

# APEX STANDARDS

SEP Essentiality Approximation and Validation

R&D Intelligence R800396  
Standard Essentiality  
Declassified  
30 August 2022

Apex Standards	Sample Size (No. Patents)	True Positive Declaration	False Positive Declaration: Type I Error	Sample Size (No. Patents)	False Negative Declaration: Type II Error	True Negative Declaration
AI Essentiality Approximation	Declared as SEP (ETSI)	Declared and Verified as Essential by 3GPP Expert	Percentage (%) Successful Validation, i.e., Accurate Declaration	Undeclared in ETSI	Undeclared but Verified as Essential by 3GPP Expert	Percentage (%) Successful Rejection, i.e., Accurate Undeclaration
			Percentage (%) Challenged		Percentage (%) Successful Discovery of New SEP	
(0.9 - 1.0]	134	93%	7%	91	74%	26%
(0.8 - 0.9]	136	85%	15%	128	71%	29%
(0.7 - 0.8]	135	63%	37%	130	54%	46%
(0.6 - 0.7]	131	32%	68%	131	13%	87%
(0.5 - 0.6]	138	24%	76%	121	14%	86%
(0.4 - 0.5]	42	9%	91%	54	5%	95%
(0.3 - 0.4]	76	7%	93%	97	2%	98%
(0.2 - 0.3]	43	3%	97%	97	0%	100%
(0.1 - 0.2]	62	0%	100%	94	0%	100%
[0.0 - 0.1]	69	0%	100%	63	0%	100%

**Apex Standards 3GPP former delegates, technical specialists, patent attorneys, and data scientists devised a variety of models to approximate patent standard essentiality. The model accepts a patent number as input, evaluates its title, abstract, claim elements, descriptions, and prosecution history against all potential criteria, and generates an essentiality metric in the interval [0.00 - 1.00]. Such a confidence-representing essentiality metric may therefore serve as a rapid numeric measure for sorting and filtering when separating the more essential patents from the less essential ones. To assess the explanatory power of the essentiality metric, we tasked experts with over ten years of 3GPP experience to analyze random samples from each stratified bucket, e.g., 134 declared SEPs from the most confident bucket with the essentiality metric falling between (0.9 - 1.0), 136 declared SEPs from the second most confident bucket with the essentiality metric falling between (0.8 - 0.9), etc. 93% out of the 134 declared SEPs found by AI to be the most essential, i.e., with an essentiality measure between (0.9 - 1.0), are evaluated by experts as true essential, while 7% may be disputed as non-essential; 85% of the SEPs in the second-most-confident bucket are evaluated as essential by experts, whereas 15% may be contested as non-essential, etc. On the other side, we undertake the same analysis on patents that have not been declared, i.e., are not listed as SEPs on ETSI. 74% out of the 91 randomly sampled, undeclared patents determined by AI to be highly likely essential, i.e., with the essentiality metric falling between (0.9 - 1.0), are expert reviewed as true essential, i.e., may be established as a new SEP for increasing licensing revenue, while 26% are determined to be true non-essential. Such an analysis provides cross-checks between self-declarations and AI-confidence of true essentiality, allowing an alleged licensee to validate an approaching licensor's SEP portfolio strength early on.**

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