

## SEARCH HISTORY

<b>Application Number</b>	PCT/US 18/17090
<b>Search Conducted By</b>	ABP
<b>Search Approved By</b>	ADS

<b>CPC/IPC Classifications Searched</b>	IPC(8): H04B 15/00 (2018.01) CPC: H04B 10/516; H04B 7/0868; H04W 28/0231
<b>Date Conducted</b>	31 May 2018 (31.05.2018)

<b>Documentation Searched</b>	IPC(8): H04B 15/00 (2018.01) CPC: H04B 10/516; H04B 7/0868; H04W 28/0231 455/250.1,203-205
<b>Search Terms Used</b>	orthogonal, time, frequency, space, user, information, data, communicate, wireless, error, correction, fec, channel, coding, Hamming, Reed-Solomon, symbol, combine, interleave, merge, constellation, transmit, send, waveform, signal, iterative, multi-level, equalization, decoding, Cohere Technologies
<b>Date Conducted</b>	31 May 2018 (31.05.2018)

<b>Electronic Database Searched</b>	Patbase
<b>Files Searched</b>	Full-text: AU BE BR CA CH CN DE DK EP ES FI FR GB IN JP KR SE TH TW US WO Bibliographic: (Europe) AT BA BE BG CH CS CY CZ DD DK EE ES FI GE GR HR HU IE IS IT LT LU LV MC MD MT NL NO PL PT RO RS SE SI SK SM TR UA YU (Asia) EA GC HK ID IL IN KZ MN MY PH RU SG SU TH TJ TW UZ VN (North America) CA CR CU DO GT HN MX NI PA SV TT (South America) AR BR CL CO EC PE UY (Australasia) AU NZ (Africa) AP DZ EG KE MA MW OA ZA ZM ZW
<b>Date Conducted</b>	31 May 2018 (31.05.2018)
<b>Search Logic:</b>	

Search 1: IC=(H04B15/00) (Results 12693)  
 Search 2: CPC=(H04B10/516 or H04B7/0868 or H04W28/0231) (Results 1210)  
 Search 3: UC=(455/250.1 or 455/203 or 455/204 or 455/205) (Results 847)  
 Search 4: 1 or 2 or 3 (Results 14709)  
 Search 5: PA=(Cohere Technolog\*) (Results 18)  
 Search 10: FT=(orthogon\* time frequenc\*) and FT=(user% w2 (informat\* or data)) (Results 56)  
 Search 14: 4 and FT=(orthogon\* w3 (time or spac\* or frequenc\*)) (Results 1676)  
 Search 15: 14 and FT=((orthogon\* w3 (time or spac\* or frequenc\*)) w10 (communicat\* or wireless\*)) (Results 468)  
 Search 16: 14 and FT=(error correct\* or fec or channel\* cod\* or hamming or reed%solomon or fec) (Results 530)  
 Search 17: 16 and FT=(symbol\* near (combin\* or interleav\* or merg\*)) (Results 125)  
 Search 18: 17 and Ft=(user% w2 data%) (Results 29)  
 Search 19: 15 and Ft=(user% near data%) (Results 173)  
 Search 20: 19 and FT=(error correct\* or fec or channel\* cod\* or hamming or reed%solomon or fec) (Results 71)  
 Search 21: 17 and FT=(constellat\*) (Results 63)  
 Search 22: FT=((orthogon\* w3 (time or spac\* or frequenc\*)) w10 (communicat\* or wireless\*)) (Results 17413)  
 Search 23: 22 and FT=(error correct\* or fec or channel\* cod\* or hamming or reed%solomon or fec) (Results 5284)  
 Search 24: 23 and FT=(symbol\* near (combin\* or interleav\* or merg\*)) (Results 1177)  
 Search 25: 24 and Ft=(user% w2 data%) (Results 283)  
 Search 26: 25 and FT=(constellat\*) (Results 141)  
 Search 27: 26 and FT=(waveform\*) (Results 55)  
 Search 28: 26 and FT=((transmit\* or send\*) near (waveform% or signal\*)) (Results 137)  
 Search 29: pn=(US20040086027 or US20020136276 or US20080165873 or US20020136276) (Results 3)  
 Search 30: ctb 29 or ctf 29 (Results 1706)  
 Search 31: 30 and FT=((orthogon\* w3 (time or spac\* or frequenc\*)) w10 (communicat\* or wireless\*)) (Results 353)  
 Search 32: 31 and FT=(error correct\* or fec or channel\* cod\* or hamming or reed%solomon or fec) (Results 199)  
 Search 33: 32 and FT=(symbol\* near (combin\* or interleav\* or merg\*)) (Results 71)

<b>Electronic Database Searched</b>	Google Patents
<b>Files Searched</b>	US Patents/Published Applications EPO publications International - China - Germany - Canada
<b>Date Conducted</b>	31 May 2018 (31.05.2018)
<b>Search Logic:</b>	
<p>About 27,600 results (0.34 seconds) ITERATIVE MULTI-LEVEL EQUALIZATION AND DECODING</p> <p>About 109 results (0.27 seconds) "orthogonal time frequency space" "user data"</p> <p>About 58 results (0.23 seconds) "orthogonal time" frequency space "user data" constellation</p> <p>About 43,000 results (0.31 seconds) orthogonal time frequency symbol waveform</p> <p>About 21,100 results (0.36 seconds) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon")</p> <p>About 19,900 results (0.47 seconds) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon") (combine OR merge OR interleave OR interleaving)</p> <p>About 4,120 results (0.50 seconds) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon") (combine OR merge OR interleave OR interleaving) ("user data")</p>	

<b>Electronic Database Searched</b>	Google Scholar
-------------------------------------	----------------

<b>Files Searched</b>	Articles excluding patents published anytime including at least summaries.
<b>Date Conducted</b>	31 May 2018 (31.05.2018)
<b>Search Logic:</b>	
<p>About 1,820 results (0.09 sec) ITERATIVE MULTI-LEVEL EQUALIZATION AND DECODING</p> <p>2 results (0.08 sec) "orthogonal time frequency space" "user data"</p> <p>About 45 results (0.06 sec) "orthogonal time" frequency space "user data" constellation</p> <p>About 43,800 results (0.11 sec) orthogonal time frequency symbol waveform</p> <p>About 18,700 results (0.14 sec) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon")</p> <p>About 17,500 results (0.22 sec) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon") (combine OR merge OR interleave OR interleaving)</p> <p>About 1,630 results (0.16 sec) orthogonal time frequency symbol waveform ("error correction" OR FEC OR "channel coding" OR "error correcting" OR Hamming OR "Reed-Solomon") (combine OR merge OR interleave OR interleaving) ("user data")</p>	

Supplemental (SAO-ADS):

<b>Electronic Database Searched</b>	PatBase
<b>Files Searched</b>	<p>Full-text: AU BE BR CA CH CN DE DK EP ES FI FR GB IN JP KR SE TH TW US WO</p> <p>Bibliographic: (Europe) AT BA BE BG CH CS CY CZ DD DK EE ES FI GE GR HR HU IE IS IT LT LU LV MC MD MT NL NO PL PT RO RS SE SI SK SM TR UA YU (Asia) EA GC HK ID IL IN KZ MN MY PH RU SG SU TH TJ TW UZ VN (North America) CA CR CU DO GT HN MX NI PA SV TT (South America) AR BR CL CO EC PE UY (Australasia) AU NZ (Africa) AP DZ EG KE MA MW OA ZA ZM ZW</p>

<b>Date Conducted</b>	04 June 2018 (04.06.2018)
<b>Search Logic:</b>	
1 cpc=(H04B10/516 OR H04B7/0868 OR H04W28/0231) 1210 2 1 AND ((orthognoal WF2 time) OR offs OR ofdm) 186 3 2 AND (error OR fec) 123 4 3 AND waveform 26 5 3 AND (stream W3 (symbol* OR segment*)) 23 6 ((orthognoal WF2 time) OR offs OR ofdm) 65639 7 6 AND (error OR fec) 33176 8 7 AND (stream W3 (symbol* OR segment*)) 4553 9 8 AND waveform 828 10 9 AND (bit WF2 length*) 34 11 4 OR 5 OR 10 76	