

Table SINV-8

International patent families granted in telecommunications, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	10,230	13,081	11,960	11,508	11,599	12,521	13,799	13,594	20,247	19,229	16,181	15,774	18,306	20,649	22,326	21,312	20,923	18,331	18,234	17,823	18,190	20,545	20,850
North America	na	2,246	2,566	2,608	2,648	2,672	2,831	3,152	2,663	3,738	3,125	3,035	3,272	3,897	3,865	4,722	4,361	4,202	3,538	3,254	3,166	2,812	2,917	2,640
Canada	High	127	155	148	171	147	152	204	165	256	216	228	230	288	267	322	339	361	295	275	218	182	195	182
Mexico	Upper middle	0	1	1	1	1	2	5	3	1	1	0	0	1	0	2	1	4	1	16	9	7	9	3
United States	High	2,119	2,410	2,458	2,476	2,524	2,677	2,942	2,495	3,481	2,909	2,807	3,042	3,607	3,598	4,398	4,021	3,837	3,241	2,962	2,939	2,623	2,714	2,454
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	1	2	3	4	2	0	2
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	2	4	5	1	4	6	8	1	5	1	10	8	3	9	8	9	15	9	12	13	15	12	18
Argentina	Upper middle	0	0	0	0	0	1	0	0	1	1	0	2	0	3	1	1	1	3	2	0	2	1	0
Brazil	Upper middle	1	2	5	1	2	5	7	1	4	0	9	5	2	5	6	7	13	6	9	13	13	9	17
Europe	na	1,544	1,705	1,804	1,765	1,809	2,258	2,439	2,132	2,229	1,960	1,851	1,665	1,800	1,811	2,111	1,961	1,969	1,778	1,908	1,889	1,879	1,976	1,739
EU-27 + UK ^a	na	1,247	1,473	1,596	1,593	1,572	1,936	2,071	1,819	1,875	1,616	1,496	1,330	1,472	1,494	1,779	1,666	1,668	1,405	1,559	1,521	1,489	1,559	1,376
United Kingdom	High	157	210	202	205	222	302	352	298	276	225	172	161	176	160	210	187	197	194	165	143	144	149	154
EU-27 ^b	na	1,091	1,263	1,394	1,388	1,350	1,634	1,718	1,521	1,599	1,391	1,325	1,170	1,296	1,335	1,569	1,479	1,471	1,211	1,393	1,378	1,345	1,410	1,221
Austria	High	12	11	20	27	22	29	27	30	43	24	23	27	24	33	42	29	34	26	32	41	39	42	44
Belgium	High	23	15	18	15	12	19	26	23	21	21	24	20	23	25	24	28	26	26	36	33	30	32	36
Denmark	High	7	12	14	17	19	26	19	24	26	25	28	21	22	19	27	34	34	26	30	37	17	16	16
Finland	High	115	128	174	162	149	206	203	163	161	175	168	147	138	113	115	142	116	108	84	75	71	59	53
France	High	212	245	292	299	285	399	352	308	408	287	296	245	276	314	368	297	305	228	324	312	295	266	226
Germany	High	375	373	388	473	460	565	643	652	643	556	497	404	422	379	472	468	457	398	463	446	472	531	456
Hungary	High	3	6	1	2	4	7	6	1	5	6	5	3	4	3	5	4	5	2	6	4	2	5	4
Ireland	High	5	11	4	4	9	7	14	9	12	14	12	9	17	14	22	26	23	27	24	24	26	27	32
Italy	High	85	143	162	66	62	53	123	76	34	43	30	37	60	73	79	70	49	48	48	101	82	71	56
Netherlands	High	61	73	77	68	63	71	69	63	68	59	68	60	63	77	77	61	75	51	64	57	59	55	51
Spain	High	39	57	27	29	13	39	43	54	43	54	39	31	48	47	62	63	64	37	47	35	40	40	27
Sweden	High	120	159	196	197	224	188	162	83	106	84	99	119	157	181	215	207	211	175	169	159	154	195	179
Other Europe	na	297	231	209	171	238	322	368	313	355	344	355	335	327	316	332	294	301	373	349	369	389	417	363
Other Europe-2020 ^b	na	454	441	410	377	459	624	721	611	630	569	527	495	503	476	542	481	497	567	514	512	534	566	518

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Belarus	Upper middle	1	0	0	0	0	0	2	4	0	1	1	0	2	1	3	1	1	3	4	5	1	2	1
Moldova	Lower middle	0	1	0	0	1	0	3	0	0	1	1	1	1	1	3	1	0	1	1	0	1	0	0
Norway	High	7	7	9	8	11	13	11	14	15	13	8	8	11	5	9	7	4	9	8	5	9	10	8
Russia	Upper middle	265	188	164	131	184	246	264	242	294	288	291	273	249	248	269	234	233	301	278	310	326	354	306
Switzerland	High	18	30	30	25	35	41	32	40	38	24	34	26	28	26	26	29	28	24	26	33	37	36	25
Ukraine	Lower middle	6	5	4	4	5	19	53	11	6	17	17	25	31	29	20	18	28	30	19	9	9	5	3
Asia	na	6,324	8,647	7,366	6,870	6,840	7,048	7,781	8,522	13,975	13,948	11,086	10,626	12,404	14,785	15,272	14,767	14,520	12,805	12,864	12,558	13,290	15,443	16,291
China	Upper middle	18	31	109	86	80	260	651	636	799	870	1,616	2,554	2,802	3,442	4,105	4,190	4,309	5,013	5,212	5,490	6,734	8,758	10,490
India	Lower middle	1	1	2	1	3	3	11	9	15	25	36	34	54	58	100	111	126	133	120	136	132	141	132
Japan	High	4,863	5,644	4,977	4,660	4,447	4,624	4,620	4,561	4,988	5,396	5,719	5,741	6,340	7,295	7,213	6,574	5,936	4,330	4,393	4,031	3,812	3,749	3,180
Malaysia	Upper middle	2	3	2	3	2	6	9	7	9	11	5	8	10	12	14	10	24	30	32	25	25	9	10
Singapore	High	9	4	5	12	14	13	16	12	18	16	19	20	18	17	32	20	19	15	17	15	17	18	19
South Korea	High	1,306	2,822	2,063	1,797	1,984	1,659	1,972	2,630	7,364	7,092	3,369	1,902	2,696	3,409	3,086	3,087	3,333	2,526	2,291	2,301	2,075	2,303	2,100
Taiwan	High	122	141	205	311	308	483	500	666	780	535	318	363	479	545	718	767	767	749	792	553	488	456	352
Middle East	na	34	40	38	40	58	74	88	69	87	74	82	96	115	102	146	147	142	145	131	140	139	141	114
Israel	High	32	39	34	40	53	74	88	66	85	72	78	92	110	95	140	136	131	131	120	121	123	114	92
Africa	na	15	25	16	25	20	26	17	12	21	18	22	29	21	11	11	10	16	8	7	7	9	7	6
South Africa	Upper middle	11	21	10	19	13	22	15	8	17	14	21	26	19	5	5	6	9	4	3	2	2	4	3
Australia and Oceania	na	59	70	100	155	194	278	306	183	188	101	93	78	65	66	53	56	57	44	46	44	43	48	39
Australia	High	50	66	98	151	192	269	300	178	181	98	86	73	57	60	45	48	50	37	41	39	38	45	36
New Zealand	High	8	4	3	5	2	9	6	6	8	4	7	5	7	6	8	7	7	7	4	5	5	3	4
Unclassified	na	6	24	23	3	2	1	8	11	4	1	2	1	1	0	1	1	1	3	10	2	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

^b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):

International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators