

ATSC 3.0 Patent Portfolio License Cross-Reference Chart

(The following chart shows illustrative essential claims for each patent below. Other claims may also be essential and/or other portions of the Standard may be covered.)

| Ctry. | Patent | CI | Standards / Sections |
|-------|-----------|----------|--|
| CA | 2,773,716 | 1, 9, 10 | A/322:2021, Secs. 4.2, 6.4, 6.4.1, 7.2.7.4, 9.3.4, 9.3.5, Figs. 4.1, 4.3, 4.4, 6.14, 6.15, 7.18-7.22, Table 9.22 A/324:2021, Sec. 4.8, Fig. 4.2, Annex A.1 |
| CN | 101563951 | 1 | A/322:2021, Secs. 1.1, 7.2.1, 7.2.2.1, 7.2.5, Fig. 7.10 |
| CN | 101584144 | 1 | A/322:2021, Secs. 5.2.1, 5.2.2, 7.2.2.1, 7.2.5, 9, 9.3, 9.3.4 A/330:2019, Secs. 1, 4, 5, 5.1.2.3, 7.1.1, 7.1.2, Table 5.6 |
| CN | 103384966 | 1, 9 | A/338:2021, Secs. 3.4, 5.3, 5.4, 5.7, 5.7.3, 5.8.2, 14.4.2.1, 14.4.2.2.2, Fig. 5.1, Table 5.2 |
| CN | 105007146 | 1 | A/321:2016, Secs. 5.4, 5.4.1, Figs. 5.4, 5.5 |
| CN | 105009591 | 1 | A/300:2021, Sec. 2.1, Annexes A.1.1.1, A.1.1.2 A/331:2019, Secs. 2.1, 4.1 ISO/IEC 23008-1:2017, Figs. C.3, C.11, C.12, Table C.8, Annexes C.1, C.2.1, C.2.3, C.5.2, C.5.3, C.6.3 |
| CN | 105024791 | 1 | A/321:2016, Secs. 5.4, 5.4.1, Figs. 5.4, 5.5 |
| CN | 105794134 | 3 | A/322:2021, Secs. 4.1, 4.2, 5.2.1, 6, 6.3, 6.3.1, 6.5.1, 6.5.2.1, 6.5.2.11, 7.2.1, 7.2.2.1, 7.2.5, 7.2.5.2, 9, Figs. 4.1, 6.1, 6.5, 6.8, 6.9, Table 6.17, Annex C.1 |
| CN | 107070462 | 1 | A/322:2021, Secs. 6, 6.1.3.2, 6.2, 6.2.1, 6.2.2, 6.2.3.2, 6.3, Figs. 6.1, 6.5, 6.8, 6.9, Table 6.11 |
| CN | 107104678 | 1 | A/322:2021, Secs. 1, 4.2, 6, 6.1.3.2, 6.2.1, 6.2.2, 6.2.3.2, 6.3, Figs. 4.1 6.1, 6.8, 6.9, Table 6.11 |
| CN | 107104679 | 1 | A/322:2021, Secs. 6, 6.1.1, 6.1.3.2, 6.2, 6.2.1, 6.2.2, 6.2.3, 6.2.3.2, 6.3, 6.3.3, 6.3.4.2, Figs. 6.1, 6.5, 6.6, Tables 6.11, 6.14, B.2.3 |
| CN | 107733567 | 1 | A/322:2021, Secs. 6, 6.1.1, 6.2, 6.2.1, 6.2.2, 6.2.3, 6.2.3.2, 6.3, 6.3.3, 6.3.4.2, Figs. 6.1, 6.6, 6.8, 6.9, Tables 6.11, 6.14 |
| CN | 109617846 | 1 | A/321:2016, Secs. 5.4, 5.4.1, 5.4.2, Figs. 5.4, 5.5, 5.6 |
| JP | 5,238,069 | 1 | A/300:2021, Sec. 2.1 A/331:2021, Secs. 7.2.1.1, 7.2.3.2.1 ISO/IEC 14496-15:2019, Secs. 9.6.1.1, 9.6.1.2, 9.6.1.3 |
| JP | 5,562,408 | 1 | A/344:2021, Secs. 4.2, 5.2.5, 9.7.2, Fig. 4.1 |
| KR | 1,159,432 | 33 | A/300:2021, Annex A.1.1.1 A/331:2021, Secs. 1, 2.1, 4.1, 8.1, 8.1.2.5 ISO/IEC 23008-1:2017, Secs. 3.1.33, 3.1.34, Fig. C.3, Annexes C, C.1, C.3 |
| KR | 1,431,233 | 1 | A/330:2019, Secs. 1.4, 4.1.1.2, 5, 5.1.2.3, 5.2, 5.2.1.7, Figs. 4.1, 5.1, 5.5, 5.6, B.1.4, B.1.5, Tables 5.6, 5.11, 5.13, 5.14, Annex B.1.3 |
| KR | 1,620,776 | 9 | A/331:2021, Secs. 1, 4.1, 8.1.2, 8.1.2.3 ISO/IEC 23008-1:2017, Secs. 1, 3.1.1, 5, 6.4, 7, 7.1, 10, 10.1, 10.5, 10.5.2.1, Fig. 1 ISO/IEC 14496-12:2015, Secs. 3, 8.16.3, 8.16.3.1, 8.16.3.2, 8.16.3.3 |
| KR | 1,691,709 | 1, 16 | A/337:2019, Secs. 2.1, 4.2, 4.4, 4.5.1, 4.5.2, 4.5.2.2, Table 4.6 ISO/IEC 23009-1:2014, "emsg" |

ATSC 3.0 Patent Portfolio License Cross-Reference Chart

| Ctry. | Patent | CI | Standards / Sections |
|-------|-----------|----------|---|
| KR | 1,812,218 | 1, 8 | A/300:2021, Sec. 2.1, Annex B.1.1.1 A/331:2021, Secs. 2.1, 4.1, 8.1.2.5 ISO/IEC 23008-1:2017, Figs. C.11, C.12, Annexes C.1, C.3, C.5, C.5.2, C.5.3 |
| KR | 1,908,349 | 1 | A/322:2021, Secs. 6.2, 6.2.1, 6.2.2, 6.2.3.1, Figs. 6.5, 6.6, 6.7 |
| KR | 1,942,891 | 1 | A/322:2021, Secs. 6.2, 6.2.1, 6.2.2, 6.2.3.2, 6.3.3, 6.3.4.2, Figs. 6.5, 6.6, 6.8, Tables 6.2, 6.11, 6.14, B.2.3 |
| KR | 2,041,761 | 2 | A/331:2021, Secs. 1, 6.4, 8.1.2, 8.1.2.1.1, 8.1.2.1.3, 8.1.2.3, Figs. 8.5, B.4.2, Table 6.7, Annexes B.4, E.3 A/336:2019, Secs. 1, 5.4.3 |
| KR | 2,048,221 | 1 | A/321:2016, Secs. 1, 4, 4.1, 5.4, 5.4.2, Figs. 4.1, 5.6 |
| KR | 2,114,362 | 3 | A/322:2021, Secs. 1, 4.2, 5.2.1, 6.6.1, 6.3, 6.3.1, 6.3.3, 6.3.4.2, 6.5, 6.5.1, 6.5.2, 6.5.2.1, 6.5.2.5, 6.5.2.11, 7, 7.1, 7.2, 7.2.1, 7.2.2, 7.2.2.1, Figs. 4.1, 6.1, 6.18, 7.1, 7.10, Tables 6.14, 6.17, C.1.2, C.1.3 |
| KR | 2,124,050 | 1 | A/322:2022-11, Secs. 1, 8.1, 8.1.1, 8.1.3, 8.1.3.1, 8.1.5, Annexes E, E.1, Figs. E.1.1, E.1.16, Table 8.2 |
| KR | 2,163,876 | 1 | A/322:2022-11, Secs. 1, 4.2, 6.1.3.1, 6.5, 6.5.1, 6.5.2.5, 6.5.2.7, 6.5.2.8, Figs. 4.1, 6.18, 6.19, 6.22-25, Tables 6.6, 6.23, 6.24 |
| KR | 2,197,545 | 1 | A/322:2021, Secs. 1, 4.2, 6, 6.1.3.2, 6.2, 6.2.1, 6.2.2, 6.3, 6.3.1, 6.3.4.3, Figs. 4.1, 6.1, 6.5, 6.6, C.2.6, Tables B.1.6, C.1.10, C.1.11, C.3.3, C.3.4 |
| KR | 2,234,307 | | A/321:2016, Secs. 1, 4, 4.1, 5.4, 5.4.2, Figs. 4.1, 5.6 |
| KR | 2,359,850 | 1 | A/322:2021, Secs. 4.1, 6.3, 7, 7.1, 7.2, 7.2.1, 8, Figs. 4.1, 7.1, 8.1, L.1.1, L.1.2, L.5.2, Annexes L.1, L.4.1, L.5, L.5.2, L.6, L.7 |
| KR | 2,359,983 | 1 | A/322:2021, Secs. 4.1, 6.3, 7, 7.1, 7.2, 7.2.1, 8, Figs. 4.1, 7.1, 8.1, L.1.1, L.1.2, L.5.2, Annexes L.1, L.4.1, L.5, L.5.2, L.6, L.7 |
| US | 8,233,532 | 31, 32 | A/300:2020, Sec. 2.1 A/331:2021, Secs. 2.1, 4.1, 8.1.2.5, Annex B.1.1.1 A/341:2021, Sec. 6.3.1 ISO/IEC 23008-1:2017, Secs. 3.1.33, Fig C.3, Annexes C.1, C.2.1, C.2.3, C.4 |
| US | 8,335,962 | 1, 21 | A/322:2021, Secs. 7, 7.1.5.5, 7.2.2.1, 7.3, 8, Figs. 6.2, 6.3, 7.5, 7.7(b), 7.8, Tables 6.1, 6.14, 7.4 |
| US | 8,902,928 | 1 | A/330:2019, Secs. 1, 4, 5, 7, 7.1.2, Figs. 5.1, A.1.4, A.1.5, Tables 5.6, 7.3, Annex A.1.3 |
| US | 9,078,140 | 1 | A/322:2021, Secs. 1.1, 7.2.1, 7.2.2.1, 7.2.5, 7.2.5.1, Figs. 7.10, 7.11, Annex L.11.1 |
| US | 9,219,501 | 1 | A/322:2017, Secs. 6.6.1, 6.1.1, 6.1.2.1, 6.1.2.3, 6.1.3.1, 6.1.3.2, Figs. 6.1, 6.2 |
| US | 9,253,428 | 1 | A/322:2021, Secs. 7.2.1, 7.2.2.1 |
| US | 9,392,325 | 1 | A/332:2017, Secs. 2.1, 3.4, 5.1, 5.2.2.1.6, 5.5.1, 5.5.2, Table 5.5 OMA "Service Guide for Mobile Broadcast Services," V.1.0.1:2013, Secs.5.1.1, 5.4.1.5.1, 5.4.1.5.2, 5.4.2, 5.4.3, Appendix D |
| US | 9,438,459 | 1 | A/322:2021, Secs. 4.1, 4.2, 7.2, 8.3, 9, 9.2.3, 9.3.3, Figs. 4.1, 7.10, Tables 8.9, 9.10 |
| US | 9,479,826 | 1, 9, 10 | A/322:2021, Secs. 4.2, 6.4, 6.4.1, 7.2.7.4, 9.3.4, 9.3.5, Figs. 4.1, 4.3, 4.4, 6.14, 6.15, 7.18-7.22, Table 9.22 A/324:2021, Sec. 4.8, Fig. 4.2, Annex A.1 |
| US | 9,521,432 | 1 | A/331:2021, Secs. 3.4, 7, 7.1.7, 8.3, 8.3.3 |

ATSC 3.0 Patent Portfolio License Cross-Reference Chart

| Ctry. | Patent | CI | Standards / Sections |
|-------|------------|--------|---|
| US | 9,628,590 | 1 | A/331:2021, Secs. 2.1, 3.4, 4.1, 8.1.2, 8.1.2.1.2, 8.1.2.3, Figs. 4.1, B.1.2 ISO/IEC 23008-1:2017, Secs. 3.1.1, 5, 6.4, 7.1, 10.1, 10.5.2.1, Figs. 1, 2, 7 ISO/IEC 14496-12:2015, Secs. 3, 8.8.4.1, 8.16.3, Fig. K.1, Annex K.2.1 |
| US | 9,762,347 | 13, 14 | A/321:2016, Secs. 1.1, 4.1, 5.2, 5.2.2, 5.2.3, 5.3.1, 5.3.2, 5.3.3, Figs. 4.1, 5.1, 5.3 |
| US | 9,769,476 | 1, 18 | A/322:2021, Secs. 6.3, 6.3.4, 7.1, 7.1.2, 7.1.5, Fig. 4.1 |
| US | 9,794,958 | 1 | A/322:2021, Secs. 4.2, 7.2.1, 7.2.2.1, 7.2.6, 7.2.6.6, 7.2.6.7, 7.2.7, 7.2.7.2, 7.2.7.3, 9.3.8, Figs. 4.1, 7.10, 7.15, 7.16, 7.17, Tables 7.7, 7.8 |
| US | 9,853,851 | 7 | A/322:2021, Secs. 1.1, 7.2.2.1, 7.2.5.2, 8.3, 8.5.1, Figs. 4.2, 7.10, 7.11, 8.4 |
| US | 9,860,293 | 1 | A/331:2022, Secs. 3.4, 7, 7.2, 7.2.3.2.1.2, 7.2.3.4.1, 7.2.3.4.3, 7.2.3.5, 8.1.1, Figs. 8.10, B.5.1, B.9.1, B.12.1, Table A.3.1, Annexes B.5, B.9, B.12 |
| US | 9,866,421 | 1 | A/322:2021, Secs. 1.1, 7.2.2.1, 7.2.5.2, 8.3, 8.5.1, Figs. 4.2, 7.10, 7.11, 8.1, 8.4 |
| US | 9,935,890 | 1 | A/322:2021, Secs. 3.4, 6, 7, 7.1, 7.1.1, 7.1.5, 7.1.5.1, 7.1.5.5, Figs. 6.1, 6.3, 6.6, 7.1, 7.4, 7.8 |
| US | 9,942,364 | 2 | A/331:2021, Secs. 2.1, 3.4, 4.1, 8.1.2, 8.1.2.1.2, 8.1.2.3, Figs. 4.2, B.1.2, Annexes B.1, E.3 ISO/IEC 23008-1:2017, Secs. 3.1.1, 7, 10.1, 10.5.2.1, Fig. 7 ISO/IEC 14496-12:2015, Secs. 6.2.3, 8.6.1.3.1 |
| US | 10,009,078 | 1 | A/322:2021, Secs. 4.1, 6.3, 7, 7.1, 7.2, 7.2.1, 8, Figs. 4.1, 7.1, 8.1, L.1.1, L.1.2, L.5.2, Annexes L.1, L.4.1, L.5, L.5.2, L.6, L.7 |
| US | 10,033,566 | 1,7 | A/322:2021, Secs. 1, 3.3, 4.1, 4.2, 7.2.1, 7.2.2.1, 7.2.4.2, 8.3, 8.7, 9, 9.2.3, 9.3.3, Figs. 4.1, 7.10, Tables 8.8, 8.9, 9.10, Annex N.2.2 |
| US | 10,079,708 | 1 | A/321:2016, Secs. 1.1, 3.5, 4.2, 5.2, 5.2.1, 5.2.2, 5.2.4, Figs. 5.1, 5.2 |
| US | 10,116,973 | 1 | A/322:2022, Secs. 4.1, 7.2.2.1, 7.2.6.1, 7.2.6.6, 7.2.6.7, 7.2.6.8, 7.2.7, 7.2.7.6, 9.3.8, Figs. 7.10, 7.15, 7.25, Table 7.10 |
| US | 10,158,518 | 26-28 | A/321:2016, Secs. 4.1, 5.4, 5.4.1, 5.4.2, Figs. 4.1, 5.4, 5.5, 5.6 |
| US | 10,194,196 | 7 | A/331:2021, Secs. 4, 4.1, 5.1, 6.4, 8.1.2.3, Fig. 4.1, Table 6.7 A/336:2019, Sec. 5.4.3 |
| US | 10,205,619 | 4 | A/321:2016, Secs. 4.1, 5.1, 6.1.1.1, Fig. 4.1 A/322:2021, Secs. 1.1, 7.2.2.1, 8.3, Figs. 4.2, 7.10, 8.1 |
| US | 10,305,573 | 2 | A/322:2021, Secs. 4.1, 7.2, 7.2.1, 7.2.4, 7.2.4.1, Figs. 4.1, 7.10 |
| US | 10,389,569 | 1 | A/322:2021, Secs. 1, 1.1, 4.2, 7.2, 9, Figs. 4.1, 7.10 A/331:2021, Secs. 6.5, 6.5.2, Table 6.9 |
| US | 10,396,884 | 7 | A/322:2021, Secs. 4.1, 4.2, 7.2.4, 8.1.3, 8.1.3.1, 8.1.7, 8.1.7.1, Figs. 4.1, 7.10, E.1.1, Annex E |
| US | 10,411,929 | 1 | A/321:2016, Secs. 5.3.1, 5.4, 5.4.1, 5.4.2, 6, Figs. 5.5, 5.6 A/327:2020, Secs. 6.1, 6.1.1, 6.1.1.1, 6.1.1.1.1, Fig. 6.1 |
| US | 10,560,299 | 9 | A/322:2021, Secs. 1, 4.2, 8.3, Figs. 4.1, 4.2, 7.10 A/331:2021, Secs. 1.1, 4.1, 5, 5.1, 7.2.3, 7.2.3.2.5, 8.1.2.2, Figs. 5.1, 8.8, Annex E.2 |
| US | 10,574,500 | 1 | A/322:2021, Secs. 1.1, 7.2.1, 7.2.2.1, 7.2.7.5, 8.3, Figs. 4.2, 7.24, 8.1, Table 7.9 |
| US | 10,602,204 | 15 | A/322:2021, Secs. 4.2, 7.2.1, 7.2.2.1, 7.2.6, 7.2.6.6, 7.2.6.7, 7.2.6.8, 7.2.7, 9.3.4, 9.3.8, Figs. 4.1, 4.3, 7.10, 7.15, 7.25, Table 7.10 |
| US | 10,630,411 | 1 | A/321:2016, Secs. 1.1, 4.2, 5.2, 5.2.1, 5.2.2, 5.3.3, Figs. 4.1, 5.1 |

ATSC 3.0 Patent Portfolio License Cross-Reference Chart

| Ctry. | Patent | CI | Standards / Sections |
|-------|------------|------|---|
| US | 10,631,037 | 3 | A/331:2021, Secs. 6.4, 8.1.2, 8.1.2.1.1, 8.1.2.1.3, 8.1.2.3, Figs. 8.5, B.4.2, Table 6.7, Annexes B.4, E.3 A/336:2019, Sec. 5.4.3 |
| US | 10,637,539 | 1 | A/322:2021, Secs. 1, 1.1,7, 7.2.2.1, 7.2.5, 9.1, Figs. 7.10, 8.1, L.1.1, Annexes L.4.1, L.4.2, L.5.3, L.9.1 |
| US | 10,666,385 | 2 | A/322:2021, Secs. 1, 5.2, Figs. 5.2, 6.1, K.1.1, K.1.2, K.3.1, Annexes K.1, K.3 |
| US | 10,666,387 | 1 | A/322:2021, Secs. 7.1, 7.2, 7.2.5, 9.2, 9.3, Figs. 7.10, L.1.1, L.1.2, L.6, Annex L |
| US | 10,693,497 | 1 | A/331:2021, Secs. 5.1, 8.1.2.2, Figs. 5.1, E.3.1, Annex E.3 A/322:2021, Fig. 4.1, Table 6.1 |
| US | 10,693,502 | 1 | A/322:2021, Secs. 6.3, 6.3.4, 6.3.4.1, 6.3.4.2, 6.5.1, 6.5.2, 6.5.2.4, 6.5.2.5, 6.5.2.6, 6.5.2.9, 6.5.2.11, Figs. 6.19, 6.21,6.26, Table 6.19 |
| US | 10,721,006 | 1 | A/331:2021, Sec. 6.5, Fig. G.1.2, Tables 5.5, 6.9 |
| US | 10,756,845 | 1 | A/322:2021, Secs. 6.1.1, 6.1.2.1, 6.1.3.1, 6.1.3.2, 6.2, 6.3.1, 6.3.4.2.1, 6.5.2.3, 6.5.2.5, 6.5.2.11, 6.6.1, 7.2.5.2, 9, Figs. 4.1, 6.1, 6.4, 6.5, 6.10, 6.12, 6.18, 6.19, 7.11, Tables 6.1, 6.17, C.1.2, C.1.2, Annex C.1 |
| US | 10,886,946 | 1 | A/322:2021, Secs. 4.2, 6.2.1, 6.2.3.2, 6.3, 6.3.4.2, Figs. 4.1, 6.1, 6.8, 6.9, Tables 6.11, 6.13, 6.14, B.2.3 |
| US | 10,917,673 | 10 | A/322:2021, Secs. 4.1, 4.2, 7.2.1, 7.2.2.1, 7.2.6, 7.2.6.6, 7.2.6.7, 7.2.6.8, 7.2.7, 7.2.7.5, 7.2.7.6, 8.1.1, 9.2.3, 9.3.8, Figs. 4.1, 4.3, 7.10, 7.15, 7.25, Table 7.10 |
| US | 10,931,313 | 1 | A/322:2021, Secs. 1, 4.2, 6, 6.2.2, 6.3, Figs. 4.1, 6.1, 6.5, 6.6, 6.8, 6.9 |
| US | 10,931,494 | 1 | A/321:2016, Secs. 4.1, 5.4, Figs. 5.5, 5.6 A/322:2021, Secs. 4.1, 6.5.2.11, Figs. 4.1, 7.10 |
| US | 10,938,735 | 3 | A/322:2021, Secs. 7.1, 7.1.5.4, 7.1.5.5, Figs. 7.4, 7.7, 7.8 |
| US | 11,012,275 | 1 | A/321:2016, Secs. 5.4, 5.4.2, Figs. 5.4, 5.6 |
| US | 11,012,282 | 9,15 | A/321:2016, Secs. 4.1, 5.2, 5.2.3, 5.2.4, Figs. 4.1, 5.1, 5.3 |
| US | 11,063,805 | 1 | A/322:2021, Secs. 8, 8.2.1, Figs. 8.1, 8.3, Tables J.1.1, J.1.2 |
| US | 11,070,236 | 1 | A/322:2021, Secs. 6.1.3.2, 6.1, 6.2.1, 6.2.2, 6.2.3.2, 6.3, Figs. 6.1, 6.5, 6.6, 6.8, 6.9, Tables 6.11, 6.14, B.2.1 |
| US | 11,082,277 | 1 | A/322:2021, Secs. 4.2, 8.3, Fig. 4.1, 7.10 A/331:2021, Secs. 1.1, 4.1, 5, 5.1, 7.2.3, 7.2.3.2, 8.1.2.2, Figs. 5.1, 8.8, B.5.2, B.9.2, Annexes B.5, E.1, E.2, E.3 |
| US | 11,115,060 | 1 | A/322:2021, Secs. 6.2, 6.2.1, 6.2.2, 6.2.3, 6.2.3.2, 6.3, 6.3.3, 6.3.4.2, Figs. 6.5, 6.6, 6.8, 6.9, 6.10, 6.11, Tables 6.2, 6.11, 6.14, B.2.3 |
| US | 11,146,437 | 1 | A/322:2021, Secs. 7.2.1, 7.2.2.1, 7.2.5.2, 8.3, 9.2, 9.3, Figs. 4.2, 7.10, 7.11, Tables 9.2, 9.8 |