

TABLE S8-7

USPTO patents and patent families granted in telecommunications, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	
World	5,028	9,024	5,450	11,648	5,492	10,497	5,727	9,095	5,878	8,635	6,032	9,910	6,508	10,872	5,989	11,304	8,305	17,294	6,913	16,674	7,060	13,434	7,215	12,939	8,561	14,953	9,183	16,957	11,340	17,652	12,108	16,537	12,530	16,172	11,740	13,893	11,147	14,094	11,650	13,577	11,016	14,074	
North America	2,599	2,945	2,945	2,945	2,998	2,403	2,931	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150	2,348	3,150	2,393	3,150
Canada	114	108	154	124	161	134	169	155	147	118	157	108	183	138	175	112	246	164	206	144	193	168	225	153	252	191	306	177	393	214	438	225	456	244	393	187	349	163	322	160	265	130	
Mexico	0	0	1	0	1	1	1	1	1	1	3	1	5	4	3	2	2	1	1	1	1	0	0	0	0	0	0	0	0	1	1	2	1	3	1	2	1	10	7	6	7	4	
Puerto Rico	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0
United States	2,485	2,071	2,788	2,268	2,835	2,267	2,981	2,192	3,041	2,135	3,015	2,096	3,343	2,280	3,015	1,994	4,145	2,781	3,376	2,229	3,258	2,133	3,331	2,225	3,884	2,615	4,184	2,555	4,888	3,089	5,337	2,868	5,537	2,637	5,137	2,129	4,831	1,863	5,056	1,816	4,753	1,590	
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central and South America	1	2	3	2	2	5	0	0	2	3	0	4	1	6	1	3	1	6	3	1	4	6	6	6	7	5	7	5	7	5	18	10	14	6	11	6	11	6	14	13	15	12	
Argentina	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	0	2	2	0	1	2	0	3	0	2	1	3	0	3	0	4	0	
Brazil	1	1	2	0	2	4	0	0	1	1	0	4	0	6	0	1	2	1	0	3	6	2	3	4	3	5	3	4	3	5	8	4	9	6	8	4	7	11	7	9	2		
All others	0	1	2	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2	4	3	1	0	3	1	3	5	1	1	3	1	4	3	4	2	9	
Europe	620	1,188	727	1,299	765	1,406	857	1,318	894	1,307	925	1,576	928	1,718	820	1,501	1,090	1,601	879	1,374	874	1,268	827	1,162	1,022	1,214	987	1,180	1,242	1,366	1,365	1,165	1,498	1,241	1,471	1,095	1,488	1,152	1,496	1,226	1,381	1,211	
EU	607	909	702	1,099	742	1,217	829	1,167	864	1,101	897	1,289	885	1,375	784	1,215	1,044	1,304	849	1,054	842	936	796	843	976	906	943	894	1,190	1,058	1,314	901	1,441	975	1,401	767	1,402	853	894	1,295	871		
Austria	9	9	8	8	8	15	3	24	6	17	13	18	10	19	17	19	13	38	7	18	16	14	12	19	18	13	20	17	30	25	19	17	35	29	26	18	27	20	37	29	31	28	
Belgium	32	8	17	11	12	9	14	12	8	7	15	11	19	12	19	15	24	19	18	13	21	19	17	17	15	14	15	13	13	13	17	15	17	22	30	16	32	20	31	27	29	22	
Denmark	2	3	13	7	12	10	13	14	16	9	17	12	12	14	13	20	18	23	15	23	15	18	11	14	13	13	12	9	26	15	33	16	44	11	27	11	37	13	45	16	24	12	
Finland	70	71	82	99	94	139	97	145	109	108	131	150	119	161	101	115	138	90	131	76	110	88	116	90	123	81	112	62	98	68	109	77	105	72	113	52	94	54	91	61	41		
France	91	189	114	214	117	255	139	235	137	222	129	337	134	289	108	281	163	372	110	249	112	238	111	203	142	193	132	229	180	259	196	196	183	226	215	154	204	250	216	242	178	252	
Germany	131	260	139	238	149	229	198	283	206	265	242	283	262	334	234	350	297	388	257	343	217	284	218	215	256	244	210	211	273	272	282	263	359	251	304	208	311	235	317	268			
Hungary	1	2	1	6	1	1	1	2	0	3	6	5	1	6	1	2	3	3	2	3	1	3	2	2	3	2	0	1	4	2	6	2	1	2	1	6	3	5	3	3	0		
Ireland	3	6	2	9	3	4	4	2	4	3	5	7	11	9	6	11	9	7	5	6	9	8	10	8	17	11	14	10	22	13	20	9	23	13	36	17	30	18	34	17	33	22	
Italy	24	81	16	143	16	160	20	62	19	58	26	42	30	109	28	60	37	28	31	34	44	18	29	48	48	45	23	75	55	78	19	65	23	78	19	66	17	71	52	58	41		
Netherlands	52	31	48	42	33	48	27	33	27	28	21	27	34	20	19	27	30	34	27	30	46	28	26	30	33	32	41	32	59	34	68	15	62	28	66	16	66	20	60	18	73	18	
Spain	7	45	3	48	5	33	6	30	3	11	10	35	7	32	9	45	23	34	18	39	26	30	18	23	15	41	31	45	48	41	54	37	54	47	24	35	24	36	24	38	24		
Sweden	63	96	99	137	130	166	131	180	146	197	125	166	70	139	78	63	85	82	56	54	65	54	68	65	127	80	128	81	151	75	69	215	63	47	69	231	54	231	40	209	43	186	26
United Kingdom	120	75	159	108	161	127	174	116	180	145	156	174	173	205	144	187	198	162	167	126	152	101	147	96	150	106	167	106	212	139	231	109	242	117	240	117	240	117	240	117	240	117	85
All others	1	34	1	31	1	20	2	28	2	28	2	21	4	27	6	34	5	28	5	39	6	34	12	41	14	39	19	45	23	58	25	58	27	51	33	51	34	43	36	32	32		
Other Europe	13	278	25	199	23	190	28	152	30	207	29	287	43	343	36	286	46	297	30	321	33	331	31	319	46	308	44	264	51	309	266	69	327	86	300	93	332	86	341	341			
Former Soviet Union	0	5	0	3	0	2	1	2	0	5	0	18	0	58	0	16	0	6	1	17	0	19	0	26	0	33	4	28	4	24	0	23	2	26	2	20	3	14	3	9			
Norway	1	6	1	7	2	8	3	6	6	9	7	12	6	7	5	11	8	12	6	10	6	6	3	4	7	3	5	3	5	6	7	4	7	4	9	4	7	5	6	5	5		
Russia	2	257	3	179	3	163	7	128	4	179	2	243	8	261	6	240	7	255	8	273	6	286	10	270	10	247	11	240	12	263	13	226	18	223	28	287	40	295	29	304	304		
Switzerland	10	10	18	10	16	15	15	12	17	12	18	14	22	14	23	19	27	22	13	20	20	19	17	18	27	14	20	13	29	15	31	11	29	13	27	7	37	12	40	16	41	21	
All others	0	0	1	1	2	2	2	3	3	1	2	7	3	2	1	4	2	2	1	2	1	2	2	1	5	2	2	2	3	4	4	4	4	4	6	6	3	6	7	7	1		
Asia	1,749	5,602	1,726	7,899	1,668	6,609	1,654	5,350	1,714	4,980	1,836	6,043	1,931	6,629	1,873	7,604	2,638	12,628	2,315	12,846	2,591	9,771	2,680	9,282	3,215	10,805	3,490	12,931	4,596	12,863	4,740	12,152	4,751	11,909	4,476	10,355	4,224	10,791	4,506	10,269	4,324	11,036	

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	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families			
China	7	18	7	27	8	96	7	71	3	246	12	246	20	618	23	604	41	733	40	764	59	1,448	94	2,345	165	2,435	242	394	387	3,502	394	3,510	543	3,477	504	4,329	531	4,743	710	4,743	721	5,912	
India	1	0	1	0	1	1	2	1	3	2	2	6	6	7	7	10	11	18	17	21	23	16	20	24	38	34	34	61	59	84	60	100	66	123	75	152	72	148	76				
Japan	1,522	4,219	1,452	4,927	1,401	4,299	1,365	3,964	1,412	3,644	1,451	3,767	1,543	3,661	1,473	3,720	2,004	3,728	1,613	4,463	1,753	4,839	1,786	4,956	2,100	5,505	2,159	6,427	2,804	6,165	2,781	6,427	4,799	2,460	3,294	2,106	3,592	2,140	3,164	2,066	2,996		
Malaysia	0	1	2	2	1	2	3	3	1	2	0	5	3	5	1	6	8	4	11	4	4	6	7	3	10	5	10	6	11	5	8	5	20	11	14	20	23	8	23				
Singapore	4	1	3	3	5	1	10	7	13	9	10	7	12	5	10	9	15	7	12	13	10	7	13	11	12	10	15	6	32	11	24	10	23	9	19	8	23	7	20	5	21	10	
South Korea	139	1,242	172	2,804	159	2,006	154	1,007	156	952	201	1,548	179	1,860	211	2,633	316	7,402	339	7,063	412	3,170	441	1,656	566	2,437	625	3,031	820	2,542	973	2,350	918	2,841	925	1,921	986	1,839	1,055	1,786	1,010	1,657	
Taiwan	76	119	87	134	91	201	111	298	124	301	160	469	168	474	148	624	248	739	290	513	332	277	324	285	345	368	409	436	479	570	475	731	450	691	431	701	437	748	413	476	345	359	
All others	0	2	2	1	2	2	0	1	0	0	0	1	1	0	0	0	1	1	0	1	3	0	3	1	3	1	6	5	3	4	4	4	5	7	4	7	4	5	4	4	5	3	
Middle East	34	25	35	18	38	25	43	29	43	40	66	43	77	55	58	42	95	56	77	45	77	55	82	66	101	74	108	57	157	69	182	74	213	72	198	73	181	63	193	65	210	67	
Israel	33	23	34	18	38	21	42	28	43	35	65	42	77	55	58	40	94	55	76	42	77	51	82	64	99	72	106	52	151	64	197	66	183	63	183	60	170	55	173	52	194	58	
All others	1	2	0	1	0	3	1	1	1	5	0	1	0	0	1	2	1	1	2	0	4	0	2	2	2	3	6	5	5	5	8	15	9	15	12	11	8	20	13	16	8		
Africa	2	8	0	11	2	8	2	10	3	8	1	12	3	7	3	6	3	8	3	9	2	7	2	11	3	12	6	5	4	6	5	4	4	5	4	3	4	9	5	6	7		
South Africa	2	4	0	7	1	3	2	3	3	1	9	3	6	3	2	1	2	5	2	6	2	6	2	10	3	10	2	1	3	1	1	3	0	5	1	2	0	4	1	2	1	1	
All others	0	4	0	4	1	5	1	6	0	7	0	4	0	1	2	3	1	3	0	3	0	0	2	0	2	1	5	4	3	3	4	3	5	3	3	2	3	5	4	4	6		
Australia and Oceania	24	14	15	11	19	25	19	38	33	43	30	27	38	28	41	37	84	50	55	25	60	24	61	33	77	38	96	45	48	42	36	43	47	52	39	45	45	38	47	16	50	18	
Australia	17	12	13	10	15	25	14	36	29	42	21	24	36	27	38	35	79	49	54	25	57	23	59	32	75	37	90	44	42	40	32	41	41	51	36	43	44	44	37	44	16	44	16
New Zealand	7	3	1	0	3	0	5	2	4	0	9	3	1	0	3	2	5	1	1	3	1	1	2	1	3	1	6	2	6	2	4	1	7	5	3	1	1	4	0	6	2		
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		
Unclassified	0	6	0	16	2	16	2	2	0	1	0	0	0	6	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	1	2	4	1	0	3	0		

EU = European Union; USPTO = U.S. Patent and Trademark Office.

## Note(s)

USPTO patents are allocated according to patent inventorship information. USPTO patents 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. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. 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. (2012) is used to fill in missing information on priority patents using information in successive filings within the patent families (see technical documentation for details). Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. 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 the year for which its output is accounted. The EU includes 28 member countries. China includes Hong Kong.

## Source(s)

Science-Metrix; PATSTAT, accessed April 2019; PatentsView, USPTO, accessed June 2019.