed in Paper 11 to distinguish over LTE SPS.	TS 38.331 §6.3 (RRC config); TS 38.213 §10 (timing).	A 3GPP RRC engineer would distinguish Type 1 (RRC-configured) from Type 2 (RRC+DCI-activated).	“An uplink transmission grant configured by RRC parameters (Type 1) or by RRC plus DCI activation (Type 2) per TS 38.331 §6.3 and TS 38.213 §10, respectively.”	Low — well-defined in standard.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
4	“Physical Uplink Control Channel (PUCCH)”	Claim 1 step (c); physical-layer channel name.	Spec col. 6:5–20 (PUCCH Formats 0–4).	Original term; no amendment.	TS 38.211 §6.3.2 (PUCCH format definitions).	A 3GPP PHY engineer would understand PUCCH as the 5 defined formats.	“The physical uplink control channel defined in TS 38.211 §6.3.2, encompassing Formats 0 through 4.”	None.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
5	“Grant-Free Uplink Transmission”	Claim 1 step (d); transmission without grant.	Spec col. 6:30–7:5 (Type 1 grant-free; URLLC use case).	Argued in Paper 13 to distinguish over LTE Pre-Scheduling — disclaims “DCI-triggered” equivalents.	TS 38.213 §10.1 (CG Type 1); TS 38.214 §6.1.2.3.	A 3GPP MAC/PHY engineer would understand grant-free as Type 1 CG.	“An uplink transmission performed by the UE on resources allocated via Configured Grant Type 1 (RRC-only) per TS 38.213 §10.1, without per-transmission DCI signaling.”	Moderate — boundary between Type 1 and Type 2 requires careful disclaimer review.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
6	“Transmitting [the SR]”	Claim 1 step (a); verb-only functional language.	Spec col. 7:15–8:10 (algorithm: monitor BSR → trigger sr_TriggerStatus → schedule PUCCH transmission opportunity).	No amendment.	TS 38.321 §5.4.4 (SR procedure flow).	A 3GPP MAC engineer would understand transmission as the algorithmic flow of §5.4.4.	“The procedural sequence in which the UE MAC entity monitors uplink Buffer Status Reports, triggers `sr_TriggerStatus`, and transmits the SR on the next PUCCH SR opportunity per TS 38.321 §5.4.4.”	High *if* claimed in MPF form per §2.4.3 above.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
7	“Receiving [the configured grant]”	Claim 1 step (b); verb-only.	Spec col. 8:15–9:5 (RRC reconfiguration message processing).	No amendment.	TS 38.331 §5.3.5.	A 3GPP RRC engineer would understand reception as processing of RRCReconfiguration message per §5.3.5.	“The procedural sequence in which the UE RRC entity processes RRCReconfiguration messages containing `ConfiguredGrantConfig` IE per TS 38.331 §5.3.5.”	High *if* claimed in MPF form per §2.4.3 above.

#	Claim Limitation	Claim-Language Evidence	Specification Support (Col:Line)	Prosecution History Notes	3GPP TS Reference	POSITA Understanding	Proposed Construction	Indefiniteness Risk
8	“Performing [the grant-free transmission]”	Claim 1 step (d); verb-only.	Spec col. 9:10–10:5 (autonomous transmission on CG resources).	No amendment.	TS 38.214 §6.1.2.3.	A 3GPP PHY engineer would understand performance as autonomous transmission per §6.1.2.3.	“The procedural sequence in which the UE PHY entity autonomously transmits PUSCH on CG-allocated resources per TS 38.214 §6.1.2.3, without per-transmission DCI grant.”	High *if* claimed in MPF form per §2.4.3 above.

Each construction is supported by intrinsic evidence first (claim language → specification → prosecution history) and by the corresponding 3GPP TS as extrinsic evidence to inform the POSITA’s understanding. *See Phillips*, 415 F.3d at 1314–17.

2.6 4. STANDARDS MAPPING (3GPP TS REFERENCES)

2.6.1 4.1 Claim-to-Standard Mapping Matrix

Claim Element	3GPP Reference	Standard Section	Essentiality Assessment
User Equipment (UE)	TS 38.300	Section 4.2	Core architecture term
User Equipment (UE)	TS 38.321	Section 4.2 (MAC entity)	Protocol definition

Claim Element	3GPP Reference	Standard Section	Essentiality Assessment
Scheduling Request (SR)	TS 38.321	Section 5.4.4	**Normative: SR procedure**
Scheduling Request (SR)	TS 38.213	Section 7.2.1 (PUCCH for SR)	**Normative: PUCCH resource**
Scheduling Request (SR)	TS 38.331	SchedulingRequestConfig IE	RRC configuration
Configured Grant — Type 1	TS 38.321	Section 5.8.2	**Normative: Type 1 CG**
Configured Grant — Type 2	TS 38.321	Section 5.8.2	**Normative: Type 2 CG**
Configured Grant (RRC)	TS 38.331	ConfiguredGrantConfig IE	RRC configuration
PUCCH resource	TS 38.211	Section 6.3 (PUCCH formats)	Physical layer
PUCCH resource	TS 38.213	Section 9.2.4 (SR resources)	Resource allocation
Grant-Free transmission	TS 38.321	Section 5.8 (overall CG)	**Normative: TWG**
Grant-Free transmission	TS 38.300	Section 4.2 (URLLC)	Architecture motivation
MAC entity processing	TS 38.321	Section 5 (MAC procedures)	Protocol implementation
Logical channel association	TS 38.321	Section 5.4.4.1	LCG-to-SR mapping

Normative References (Required for Compliance): TS 38.321 v18.6.0 — MAC protocol (core claim elements); TS 38.213 — Physical layer procedures for control (PUCCH resources); TS 38.331 — RRC protocol (configuration parameters).

Informative References (Supporting Context): TS 38.211 — Physical channels and modulation; TS 38.300 — NR overall description; TS 38.214 — Physical layer procedures for data (PUSCH).

2.7 5. PROSECUTION HISTORY NOTES

2.7.1 5.1 Amendment Analysis

Date	Action	Claim Term Affected	Impact on Construction
Mar 2018	Original filing	All	Baseline disclosure; no narrowing statements

Date	Action	Claim Term Affected	Impact on Construction
Aug 2019	Amendment after restriction	“configured grant”	Added Type 1/Type 2 limitation; **estoppel risk** for broad grant-free construction
Oct 2019	Response to Office Action	“SR”	Emphasized “selective suppression” to distinguish prior art; **disclaimer**
Dec 2019	Notice of Allowance	All claims	No further narrowing; claims allowed as amended

2.7.2 5.2 Critical Prosecution Statements

Statement 1 — “Selective Suppression” (Oct. 2019 Response): > “The present invention recognizes that transmitting an SR when a configured grant is already active for the associated logical channel is unnecessary and wastes PUCCH resources. The prior art [U.S. Patent No. 9,800,000] does not disclose selective suppression of SR transmission based on configured grant status per logical channel.”

Construction Impact: This statement limits “scheduling request” to the selective suppression embodiment. Applicant cannot now argue that the claim covers blanket SR suppression for all logical channels regardless of configured grant status.

Statement 2 — “Configured Grant” Types (Aug. 2019 Amendment): > “Applicant respectfully amends claim 1 to clarify that the configured grant comprises one of a Type 1 configured grant or a Type 2 configured grant, as defined in the 3GPP NR specifications.”

Construction Impact: The amendment adds specificity but does not clearly state whether this was a narrowing amendment to avoid prior art or merely clarifying. Under *Phillips*, if made to avoid prior art, the amended term is limited to the added structure. Examiner cited U.S. Patent No. 9,800,000 which disclosed “preconfigured uplink resources” without the Type 1/Type 2 distinction. The amendment likely narrows the claim to 3GPP-compliant configured grants only.

2.7.3 5.3 File Wrapper Estoppel Assessment

Estoppel Category	Applies	Scope of Estoppel
Argument-based estoppel	**YES**	“Selective suppression” statement limits SR construction
Amendment-based estoppel	**LIKELY YES**	Type 1/Type 2 amendment narrows “configured grant”
Disclaimer	**PARTIAL**	Per-logical-channel limitation on SR suppression

2.8 6. RELATED IPR/PTAB DECISIONS

2.8.1 6.1 Sisvel Int'l S.A. v. TCT Mobile Ltd., No. 23-1123 (Fed. Cir. Mar. 19, 2024)

The Federal Circuit affirmed PTAB's invalidity ruling for a scheduling-related 5G/LTE SEP, holding that prior art disclosed the scheduling mechanism under the Board's construction. The court emphasized that **for SEP claims, the standard document provides the relevant artisan's understanding** of claim terms. *Impact:* Reinforces that 3GPP definitions control SEP construction — SR and configured grant terms will be construed consistently with TS 38.321.

2.8.2 6.2 AT&T Mobility LLC v. Daingean Technologies Ltd. (PTAB Aug. 14, 2024)

PTAB denied institution because petitioners failed to address the Board's claim construction of a "first RNTI phrase" in a 5G SEP. The Board faulted petitioners for "implicitly adopting a different construction… but not providing any reason to adopt that construction." *Impact:* Any IPR petitioner must **explicitly address construction** of "configured grant," "active," and "selectively suppressed" — failure risks denial of institution.

2.8.3 6.3 Unwired Planet LLC v. Huawei Technologies Co., [2020] UKSC 37

The UK Supreme Court held that for SEPs, the proper construction gives the claim its **fair scope of protection** while respecting standard-defined terminology. The FRAND commitment does not alter claim construction but provides remedial context. *Impact:* Construction must be consistent with the 3GPP standard; a construction that reads the claim out of the standard undermines the SEP declaration.

2.8.4 6.4 InterDigital Tech. Corp. v. Lenovo Grp. Ltd., [2023] EWHC 539 (Pat); aff'd [2024] EWCA Civ 952

The UK High Court (affirmed by Court of Appeal) conducted technical trials before FRAND rate-setting, relying on **3GPP specifications as the primary interpretive source** for 5G SEP claims. *Impact:* Confirms that UK, Chinese, and U.S. courts all look to 3GPP specifications for 5G SEP construction.

2.9 7. CONCLUSION & RECOMMENDATIONS

2.9.1 7.1 Summary of Constructions

#	Claim Term	Proposed Construction	Risk Level
1	"User Equipment (UE)"	3GPP TS 38.300-defined device with full NR protocol stack	Low

#	Claim Term	Proposed Construction	Risk Level
2	"Scheduling Request (SR)"	MAC-layer resource request, per logical channel, on configured PUCCH; **selectively suppressed** per prosecution history	Medium
3	"Configured Grant"	Type 1 (RRC-configured) or Type 2 (RRC-configured, PDCCH-activated) per TS 38.321; **narrowed by amendment**	Medium-High
4	"Physical Uplink Control Channel (PUCCH)"	NR uplink physical channel for UCI per TS 38.211/38.213	Low
5	"Grant-Free Uplink Transmission"	PUSCH transmission using configured grant without dynamic scheduling per TS 38.321, section 5.8	Medium

2.9.2 7.2 Strategic Recommendations

For Patentee (Enforcement/Licensing):

1. **Embrace 3GPP-aligned construction.** The proposed constructions are standard-compliant and support essentiality. Non-standard arguments jeopardize the SEP declaration.
2. **Address prosecution history head-on.** The "selective suppression" disclaimer is binding. Frame the invention as per-logical-channel optimization — a meaningful contribution to 5G NR URLLC efficiency.
3. **Prepare expert testimony.** Retain a former 3GPP standards delegate who can testify that a standards engineer would understand the terms consistently with the proposed constructions.
4. **Monitor PTAB proceedings.** Per *Sisvel* and *Daingean*, IPR institution hinges on claim construction — prepare construction briefing early.

For Potential Licensee / Challenger:

1. **Challenge "configured grant" type limitation.** Argue prosecution history estoppel prevents reading the claim on generic grant-free schemes outside the 3GPP Type 1/Type 2 dichotomy.
2. **Argue "active" requires Type 2 activation.** For Type 1 configured grants, the "active" status is always satisfied, potentially rendering selective suppression logic inapplicable.
3. **IPR petition strategy:** Per *Daingean*, explicitly address claim construction. Proffer prior art combinations that read on the constructed claims.
4. **FRAND defense:** The FRAND commitment may provide a defense to injunctive relief but not to infringement or damages. Consider parallel FRAND rate proceedings.

2.9.3 7.3 Litigation Risk Matrix

Jurisdiction	SEP Treatment	Claim Construction Approach	Risk Level
E.D. Texas (E.D. Tex.)	SEP-friendly; Ericsson/Samsung precedent	Phillips + 3GPP definitions	**High for implementers**
N.D. California (N.D. Cal.)	Huawei/Samsung precedent; global FRAND rate possible	Phillips + extrinsic evidence	**Medium**
UK (Patents Court)	*Unwired Planet/InterDigital* framework; global FRAND	Standard-primary construction	**High for implementers**
Germany (Munich/Dusseldorf)	Injunction gap; Orange Book licensing	3GPP definitions; validity-focused	**High for infringement**
China (SPC/Beijing)	*OPPO v. Nokia* 2023 guidance; national rate-setting	Standard definitions; policy-driven	**Medium**
PTAB	IPR/IPR estoppel; *Sisvel/Daingean*	Broadest reasonable interpretation	**Medium for patentee**

2.9.4 7.4 Next Steps

1. **Secure 3GPP contribution records** to confirm patentee's RAN1/RAN2 meeting contributions on SR/CG procedures.
2. **Order certified copies** of all cited 3GPP TS specifications (TS 38.321, TS 38.213, TS 38.331) for litigation use.
3. **Prepare Markman briefing** with proposed constructions 90 days before hearing.
4. **Retain technical expert** with 3GPP MAC-layer working group experience.
5. **Monitor Ericsson v. Samsung E.D. Tex.** proceedings for additional 5G SEP construction precedent.

END OF MEMORANDUM

This analysis was prepared using the HiveClaim Claim Construction & Mapping platform. All constructions are recommendations based on current law and publicly available standard documents. Final constructions are the province of the court. This document constitutes attorney work product and is privileged and confidential.

HiveClaim v3.2 | 5G NR SEP Module | Generated: January 15, 2025
For questions or additional analysis, contact: analytics@thehiveryiq.com

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APPENDIX: ABBREVIATIONS

3GPP — 3rd Generation Partnership Project | BSR — Buffer Status Report | CG — Configured Grant | CSI — Channel State Information | DCI — Downlink Control Information | ETSI — European Telecommunications Standards Institute | FRAND — Fair, Reasonable, And Non-Discriminatory | gNB — Next-Generation Node B | HARQ — Hybrid Automatic Repeat Request | IE — Information Element | LCG — Logical Channel Group | MAC — Medium Access Control | MCS — Modulation and Coding Scheme | NR — New Radio | PDCCH — Physical Downlink Control Channel | PUCCH — Physical Uplink Control Channel | PUSCH — Physical Uplink Shared Channel | RRC — Radio Resource Control | SR — Scheduling Request | UCI — Uplink Control Information | UE — User Equipment | URLLC — Ultra-Reliable Low-Latency Communication

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2.10 RECEIPT-MINT ENVELOPE

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2.11 CITABILITY ANCHOR FOOTER

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