

Diego Gonzalez

Search history

Search STAC=(satellite and node* and beam and weight near matrix and beacon) (Results 1)

1:

2: [SP]: 1. a method of communication at an access node of a communication system comprising a plurality of access nodes at geographically distributed locations providing a communication service to user terminals distributed over multiple forward user beam coverage areas via an end-to-end relay comprising multiple forward receive/transmit signal paths, the method comprising: obtaining an access node-specific forward signal for transmission via the end-to-end relay to a plurality of the user terminals grouped by the multiple forward user beam coverage areas, the access node-specific forward signal comprising a composite of forward beam signals corresponding to a plurality of the multiple forward user beam coverage areas, the forward beam signals weighted by respective beam weights of a beam weight vector associated with the access node identifying forward signal transmit timing information indicating transmission timing for the access node-specific forward signal transmitting a forward uplink signal comprising the access node-specific forward signal and an access node beacon signal to the end-to-end relay, the access node-specific forward signal having the forward signal transmit timing information synchronized to corresponding transmit timing information in the access node beacon signal receiving signaling from the end-to-end relay comprising a relay beacon signal and the access node beacon signal relayed from the end-to-end relay and adjusting the forward uplink signal to time and phase align the relayed access node beacon signal with the received relay beacon signal. 2. the method of claim 1, further comprising: demodulating the relay beacon signal to obtain receive timing information and receive phase information. 3. the method of claim 2, further comprising: demodulating the relayed access node beacon signal to obtain relayed transmit timing information and relayed transmit phase information. 4. the method of claim 3, wherein the adjusting comprises: adjusting timing of the forward uplink signal based on comparing the receive timing information to the relayed transmit timing information. 5. the method of claim 3, wherein the adjusting comprises: adjusting a phase of the forward uplink signal based on comparing the receive phase information to the relayed transmit phase information. 6. the method of claim 1, wherein the identifying comprises: demultiplexing the forward signal transmit timing information from a multiplexed access node-specific forward signal received at the access node. 7. the method of claim 1, wherein the access node-specific forward signal comprises a plurality of time-domain subsets of samples. 8. the method of claim 1, wherein: the access node-specific forward signal comprises a plurality of sub-signals associated with different subsets of the multiple forward user beam coverage areas and the transmitting the forward uplink signal comprises upconverting the plurality of sub-signals to different carrier frequencies. 9. the method of claim 1, wherein: the forward uplink signal comprises a plurality of signals transmitted over different frequency sub-bands and the multiple forward user beam coverage areas comprise a plurality of subsets of forward user beam coverage areas associated with the different frequency sub-bands. 10. an access node for communication in a communication system comprising a plurality of access nodes at geographically distributed locations providing a communication service to user terminals distributed over multiple forward user beam coverage areas via an end-to-end relay comprising multiple forward receive/transmit signal paths, comprising: a network interface that obtains an access node-specific forward signal for transmission to a plurality of the user terminals grouped by the multiple forward user beam coverage areas via the end-to-end relay, the access node-specific forward signal comprising a composite of forward beam signals corresponding to a plurality of the multiple forward user beam coverage areas, the forward beam signals weighted by respective beam weights of a beam weight vector associated with the access node a de-multiplexer that obtains forward signal transmit timing and phase information for the access node-specific forward signal a transmitter that transmits a forward uplink signal comprising an access node beacon signal and the access node-specific forward signal to the end-to-end relay a receiver that receives a downlink signal from the end-to-end relay, the downlink signal comprising a relay beacon signal and the relayed access node beacon signal relayed from the end-to-end relay a controller that determines a timing and phase adjustment to align relayed transmit timing and phase information in the relayed access node beacon signal with received relay timing and phase information in the received relay beacon signal and a transmit timing and phase compensator that outputs the forward uplink signal to the transmitter based on the timing and phase adjustment, the transmit timing and phase compensator multiplexing the access node-specific forward signal with the access node beacon signal such that the forward signal transmit timing and phase information is synchronized to corresponding transmit timing and phase information in the access node beacon signal. 11. the access node of claim 10, further comprising: a relay beacon signal demodulator that demodulates the relay beacon signal to obtain receive timing and phase information. 12. the access node of claim 11, further comprising: an access beacon signal demodulator that demodulates the relayed access node beacon signal to obtain relayed transmit timing and phase information. 13. the access node of claim 12, wherein the controller determines the timing and phase adjustment based on a comparison of the receive timing and phase information with the relayed transmit timing and phase information. 14. the access node of claim 10, wherein the access node-specific forward signal comprises a plurality of time-domain subsets of samples. 15. the access node of claim 10, wherein: the access node-specific forward signal comprises a plurality of sub-signals associated with different subsets of the multiple forward user beam coverage areas and the transmitting the forward uplink signal comprises upconverting the plurality of sub-signals to different carrier frequencies. 16. the access node of claim 10, wherein the plurality of access nodes has a first number of the access nodes and the end-to-end relay has a second number of the forward receive/transmit signal paths, wherein the first number is greater than the second number. 17. the access node of claim 10, wherein: the forward uplink signal comprises a plurality of signals transmitted over different frequency sub-bands and the multiple forward user beam coverage areas comprise a plurality of subsets of forward user beam coverage areas associated with the different frequency sub-bands. 18. the method of claim 7, wherein each of the plurality of time-domain subsets of samples comprises a plurality of interleaved samples for the access node-specific forward signal, the method further comprising: de-interleaving the interleaved samples of the access node-specific forward signal. 19. the method of claim 1, wherein the relay beacon signal comprises a pseudo-noise (pn) code. 20. the method of claim 1, wherein the relay beacon signal comprises relay frame timing information. 21. the method of claim 1, wherein the access node beacon signal comprises a pseudo-noise (pn) code associated with the access node. 22. the method of claim 21, wherein the access node beacon signal comprises transmit frame timing information. 23. the method of claim 21, wherein the adjusting the forward uplink signal comprises: adjusting a chip timing of the pn code. 24. the method of claim 9, wherein each of the plurality of subsets of forward user beam coverage areas comprises a plurality of non-overlapping forward user beam coverage areas. 25. the method of claim 9, wherein a bandwidth for each of the different frequency sub-bands is greater than or equal to 500 megahertz. 26. the access node of claim 10, wherein the relay beacon signal comprises a pseudo-noise (pn) code. 27. the access node of claim 10, wherein the relay beacon signal comprises relay frame timing information. 28. the access node of claim 10, wherein the access node beacon signal comprises a pseudo-noise (pn) code associated with the access node. 29. the access node of claim 28, wherein the access node beacon signal comprises transmit frame timing information. 30. the access node of claim 17, wherein each of the plurality of subsets of forward user beam coverage areas comprises a plurality of non-overlapping forward user beam coverage areas. (Results 0)

Search STAC=(satellite and node* and beam and weight and matrix and beacon) (Results 2)

3:

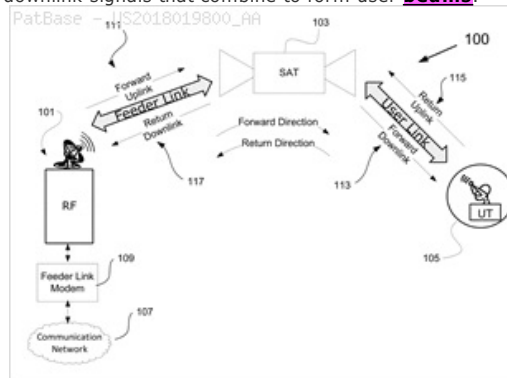
Title: **SATELLITE** FOR END-TO-END BEAMFORMING WITH ACCESS **NODE** CLUSTERS

Abstract: Methods and systems are described for providing end-to-end beamforming. For example, end-to-end beamforming systems include end-to-end relays and ground networks to provide communications to user terminals located in user **beam** coverage areas. The ground segment can include geographically distributed access **nodes** and a central processing system. Return uplink signals, transmitted from the user terminals, have multipath induced by a plurality of receive/transmit signal paths in the end to end relay and are relayed to the ground network. The ground network, using beamformers, recovers user data streams transmitted by the user terminals from return downlink signals. The ground network, using beamformers generates forward uplink signals from appropriately **weighted** combinations of user data streams that, after relay by the end-to-end relay, produce forward downlink signals that combine to form user **beams**.

Classifications:

International (IPC 8-9): H01Q1/06 H01Q1/28 H01Q21/00 H01Q3/24 H01Q3/40 H04B H04B10/118 H04B7/06 H04B7/14 H04B7/185 H04B7/204 H04B7/212 H04W16/28 H04W40/20 H04W56/00 H04W76/02 (Advanced/Invention); H01Q1/24 H01Q21/00 H04W16/26 H04W16/28 (Advanced/Non-invention); H04B (Subclass/Invention)

CPC: H04B7/2041 H04B7/18513 H04B7/18517 H04B7/1858 H04B7/18586 H04W40/20 H01Q1/288 H01Q1/06 H04W16/28 H01Q21/0025 H04W16/26 H04B10/118 H01Q3/247 H01Q5/50 H01Q1/247 H04B7/204 H01Q3/40 H04W76/02 H04B7/0617 H04B7/18508 H04B7/18589 H04W56/001 H04B7/18515 H04W76/10 H01Q19/132 H01Q21/24 H01Q25/001



Family:

Publication number	Publication date	Application number	Application date
AU2016271086 AA	20161208	AU20160271086	20160408
AU2016283501 AA	20161229	AU20160283501	20160408
AU2017207482 AA	20170720	AU20170207482	20170113
CA2981855 AA	20171004	CA20162981855	20160408
CA2981857 AA	20171004	CA20162981857	20160408
CA2982489 AA	20171011	CA20172982489	20170113
CL2017002528 A1	20180302	CL20170002528	20171006
CL2017002529 A1	20180302	CL20170002529	20171006
CL2017002530 A1	20180302	CL20170002530	20171006
CN107615681 A	20180119	CN201780001109	20170113
CN107636985 A	20180126	CN201680019675	20160408
CN107667485 A	20180206	CN201680019691	20160408
CO20170010203 A2	20180116	CO20170010203	20171006
CO20170010204 A2	20171020	CO20170010204	20171006
CO20170010205 A2	20171020	CO20170010205	20171006
CR20170458 A	20180226	CR20170000458	20160408
CR20170459 A	20180205	CR20170000459	20170113
CR20170460 A	20180205	CR20170000460	20160408
DOP2017000233 A	20180131	DO20170000233	20171006
EP3281308 A2	20180214	EP20160781585	20160408
EP3281309 A2	20180214	EP20160781881	20160408
EP3298703 A1	20180328	EP20170703844	20170113
IL254628 A0	20171130	IL20160254628	20160408
IL254630 A0	20171130	IL20160254630	20160408
IL254633 A0	20171130	IL20170254633	20170113
IN201717035184 A	20171124	IN201717035184	20171004
IN201717035335 A	20171201	IN201717035335	20171005
IN201717035550 A	20171201	IN201717035550	20171006
KR20170136594 A	20171211	KR20177032517	20160408
KR20170137156 A	20171212	KR20177032518	20160408
MX2017012969 A1	20171124	MX20170012969	20160408
MX2017012970 A1	20171124	MX20170012970	20160408
MX2017012971 A1	20171124	MX20170012971	20170113
PE01382018 A1	20180118	PE20170002007	20170113
PH2017501844 A	20180226	PH20170501844	20171009
PH2017501845 A	20180226	PH20170501845	20171009
PH2017501846 A	20180226	PH20170501846	20171009
SG11201708074W A1	20171030	SG20171108074	20170113
SG11201708178W A1	20171129	SG20171108178	20160408
SG11201708179X A1	20171129	SG20171108179	20160408
SV2017005543 A	20180226	SV20170005543	20171010
US2018019800 AA	20180118	US20170719186	20170928
US2018019804 AA	20180118	US20170719209	20170928
US2018019805 AA	20180118	US20170719249	20170928
US2018019806 AA	20180118	US20170719272	20170928
US2018019811 AA	20180118	US20170719307	20170928
US2018026709 AA	20180125	US20170715475	20170926
US2018026710 AA	20180125	US20170714203	20170925
US2018034539 AA	20180201	US20170714129	20170925
US2018034540 AA	20180201	US20170715497	20170926

US2018041269 AA	20180208	US20170714047	20170925
US2018041270 AA	20180208	US20170715537	20170926
US9954601 BB	20180424	US20170719272	20170928
WO16195813 A2	20161208	WO2016US26813	20160408
WO16195813 A3	20170223	WO2016US26813	20160408
WO16195813 A9	20161229	WO2016US26813	20160408
WO16209332 A2	20161229	WO2016US26815	20160408
WO16209332 A3	20170223	WO2016US26815	20160408
WO17124004 A1	20170720	WO2017US13518	20170113

Priority:

US20150145804P	20150410	US20150145810P	20150410	US20150164456P	20150520
US20160278368P	20160113	US20160298911P	20160223	US20160312342P	20160323
US20160314921P	20160329	US20160314416P	20160329	WO2016US26815	20160408
WO2016US26813	20160408	WO2016US26815	20160410	US20160431416P	20161207
WO2017US13518	20170113	WO2016US26815	20170113	US20170714203	20170925
US20170714129	20170925	US20170714047	20170925	US20170715475	20170926
US20170715497	20170926	US20170715537	20170926	US20170719209	20170928
US20170719186	20170928	US20170719249	20170928	US20170719272	20170928
US20170719307	20170928				

Probable Assignee: VIASAT INC

Assignee(s): (std): VIASAT INC

Assignee(s): RUNYON DONALD ; BUER KENNETH ; CRONIN CHRISTOPHER ; DANKBERG MARK ; MILLER MARK

Inventor(s): (std): BUER KENNETH ; BUER KENNETH V ; CRONIN CHRISTOPHER ; CRONIN CHRISTOPHER J ; DANKBERG MARK ; DANKBERG MARK D ; MILLER MARK ; MILLER MARK J ; RUNYON DONALD ; RUNYON DONALD L ; MARK MILLER ; MARK DANKBERG ; KENNETH BUER ; DONALD RUNYON ; CHRISTOPHER CRONIN

Agent(s): ADAMS PLUCK; BORDEN LADNER GERVAIS LLP; ESTUDIO CAREY LTDA; MAURICIO JARAMILLO CAMPUZANO; EIP; RALSTON WILLIAM ET AL; PUTNAM JONATHAN ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: METHOD FOR ITERATIVE ESTIMATION OF GLOBAL PARAMETERS

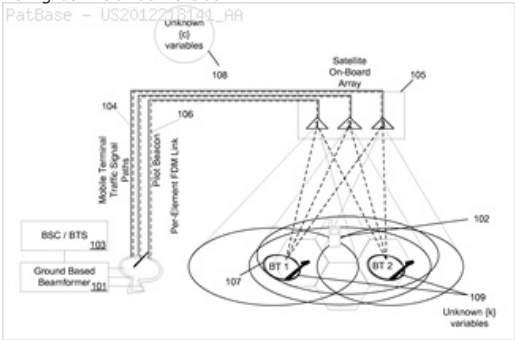
Abstract: A method for iterative estimation of a set of unknown channel parameters in a beamforming network including determining a first order estimate of offsets at measurement **nodes** and an estimate of the confidence in the initial estimate of the measurement **nodes** offsets, and iterating, until a desired estimation accuracy is obtained, determining an improved estimate of a parameter set, and the confidence in the estimates, using the prior estimate of the offsets at the measurement **nodes** and determining an improved estimate of the offsets at the measurement **nodes** and the associated confidence values using the prior estimate of the parameter set and the corresponding confidence values.

Classifications:

International (IPC 8-9): H01Q3/00 H01Q3/26 H04B1/00 H04B15/00 H04B7/185 (Advanced/Invention)

CPC: H01Q3/267

US: 1/1 342/354 342/354P 342/373 342/373S 342/377 342/377S



Family:

Publication number	Publication date	Application number	Application date
US2012218141 AA	20120830	US20120403532	20120223
US2013044024 AB	20130221	US20120403532	20120223
US9099776 BB	20150804	US20120403532	20120223

Priority:

US20110447439P 20110228 US20120403532 20120223

Probable Assignee: HUGHES NETWORK SYSTEMS LLC

Assignee(s): (std): CORRIGAN III JOHN ; CORRIGAN III JOHN E ; HUANG XIAOLING ; HUGHES NETWORK SYSTEMS LLC ; RAVISHANKAR CHANNASANDRA ; VASAVADA YASH ; PUROHIT AMBARISH

Assignee(s): WELLS FARGO BANK NATIONAL ASSOCIATION COLLATERAL AGENT AS

Inventor(s): (std): RAVISHANKAR CHANNASANDRA ; CORRIGAN III JOHN E ; VASAVADA YASH ; PUROHIT AMBARISH ; HUANG XIAOLING ; CORRIGAN III JOHN

Agent(s): K AND L GATES LLP