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..SEMSEARCH "COMMUNICATION" 64 "CONSTELLATION" 94 "GLOBAL COVERAGE" 78 "INTER SATELLITE LINK" 68 "LOW EARTH ORBIT" 70 "SATELLITE" 100 "SATELLITE COMMUNICATION" 100 "CIRCULAR ORBIT" 100 "INCLINED LEO CONSTELLATION" 100 "GEO SATELLITE" 100 "ISL" 100 "LEO CONSTELLATION" 100 "POLAR LEO CONSTELLATION" 100

..SIMILARITY SS 1 RANKED 3-4

10 Documents

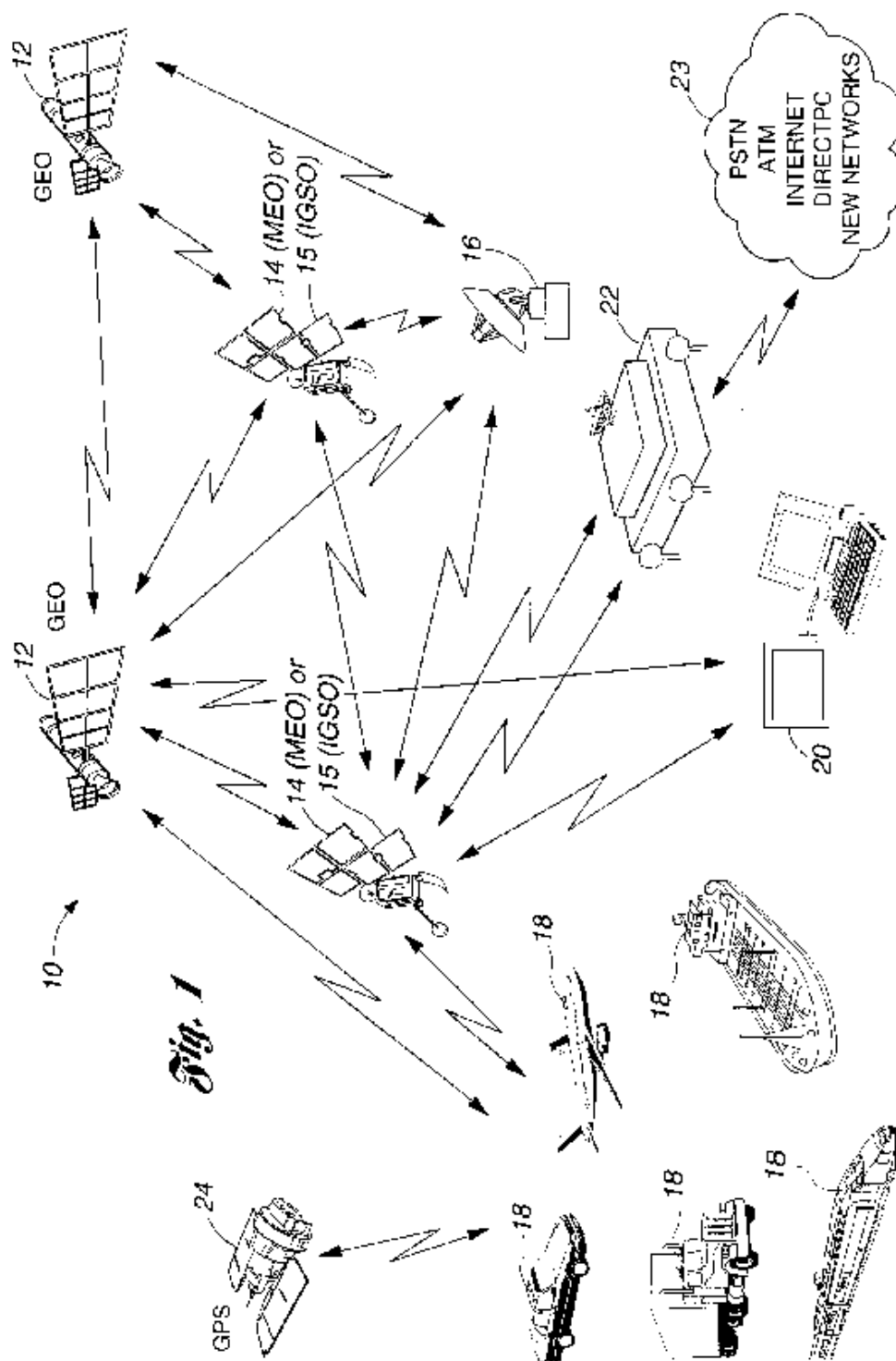
Publication numbers	Title	Current assignees
EP-883252 A2	Method and system for providing wideband communications to mobile users in a satellite-based network	DIRECTV
US20030207684 A1	Broadband communication system for mobile users in a satellite-based network	HUGHES ELECTRONICS
US5678175 A	Satellite system using equatorial and polar orbit relays	LEO ONE IP
US7020462 B1	Communications system using a satellite-based network with a plurality of spot beams providing ubiquitous coverage from two different satellites	HUGHES ELECTRONICS
EP-728386 A1	System with satellites on equatorial and inclined orbits relaying information through intersatellites link and earth relays	LEO ONE IP
US5666648 A	Polar relay system for satellite communication	LEO ONE IP
EP-787387 A2	Optimal coverage satellite system for a low earth orbit store-and-forward telecommunication network	LEO ONE IP
EP-887951 A2	Method and system for communicating high rate data in a satellite-based communications network	HUGHES ELECTRONICS
US5736959 A	Earth-fixed cell beam management for satellite communication system using dielectric lens-focused scanning beam antennas	WENGEN WIRELESS
EP3443688 A1	Dual leo satellite system and method for global coverage	TELESAT CANADA

Family 1/10 - FAMPAT - ©Questel

Title

(EP-883252)

Method and system for providing wideband communications to mobile users in a satellite-based network

Images**Publication numbers with kind code & date**

US7750863	B2	2010-07-06	US7750863
DE69838272	T2	2008-05-15	DE69838272
US20080064328	A1	2008-03-13	US20080064328
US7324056	B2	2008-01-29	US7324056
DE69838272	D1	2007-10-04	DE69838272



EP0883252	B1	2007-08-22	EP-883252				
US20040157554	A1	2004-08-12	US20040157554				
EP0883252	A3	2003-06-04	EP-883252				
US6339707	B1	2002-01-15	US6339707				
US6032041	A	2000-02-29	US6032041				
EP0883252	A2	1998-12-09	EP-883252				

IPC - International classification

H01Q-003/00; H01Q-003/00; H04B-007/185; H04B-007/185

Abstract

(EP0883252)

A satellite-based communications system operating at high data rates includes a plurality of satellites (12, 14, 15) each having uplink and downlink antennas (30,32) for transmitting and receiving a plurality of signals utilizing a plurality of spot beams to and from a plurality of coverage areas (43) at a predetermined range of frequencies. Each of the satellites (12, 14, 15) transmit and receive the signals at one of a first plurality of data rates. The system also includes a plurality of user terminals (18,20) for transmitting and receiving signals to and from the plurality of communications satellites (12, 14, 15) at the predetermined range of frequencies and at one of the first plurality of data rates. Each of the user terminals (18,20) having a steerable antenna for tracking relative movement of each of the user terminals (18,20) with respect to each of the plurality of communications satellites (12, 14, 15) and for tracking movement of each of the plurality of communications satellites (12, 14, 15) in order to maintain communications with the plurality of communications satellites (12, 14, 15).

<IMAGE>

Inventors

WAINFAN LYNNE S

WESEL ELLEN K

WANG ARTHUR W

PAVLOFF MICHAEL S

Latest standardized assignees - inventors removed

DIRECTV

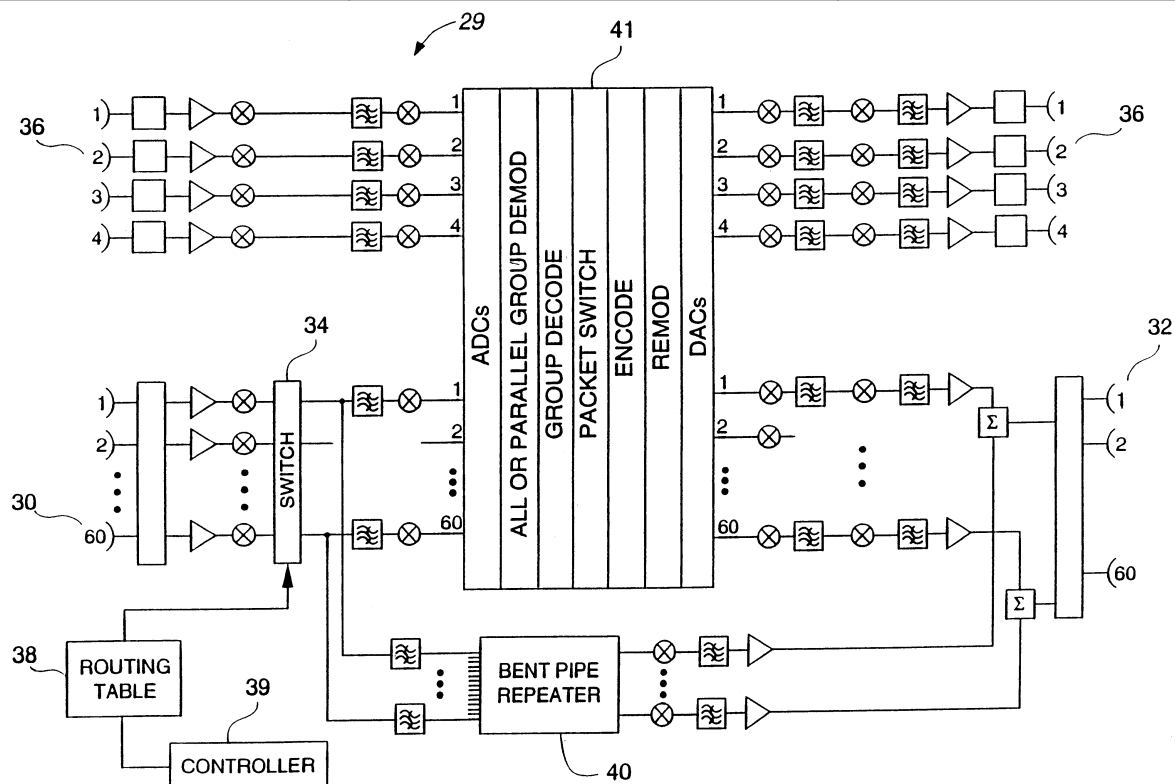
Family 2/10 - FAMPAT - ©Questel

Title

(US6708029)

Broadband communication system for mobile users in a satellite-based network

Images



Publication numbers with kind code & date

US6708029

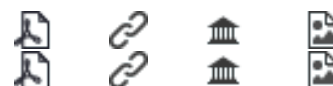
B2 2004-03-16

US6708029

US20030207684

A1 2003-11-06

US20030207684



IPC - International classification

H04B-007/185; H04B-007/185

Abstract

(US20030207684)

A satellite-based communications system operating at high data rates includes a plurality of satellites each having uplink and downlink antennas for transmitting and receiving a plurality of signals utilizing a plurality of spot beams to and from a plurality of coverage areas at a predetermined range of frequencies. The system can include, or be combined with, other systems to enable increased capacity over high population areas and ubiquitous coverage over lower population areas. A portable antenna assembly can be coupled to a user's portable or mobile electronic device for coupling the electronic device directly to a satellite. A routing switch provides routing and switching on-board the satellite and routes signals according to their desired destination.

Inventors

WESEL ELLEN K

Latest standardized assignees - inventors removed

HUGHES ELECTRONICS

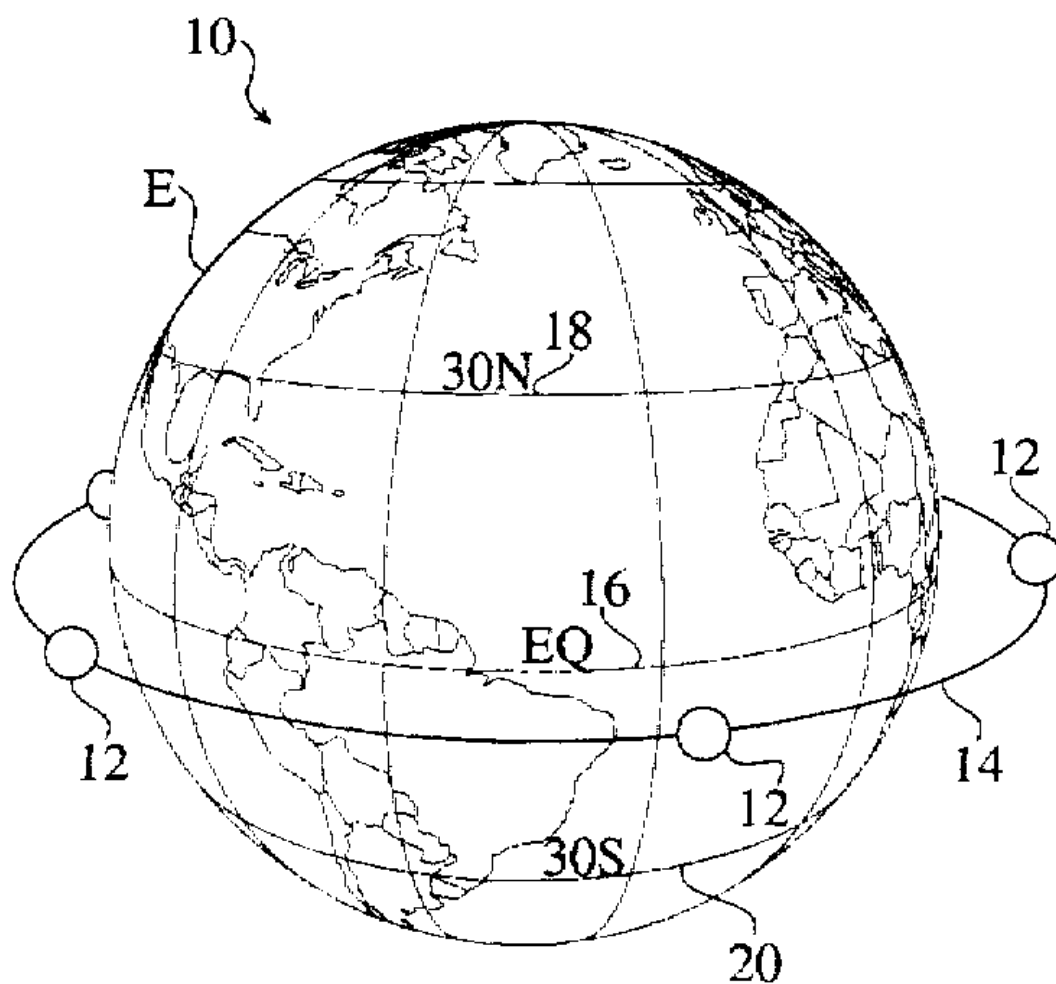
Family 3/10 - FAMPAT - ©Questel

Title

(US5678175)

Satellite system using equatorial and polar orbit relays

Images



Publication numbers with kind code & date

US5678175	A	1997-10-14	US5678175
SV1994000021	A	1995-05-02	SV9400021
TW239242	B	1995-01-21	TW-239242



IPC - International classification

H04B-007/14; H04B-007/14; H04B-007/185; H04B-007/185; H04B-007/195; H04B-010/118; H04N-007/20

Abstract

(US5678175)

A satellite communications system is disclosed. One of the embodiments of the present invention includes six to fourteen satellites (12) which operate in a single Equatorial orbit (14). These satellites (12) are capable of providing communications services to locations on the Earth (E) which are within thirty degrees of the Equator (16). Another embodiment of the invention utilizes both the single Equatorial orbit plane (14) in combination with other satellites (12) moving in polar or inclined orbits (60, 63, 210). The embodiment that combines satellites (12) in Equatorial (14), polar (60) and inclined (63, 210) orbits will provide a wide variety of data services to virtually any point on the globe. In the preferred embodiments, the satellites (12) are designed to operate in a circular low Earth orbit at an altitude of from 800 to 1852 kilometers. Although the preferred embodiments utilize this specific range of altitudes, the satellites (12) are designed to fly in any orbit that is not a geosynchronous orbit. The satellites (12) are also capable of speeding packetized messages (225) around the globe either by working in combination with relay stations (34, 61, 65) on the ground, by transferring message payloads (225) across different orbits via the relay stations (34, 61, 65) or by conveying packetized payloads (225) through the use of inter-satellite links (55).

Inventors

STUART JAMES R

STURZA MARK ALAN

VILLALVAZO JOSE MANUEL

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PETERS ARTHUR K

SMITH STEVEN W

Latest standardized assignees - inventors removed

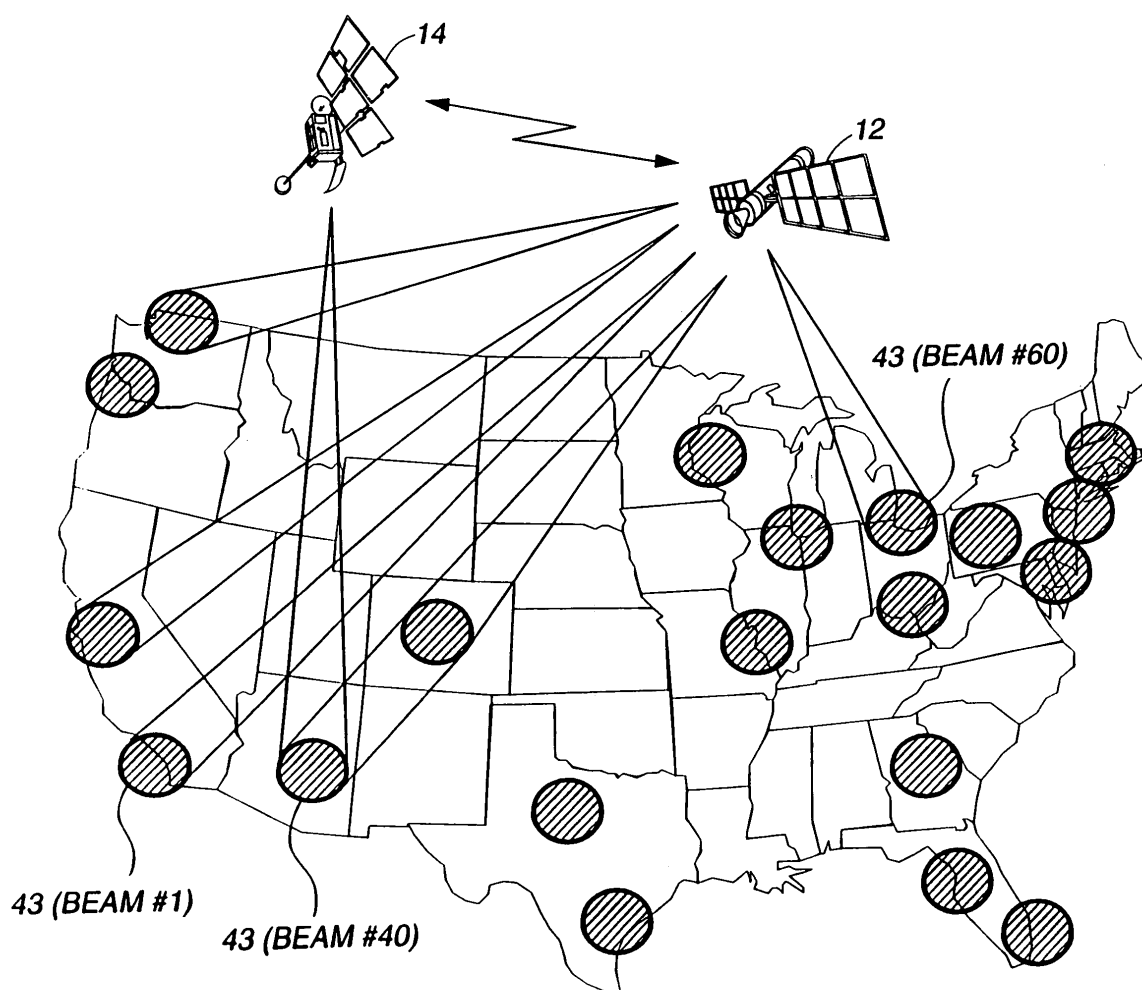
LEO ONE IP

Family 4/10 - FAMPAT - ©Questel

Title

(US7020462)

Communications system using a satellite-based network with a plurality of spot beams providing ubiquitous coverage from two different satellites

Images**Publication numbers with kind code & date**[US7020462](#)

B1 2006-03-28

US7020462

**IPC - International classification**

H04Q-007/20

Abstract

(US7020462)

A satellite-based communications system operating at high data rates includes a plurality of satellites each having uplink and downlink antennas for transmitting and receiving a plurality of signals utilizing a plurality of spot beams to and from a plurality of coverage areas at a predetermined range of frequencies. The system can include, or be combined with, other systems to enable increased capacity over high population areas and ubiquitous coverage over lower population areas. A

portable antenna assembly can be coupled to a user's portable or mobile electronic device for coupling the electronic device directly to a satellite. A routing switch provides routing and switching on-board the satellite and routes signals according to their desired destination.

Inventors

WESEL ELLEN K

Latest standardized assignees - inventors removed

HUGHES ELECTRONICS

Family 5/10 - FAMPAT - ©Questel

Title

(EP-728386)

System with satellites on equatorial and inclined orbits relaying information through intersatellites link and earth relays

Images

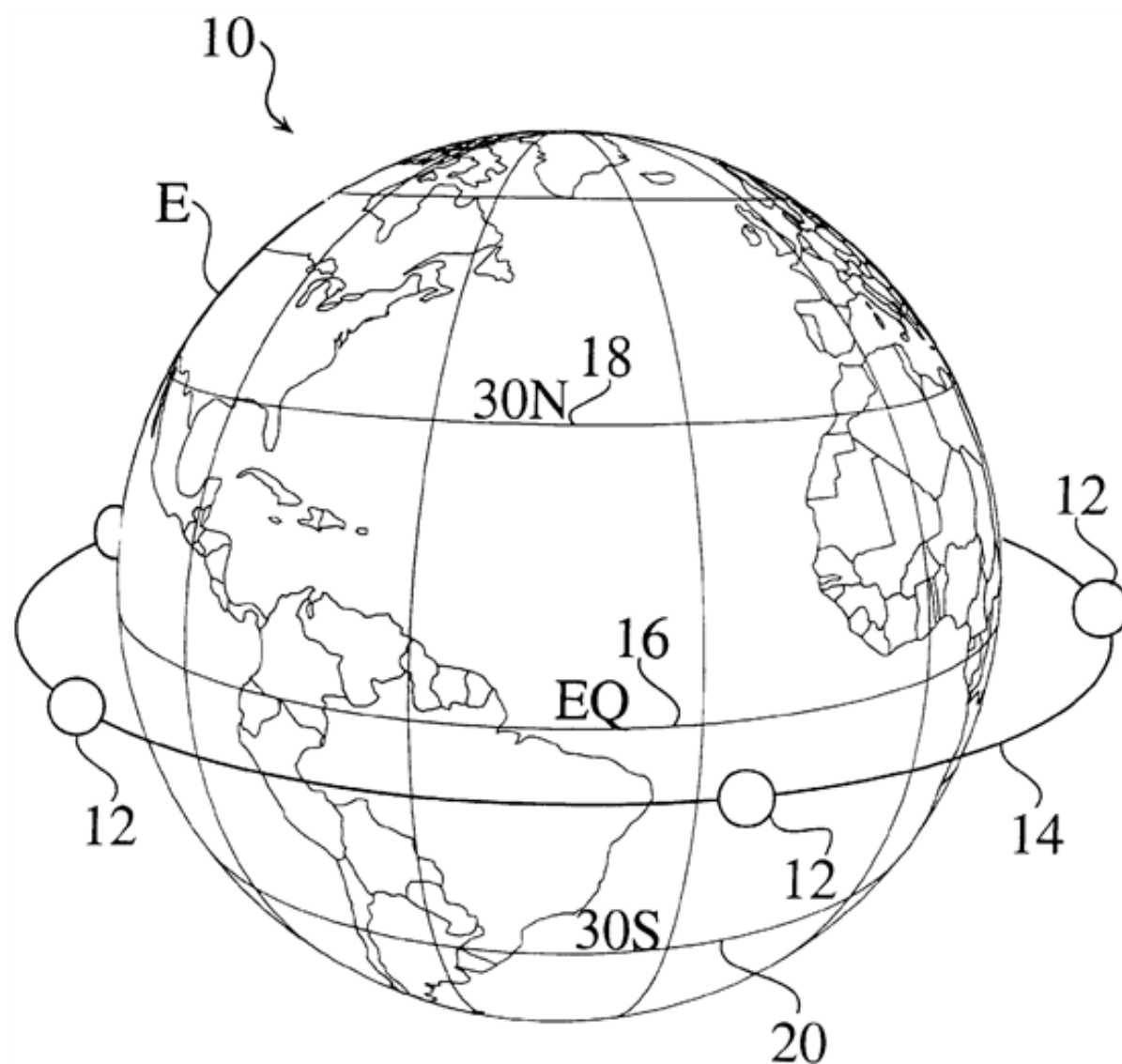


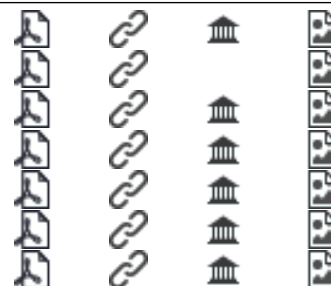
Fig. 1

Publication numbers with kind code & date

OA10719	A	2001-06-05	OA--10719
DE69416158	D1	1999-03-04	DE69416158
AT176110	T	1999-02-15	ATE176110
EP0728386	B1	1999-01-20	EP-728386



AU700038	B2	1998-12-17	AU-700038
AP9700985	A0	1997-07-31	AP9700985
BR9408022	A	1996-12-10	BR9408022
EP0728386	A1	1996-08-28	EP-728386
AU1253395	A	1995-05-29	AU9512533
CA2174671	A1	1995-05-18	CA2174671
WO95/13671	A1	1995-05-18	WO9513671

**IPC - International classification**

H04B-007/185; H04B-007/185; H04B-007/195

Abstract

(EP0728386)

A satellite system is disclosed. One embodiment of the invention utilizes both a single equatorial orbit plane (14) in combination with other satellites (12) moving in polar or inclined orbits (60, 63, 210). Although the preferred embodiments utilize a specific range of low Earth orbit altitudes, the satellites (12) are designed to fly in any orbit that is not a geosynchronous orbit. The satellites (12) are also capable of speeding packetized messages (225) around the globe either by working in combination with relay stations (34, 61, 65) on the ground, by transferring message payloads (225) across different orbits via the relay stations (34, 61, 65) or by conveying packetized payloads (225) through the use of inter-satellite links (55). The present invention will provide a wide range of non-voice, non-geostationary mobile satellite services to millions of subscribers around the globe.

Inventors

STUART JAMES R

STURZA MARK ALAN

VILLALVAZO JOSE MANUEL

Latest standardized assignees - inventors removed

LEO ONE IP

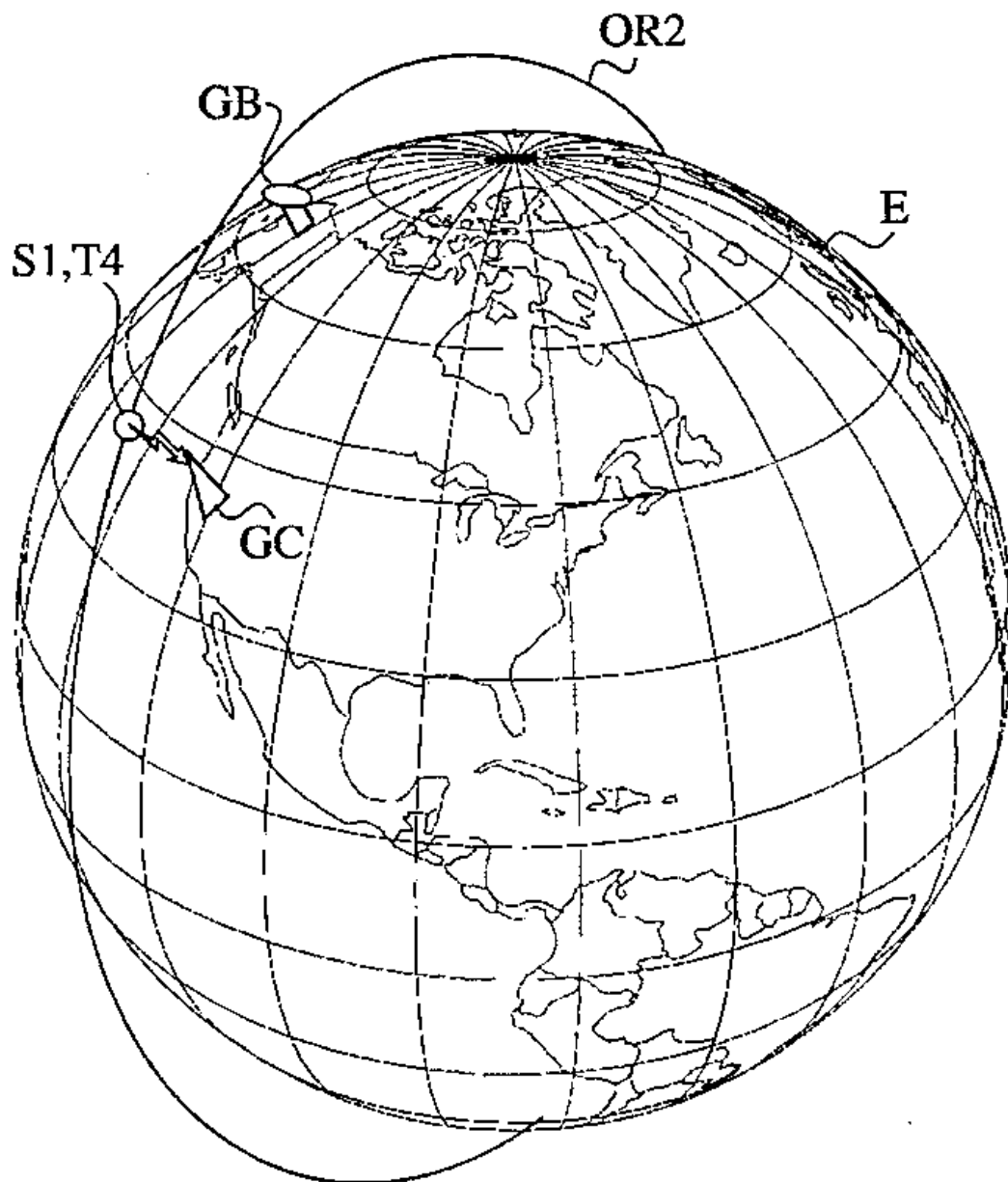
Family 6/10 - FAMPAT - ©Questel

Title

(US5666648)

Polar relay system for satellite communication

Images

**Publication numbers with kind code & date**[US5666648](#)

A

1997-09-09

US5666648

**IPC - International classification**

H04B-007/185; H04B-007/185; H04B-007/195

Abstract

(US5666648)

One of the preferred embodiments of the present invention is a telecommunications system that includes twelve satellites (S) which are equally deployed in four polar low Earth orbits (OR). A preferred embodiment provides a system for transmitting a message between two terminals (G) on the ground through a store-and-forward network. A first satellite (S1/OR1) traveling in a first polar orbit (OR1) receives and stores a message from a sending terminal (GA) on the surface of the Earth (E). As the first satellite (S1/OR1) passes over the North Pole (NP), it transmits the stored message from the sending terminal (GA) down to a relay station (GB) located near the North Pole (NP). The message is stored at this polar relay station (GB) until a second satellite (S1/OR2) moving in a second orbit (OR2) flies within range. At that time, the polar relay station (GB) sends the stored message up to the second satellite (S1/OR2), which stores the message and finally transmits it to a receiving terminal (GC) somewhere on the ground. This store-and-forward relay method takes advantage of the geometry of a system that employs more than one satellite which each operate in different polar orbits. The different polar orbits allow the satellites to fly over different parts of the globe frequently. The rotation of the Earth beneath the

satellites allows every satellite in the system to fly over vast regions of the Earth's surface and, therefore, to communicate with a very large number of terminals located virtually anywhere in the world. The present invention provides a wide variety of communication systems without requiring costly and complex intersatellite links.

Inventors

STUART JAMES R

Latest standardized assignees - inventors removed

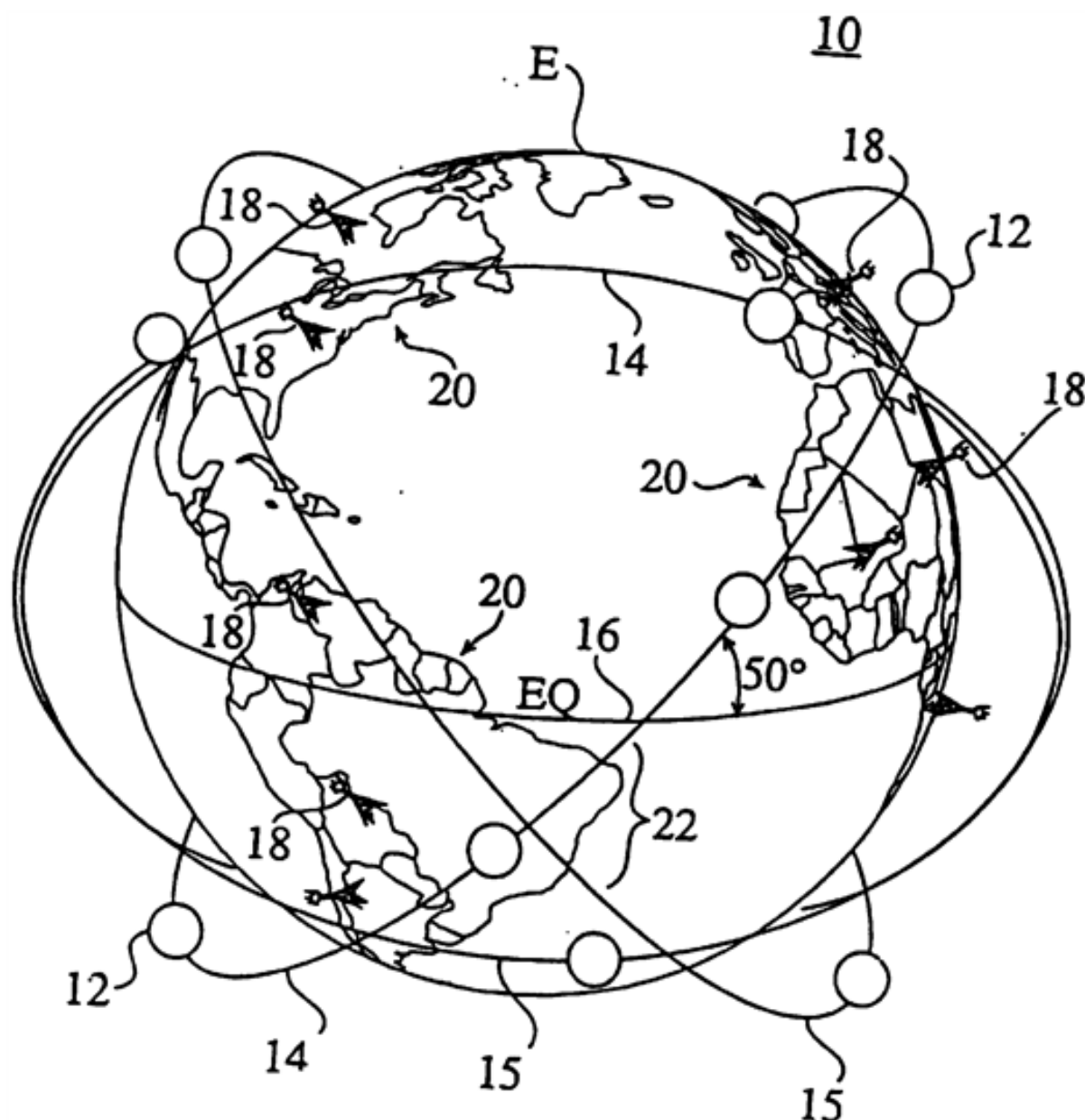
LEO ONE IP

Family 7/10 - FAMPAT - ©Questel

Title

(EP-787387)

Optimal coverage satellite system for a low earth orbit store-and-forward telecommunication network

Images**Fig. 1****Publication numbers with kind code & date**[DE69519523](#)

T2 2001-04-05

DE69519523

[DE69519523](#)

D1 2001-01-04

DE69519523



AT197861	T	2000-12-15	ATE197861				
EP0787387	B1	2000-11-29	EP-787387				
MX9702655	A	1998-02-28	MX9702655				
EP0787387	A2	1997-08-06	EP-787387				
WO96/12356	A3	1996-05-23	WO9612356				
AU4128196	A	1996-05-06	AU9641281				
CA2201470	A1	1996-04-25	CA2201470				
WO96/12356	A2	1996-04-25	WO9612356				

IPC - International classification

H04B-007/195; H04B-007/195

Abstract

(EP0787387)

A telecommunications system is disclosed which includes a constellation (10) of satellites (12) equally deployed in four pairs (22) of circular, low Earth orbits (14, 15) inclined at fifty degrees with an interplane phase angle of zero degrees. The system enables two terminals (20) on the ground to communicate through a store-and-forward network.

Inventors

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VILLALVAZO JOSE MANUEL

GOLDMAN ERIK J

PETERS ARTHUR K

BAYER DAVID A

SMITH STEVEN W

Latest standardized assignees - inventors removed

LEO ONE IP

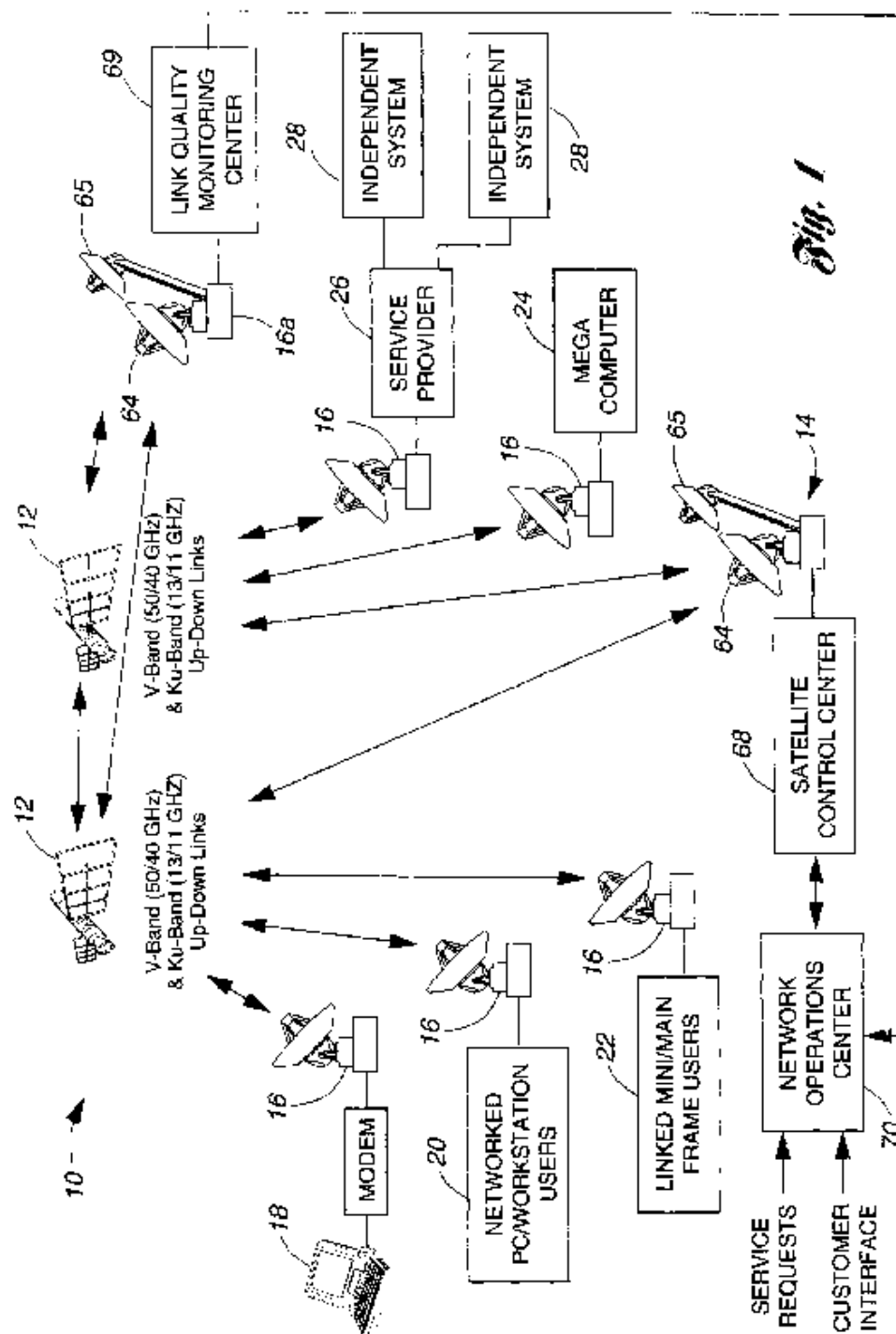
Family 8/10 - FAMPAT - ©Questel

Title

(EP-887951)

Method and system for communicating high rate data in a satellite-based communications network

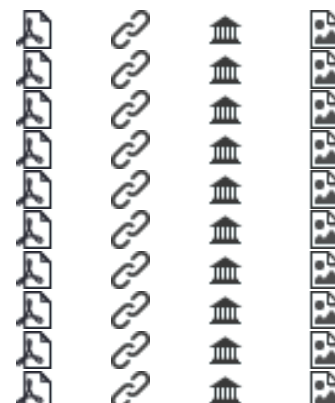
Images



Publication numbers with kind code & date

DE69839238	T2	2009-03-19	DE69839238
DE69839238	D1	2008-04-24	DE69839238
EP0887951	B1	2008-03-12	EP-887951
EP0887951	A3	2003-11-26	EP-887951
US6336030	B2	2002-01-01	US6336030
US6324381	B1	2001-11-27	US6324381
US20010018327	A1	2001-08-30	US20010018327
US6272317	B1	2001-08-07	US6272317
US6125261	A	2000-09-26	US6125261
EP0887951	A2	1998-12-30	EP-887951

IPC - International classification



H04B-007/185; H04B-007/185

Abstract

(EP0887951)

A satellite-based communications system (10) operating at high data rates includes a plurality of communications satellites (12) each having an uplink and a downlink antenna (38,44) for receiving and transmitting a plurality of spot beams corresponding to a plurality of coverage areas (43) at a plurality of frequencies. The system further includes a plurality of dedicated communications links between a source location in one of the plurality of coverage areas (43) and a destination location in another one of the plurality of coverage areas (43) wherein the plurality of dedicated communications links are each assigned an exclusive time interval for transmitting and receiving communications signals to and from each of the plurality of satellites (12). The plurality of satellites (12) each have an uplink and downlink antenna beam switch (39,41) coupled to the uplink and downlink antennas (38,44) for selecting a reconfigurable subset of the plurality of spot beams based on the time interval. The plurality of satellites (12) each further have a primary communication payload (32) for receiving and transmitting signals at a primary range of frequencies in each of the plurality of spot beams and a secondary communication payload (34) for receiving and transmitting signals at a secondary range of frequencies in each of the plurality of spot beams upon occurring a drop-out of the primary communication payload (32). The system further includes a plurality of user terminals (16) having a primary communication antenna (64) for transmitting and receiving signals to and from each of the plurality of satellites (12) at the primary range of frequencies. <IMAGE>

Inventors

ANSELMO CARL S

HOUSTON SAM W

SULLIVAN DANIEL P

Latest standardized assignees - inventors removed

HUGHES ELECTRONICS

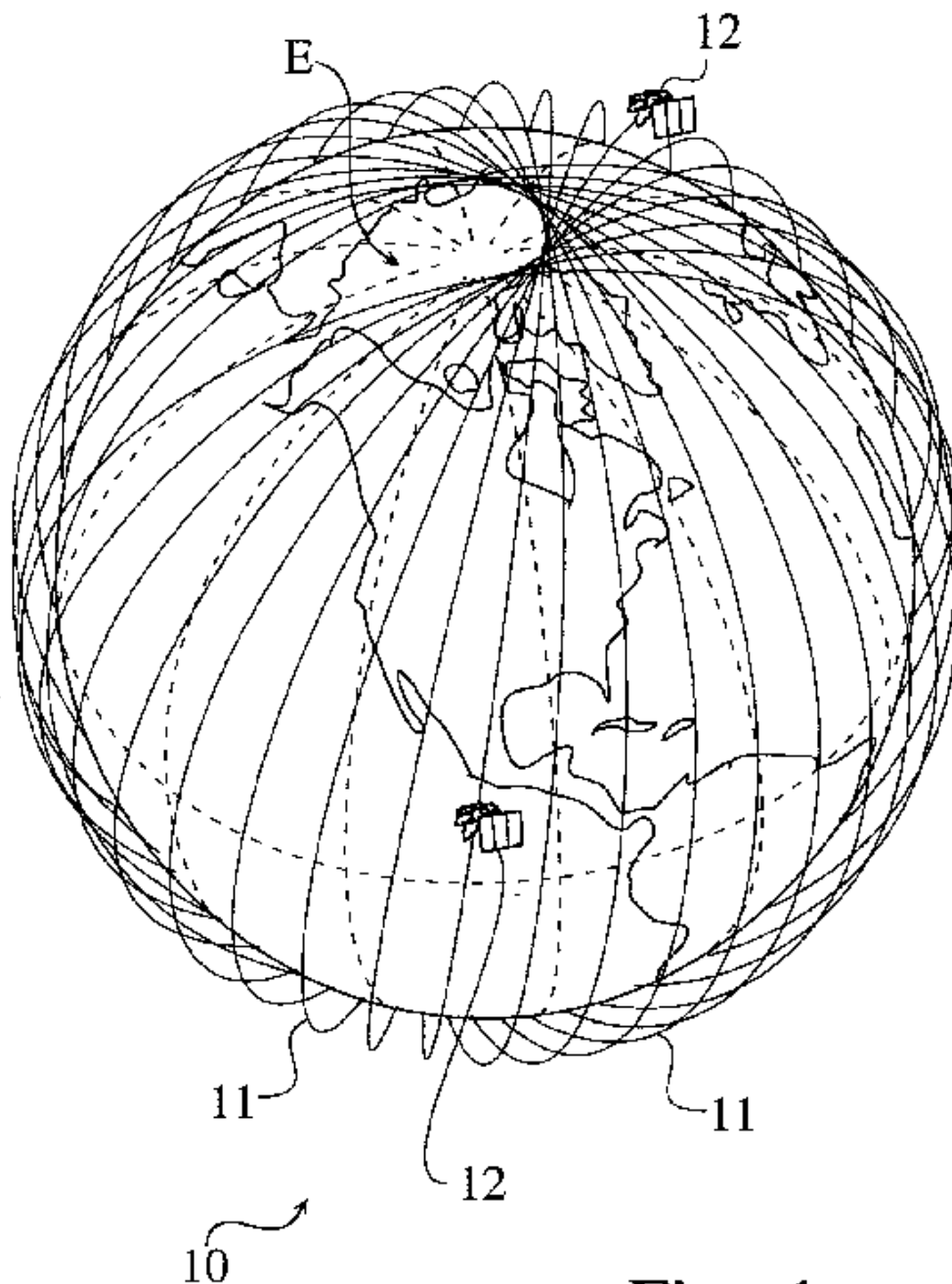
Family 9/10 - FAMPAT - ©Questel

Title

(US5736959)

Earth-fixed cell beam management for satellite communication system using dielectric lens-focused scanning beam antennas

Images

**Fig. 1****Publication numbers with kind code & date**[US5736959](#)

A 1998-04-07

US5736959

**IPC - International classification**

H01Q-001/24; H01Q-001/28; H01Q-003/24; H01Q-003/26; H01Q-005/00; H01Q-015/02; H01Q-021/06; H01Q-025/00; H04B-007/185; H04B-007/195; H04B-007/204

Abstract

(US5736959)

Earth-fixed cell beam management methods which may be employed to allocate beams generated by a constellation of low Earth orbit satellites (12) flying in orbits below geosynchronous altitudes are disclosed. These beams (19) are electronically steered so that they illuminate "Earth-fixed cells" (26) as opposed to "satellite-fixed cells." Beam steering apparatus using a spherical dielectric lens (106) is disclosed. In a system that employs satellite-fixed cells, the "footprint" of the beams

propagated by a spacecraft defines the zone on the ground called a "cell" which is illuminated by the spacecraft. This satellite-fixed cell moves constantly as the spacecraft moves around the globe. In sharp contrast, an "Earth-fixed cell" (26) is a stationary region mapped onto the surface of the Earth (E) that has permanent fixed boundaries, just like a city or a state. Although the rapidly moving satellites (12) still shine their beams over the ground in rapidly moving footprints (16), the locations of the footprints at any given time do not determine the location of the unchanging Earth-fixed cells (26). The great advantage provided by using cells having boundaries that are fixed to an Earth-fixed grid (20) is realized when a subscriber being served by one satellite must switch to another beam in the same satellite or to a second satellite because the first is moving out of range below the local horizon. With satellite-fixed cells, this "hand-off" involves the assignment to the terminal of a new communication channel within the new beam or new satellite. This assignment process takes time and consumes processing capacity at both the terminal and the satellite. It is also subject to blocking, call interruption, and call dropping if there is not an idle communication channel in the next serving beam or satellite. The Earth-fixed cell method avoids these problems by allocating communication channels (frequency, code, and/or time slot) on an Earth-fixed cell basis rather than on a satellite-fixed cell basis. Regardless of which satellite/beam is currently serving a particular cell, the terminal maintains the same channel assignment, thus ameliorating the "hand-off" problem.

Inventors

PATTERSON DAVID PALMER

STURZA MARK ALAN

Latest standardized assignees - inventors removed

WENGEN WIRELESS

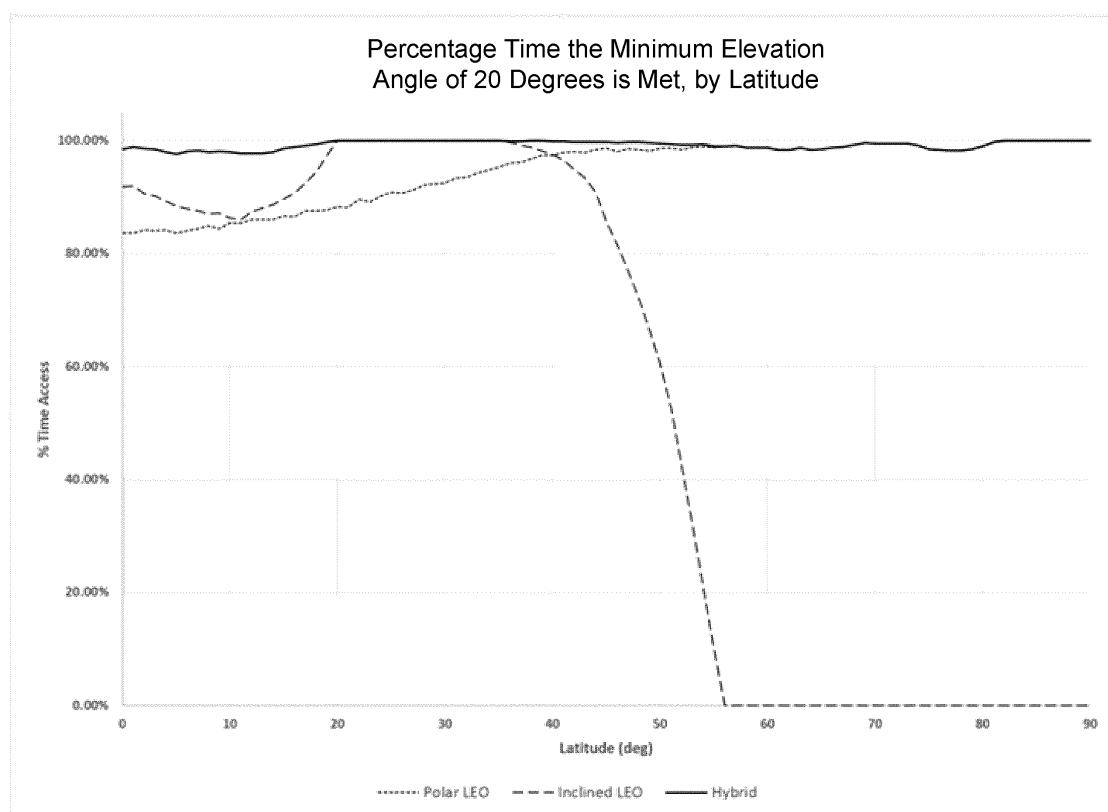
Family 10/10 - FAMPAT - ©Questel

Title

(EP3443688)

Dual leo satellite system and method for global coverage

Images



Publication numbers with kind code & date

ZA201806772

B

2019-07-31

ZA201806772



US20190181946	A1	2019-06-13	US20190181946				
JP2019514295	A	2019-05-30	JP2019514295				
MX2018012616	A	2019-05-30	MX2018012616				
VN62570	A	2019-04-25	VN--62570				
EA201892334	A1	2019-03-29	EA201892334				
EP3443688	A1	2019-02-20	EP3443688				
BR112018070877	A2	2019-02-05	BR112018070877				
CL2018002927	A1	2019-01-25	CL201802927				
CN109155669	A	2019-01-04	CN109155669				
IN201817042472	A	2019-01-04	IN201817042472				
AU2017251218	A1	2018-11-29	AU2017251218				
CO2018011303	A2	2018-10-31	CO2018011303				
BR112018070877	A1	2018-10-23	BR112018070877				
CA3020760	A1	2017-10-19	CA3020760				
WO2017/177343	A1	2017-10-19	WO2017177343				
CA2927217	A1	2017-10-14	CA2927217				

IPC - International classification

B64G-003/00; H01Q-003/00; H01Q-021/00; H04B-007/15; H04B-007/185; H04B-007/185; H04B-007/195; H04B-007/195; H04H-020/74; H04H-020/91; H04W-084/06

Abstract

(EP3443688)

The present invention relates to satellite systems and more particularly, to the provision of a satellite system and method for communications applications, with global coverage. An optimal method of providing global broadband connectivity has been discovered which uses two different LEO constellations with inter-satellite links among the satellites in each constellation, and inter- satellite links between the constellations. The first constellation is deployed in a polar LEO orbit with a preferred inclination of 99.5 degrees and a preferred altitude of 1000 km. The second constellation is deployed in an inclined LEO orbit with a preferred inclination of 37.4 degrees and a preferred altitude of 1250 km.

Inventors

WENDLING DAVID

Latest standardized assignees - inventors removed

TELESAT CANADA