A hybrid medium access control for convergence of broadband wireless and wireline ATM networks

In this paper, we propose a hybrid medium access control protocol for supporting broadband integrated services in the wireless ATM networks. The integrated services include CBR, VBR and ABR traffic varying from low bit-rate to very high bit-rate. The proposed protocol is an excellent compromise of contention, reservation and polling access techniques based on the dynamic TDMA system. Extensive simulation results using realistic data traffic sources, show that the proposed medium access scheme may provide QoS guarantees to different ATM traffic including the realistic MPEG video traces with low cell transfer delay and very high channel utilization of 90%.

General information
State: Published
Organisations: Department of Photonics Engineering, Networks Technology and Service Platforms
Authors: Liu, H. (Intern), Gliese, U. B. (Intern), Dittmann, L. (Intern)
Pages: 1105-1109
Publication date: 2000

Host publication information
Title of host publication: Proceeding of IEEE International Conference on Communications
Volume: 2
Place of publication: New Orleans, LA
Publisher: IEEE
ISBN (Print): 0-7803-6283-7
Main Research Area: Technical/natural sciences
Electronic versions:
liu.pdf
DOIs:
10.1109/ICC.2000.853669

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Source: orbit
Source-ID: 258657
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

Statistical Study of the Correlation Between Topology and Wavelength Usage in Optical Networks With and Without Conversion

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Fenger, C. (Intern), Limal, E. (Intern), Gliese, U. B. (Intern), Mahon, C. (Ekstern)
Publication date: 2000
Statistical study of the Influence of Topology on Wavelength Usage in WDM Networks

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Fenger, C. (Intern), Limal, E. (Intern), Gliese, U. B. (Intern)
Publication date: 2000

An algorithm for link restoration in wavelength translating networks
We propose the BONRA, a new and innovative algorithm for dynamic allocation of working and spare channel capacity for single link restoration in wavelength translating optical networks. The BONRA has very low calculation complexity yet gives high capacity utilisation.

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Limal, E. (Intern), Gliese, U. B. (Intern)
Pages: 438-439
Publication date: 1999

BONRA - An algorithm for link and path restoration of wavelength routing multi-hop optical networks

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Limal, E. (Intern), Gliese, U. B. (Intern)
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE - ACM Transactions on Networking
ISSN (Print): 1063-6692
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Efficient Bandwidth Allocation for Integrated Services in Broadband Wireless ATM Networks

An efficient bandwidth allocation scheme is proposed for supporting integrated services in wireless ATM networks. These include CBR, VBR and ABR types of traffic. The proposed scheme is based on A-PRMA for carrying ATM traffic in a dynamic TDMA type access system. It allows mobile users to adjust the reserved bandwidth according to their current demands and the wireless channel status. Extensive simulation results show that the proposed scheme can provide QoS guarantees with low cell transfer delay, high channel utilization (more than 70%) and short buffer length requirements.

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Liu, H. (Intern), Dittmann, L. (Intern), Gliese, U. B. (Intern), Danielsen, P. L. (Intern)
Publication date: 1999

Host publication information
Volume: 3
Publisher: IEEE
ISBN (Print): 0-7803-5287-4
Main Research Area: Technical/natural sciences
Conference: International Conference on Communications, Vancouver, 01/01/1999
Electronic versions:
Liu.pdf
Knowledge-Based Multiple Access Protocol in Broadband Wireless ATM Networks

In this paper, we propose a knowledge-based multiple access protocol for the extension of wireline ATM to wireless networks. The objective is to enable efficient transmission of all kinds of ATM traffic in the wireless channel with guaranteed QoS. The proposed protocol utilizes knowledge of the main characteristics of the traffic for allocating bandwidth efficiently to CBR, VBR and ABR/UBR connections by a compromise of assignment, contention, reservation and polling access techniques. Simulation results show that the proposed protocol can achieve a very high channel utilization of 90% while providing guaranteed QoS requirements to a variety of ATM applications.

Multiple access protocol for supporting multimedia services in wireless ATM networks

The future broadband wireless asynchronous transfer mode (ATM) networks must provide seamless extension of multimedia services from the wireline ATM networks. This requires an efficient wireless access protocol to fulfill varying Quality-of-Service (QoS) requirements for multimedia applications. In this paper, we propose a multiple access protocol using centralized and distributed channel access control techniques to provide QoS guarantees for multimedia services by taking advantage of the characteristics of different kinds of ATM traffics. Multimedia traffic, including constant bit rate (CBR), variable bit rate (VBR) and available bit rate (ABR) with different kinds of applications, such as voice, video-conferencing, MPEG video and Web-browsing, is considered to evaluate the proposed protocol. Simulation results show that the proposed multiple access protocol can support a wide range of telecommunication applications at the same time with high efficiency and guaranteed QoS.
Packaged semiconductor laser optical phase locked loop for photonic generation, processing and transmission of microwave signals

In this paper, we present the first fully packaged semiconductor laser optical phase-locked loop (OPLL) microwave photonic transmitter. The transmitter is based on semiconductor lasers that are directly phase locked without the use of any other phase noise-reduction mechanisms. In this transmitter, the lasers have a free-running summed linewidth of 6 MHz and the OPLL has a feedback bandwidth of 70 MHz. A state-of-the-art performance is obtained, with a total phase-error variance of 0.05 rad(2) (1-GHz bandwidth) and a carrier phase-error variance of 7x10(-4) rad(2) in a 15-MHz bandwidth. Carriers are generated in the range of 7-14 GHz. The OPLL transmitter has been fully packaged for practical use in field trials. This is the first time this type of transmitter has been fabricated in a packaged state which is a significant advance on the route to practical application.
Tighter upper bound for capacity utilization in survivable networks using link restoration

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Limal, E. (Intern), Gliese, U. B. (Intern)
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE - A C M Transactions on Networking
ISSN (Print): 1063-6692
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.055 SNIP 2.241 CiteScore 4.23
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.261 SNIP 3.047 CiteScore 4.14
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.101 SNIP 2.886 CiteScore 3.84
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.569 SNIP 3.408 CiteScore 4.19
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.71 SNIP 3.377 CiteScore 4.05
ISI indexed (2012): ISI indexed yes
7-14 GHz Optical Phase-Locked Loop (OPLL) Source Module for Use in Coherent Optical Beamforming Applications

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Langley, L. (Ekstern), Elkin, M. (Ekstern), Edge, C. (Ekstern), Wale, M. (Ekstern), Gliese, U. B. (Intern), Huang, X. (Ekstern), Seeds, A. (Ekstern)
Pages: 2342-2343
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Electronics Letters
Volume: 34
Issue number: 24
ISSN (Print): 0013-5194
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.442 SNIP 0.882 CiteScore 1.35
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.497 SNIP 1.011 CiteScore 1.31
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.522 SNIP 1.061 CiteScore 1.31
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.59 SNIP 1.155 CiteScore 1.45
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
The concept for a wireless ATM access system that enables seamless mobile connectivity to the B-ISDN is presented. It is based on small, low cost and intelligent base stations running a medium access control (MAC) protocol using adaptive packet reservation multiple access (APRMA). Both the principles and the performance of this protocol are discussed. A channel efficiency of more than 70% and a mean cell transfer delay of less than 17 cells are obtained in the range of 1-50 simultaneously connected users even with bursty traffic. For this, the cell dropping rate is kept below 10^-9 when the mobile terminals use buffer lengths of only 200-300 cells. The different components of this access system are currently under implementation and the MAC unit has been successfully implemented for a 32 Mbit/s wireless channel supporting 25 Mbit/s ATM introducing only 22% of protocol overhead.
Coherent Fiber-Optic Links for Transmission and Signal Processing in Microwave and Millimeter-Wave Systems

The principles of coherent fiber-optic links are presented and the transmission and signal processing capabilities offered to microwave and millimeter-wave systems are discussed. Furthermore, an overview of implemented transmitter types and link experiments is given.

Cost Competitiveness of Fiber-Optic Infrastructures for Metropolitan Micro/Pico-Cellular Mobile Networks
Development of a Packaged Optical Phase Locked Loop for Use as a Signal Source in Phased Array Communications Antennas

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Langley, L. (Ekstern), Edge, C. (Ekstern), Wale, M. (Ekstern), Gliese, U. B. (Intern), Seeds, A. (Ekstern), Huang, X. (Ekstern), Wright, J. (Ekstern), Coryell, L. (Ekstern)
Pages: 220-226
Publication date: 1998

Host publication information
Title of host publication: Development of a Packaged Optical Phase Locked Loop for Use as a Signal Source in Phased Array Communications Antennas
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 171873
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Influence of Bit-Rate Upgrades on the Cost Competitiveness of Fiber-Optic Infrastructures for Mobile Networks

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Bruun, M. (Intern), Gliese, U. B. (Intern)
Pages: 172-173
Publication date: 1998

Host publication information
Title of host publication: Influence of Bit-Rate Upgrades on the Cost Competitiveness of Fiber-Optic Infrastructures for Mobile Networks
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 171869
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Multifunctional fiber-optic microwave links based on remote heterodyne detection

The multifunctionality of microwave links based on remote heterodyne detection (RHD) of signals from a dual-frequency laser transmitter is discussed and experimentally demonstrated in this paper. Typically, direct detection (DD) in conjunction with optical intensity modulation is used to implement fiber-optic microwave links. The resulting links are inherently transparent. As opposed to DD links, RHD links can perform radio-system functionalities such as modulation and frequency conversion in addition to transparency. All of these three functionalities are presented and experimentally demonstrated with an RHD link based on a dual-frequency laser transmitter with two offset phase-locked semiconductor lasers. In the modulating link, a 1-Gb/s baseband signal is QPSK modulated onto a 9-GHz RF carrier. The frequency converting link demonstrates up-conversion of a 100-Mb/s PSK signal from a 2-GHz carrier to a 9-GHz carrier with penalty-free transmission over 25 km of optical fiber. Finally, the transparent link transmits a standard FM video 7.6-GHz radio-link signal over 25 km of optical fiber without measurable distortion

General information
State: Published
Organisations: Department of Electromagnetic Systems, Department of Photonics Engineering
Authors: Gliese, U. B. (Intern), Nielsen, T. N. (Intern), Nielsen, S. N. (Intern), Stubkjær, K. (Intern)
Pages: 458-468
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: IEE Transactions on Microwave Theory and Techniques
Volume: 46
Multi-Functional Fibre-Optic Microwave Links

The multi-functionality of microwave links based on remote heterodyne detection of signals from a dual-frequency laser transmitter is discussed and experimentally demonstrated in this paper. Typically, direct detection in conjunction with optical intensity modulation is used to implement fibre-optic microwave links. The resulting links are inherently transparent and mainly used for signal transmission. As opposed to direct detection links, remote heterodyne detection links can directly perform functionalities such as modulation, frequency conversion, and transparent signal recovery in addition to signal transmission. All three functionalities are presented and experimentally demonstrated with a remote heterodyne detection link based on a dual-frequency laser transmitter with two offset phase locked semiconductor lasers. In the modulating link a 1 Gbit/s baseband signal is QPSK modulated onto a 9 GHz RF carrier. The frequency converting link demonstrates up-conversion of a 100 Mbit/s PSK signal from a 2 GHz carrier to a 9 GHz carrier with penalty-free transmission over 25 km of optical fibre. Finally, the transparent signal recovering link transmits a standard FM video 7.6 GHz radio-link signal over 25 km of optical fibre without measurable distortion.
Optical Phase Locked Loop (OPLL) Module for Use as a 9 GHz Source in Phased Array Communications Antennas

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Langley, L. (Ekstern), Elkin, M. (Ekstern), Edge, C. (Ekstern), Wale, M. (Ekstern), Gliese, U. B. (Intern), Huang, X. (Ekstern), Seeds, A. (Ekstern)
Pages: 141-142
Publication date: 1998

Host publication information
Title of host publication: Optical Phase Locked Loop (OPLL) Module for Use as a 9 GHz Source in Phased Array Communications Antennas
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 171374
Publication: Research - peer-review › Journal article – Annual report year: 1998

Techno-Economic Analysis of Backbone Infrastructures for Metropolitan Micro/Pico-Cellular Mobile Networks

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Bruun, M. (Intern), Gliese, U. B. (Intern)
Pages: 397-401
Publication date: 1998

Host publication information
Title of host publication: Techno-Economic Analysis of Backbone Infrastructures for Metropolitan Micro/Pico-Cellular Mobile Networks
Main Research Area: Technical/natural sciences
Conference: 48th IEEE Vehicular Technology Conference, Ottawa, Canada, 21/05/1998
Source: orbit
Source-ID: 171883
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998
Adaptive packet reservation multiple access (A-PRNA) for broadband wireless ATM

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Nielsen, S. N. (Intern), Gliese, U. B. (Intern), Stubkjær, K. (Intern)
Pages: 5
Publication date: 1997
Main Research Area: Technical/natural sciences

Publication information
Journal: Selected Papers on Mobile Multimedia Communications, Plenum Publishing Company, New York, USA
Original language: English

Bibliographical note
EMI P 1440
Source: orbit
Source-ID: 168091
Publication: Research - peer-review › Journal article – Annual report year: 1997

Base station with APRMA protocol for mobile ATM networks

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Nielsen, S. N. (Intern), Le, K. H. (Intern), Dittmann, L. (Intern), Gliese, U. B. (Intern)
Pages: 411-416
Publication date: 1997

Host publication information
Title of host publication: Proc. of ACTS Mobile Communication Summit
Place of publication: Aalborg, Denmark
Main Research Area: Technical/natural sciences
Conference: ACTS Mobile Communication Summit '97, Aalborg, Denmark, 07/10/1997 - 07/10/1997
Source: orbit
Source-ID: 168153
Publication: Research - peer-review › Book chapter – Annual report year: 1997

Installation and life-cycle costs of backbone infrastructures for metropolitan micro/pico-cellular mobile networks

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Bruun, M. (Intern), Gliese, U. B. (Intern)
Pages: 814-818
Publication date: 1997

Host publication information
Title of host publication: Proc. of ACTS Mobile Communication Summit
Place of publication: Aalborg, Denmark
Main Research Area: Technical/natural sciences
Conference: ACTS Mobile Communication Summit '97, Aalborg, Denmark, 07/10/1997 - 07/10/1997
Source: orbit
Source-ID: 168154
Publication: Research - peer-review › Book chapter – Annual report year: 1997

Optical phase locked loops as signal sources for coherent optical beamforming

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Langley, L. (Ekstern), Edge, C. (Ekstern), Wale, M. (Ekstern), Gliese, U. B. (Intern), Seeds, A. (Ekstern), Walton, C. (Ekstern), Wright, J. (Ekstern), Coryell, L. (Ekstern)
Publication date: 1997
Optical phase locked loops as signal sources for phased array communications antennas

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Langley, L. (Ekstern), Edge, C. (Ekstern), Wale, M. (Ekstern), Gliese, U. B. (Intern), Seeds, A. (Ekstern), Walton, C. (Ekstern), Wright, J. (Ekstern), Coryell, L. (Ekstern)
Publication date: 1997

THz source based on laser mixing

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Gliese, U. B. (Intern)
Pages: 87-90
Publication date: 1997

Adaptive packet reservation multiple access (A-PRMA) for broadband wireless ATM

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Nielsen, S. N. (Intern), Gliese, U. B. (Intern), Stubkjær, K. (Intern)
Publication date: 1996
Chromatic dispersion in fiber-optic microwave and millimeter-wave links

General information
State: Published
Organisations: Department of Electromagnetic Systems, Technical University of Denmark
Authors: Gliese, U. B. (Intern), Nielsen, S. N. (Intern), Nielsen, T. (Ekstern)
Pages: 1716-1724
Publication date: 1996
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE Transactions on Microwave Theory and Techniques
Volume: 44
Issue number: 10
ISSN (Print): 0018-9480
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.39 SJR 1.175 SNIP 1.914
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.159 SNIP 2.077 CiteScore 3.48
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.56 SNIP 2.417 CiteScore 3.37
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.705 SNIP 2.589 CiteScore 3.64
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.371 SNIP 2.043 CiteScore 2.89
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.223 SNIP 1.764 CiteScore 2.68
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.16 SNIP 1.774
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.687 SNIP 2.478
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.815 SNIP 2.243
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.584 SNIP 2.888
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.435 SNIP 2.826
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.286 SNIP 3.098
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.304 SNIP 2.586
Limitations in distance and frequency due to chromatic dispersion in fibre-optic microwave and millimeter-wave links

Chromatic dispersion significantly limits the distance and/or frequency in fibre-optic microwave and millimeter-wave links based on direct detection due to a decrease of the carrier to noise ratio. The limitations in links based on coherent remote heterodyne detection, however, are far less significant, and are primarily due to an increase of the phase noise.
THz-signal generation by laser mixing LO Technology Assessment

General information
State: Published
Organisations: Department of Electromagnetic Systems
Authors: Gliese, U. B. (Intern)
Number of pages: 47
Publication date: 1996

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 165337
Publication: Research - peer-review › Report – Annual report year: 1996

A 2-10 GHz GaAs MMIC opto-electronic phase detector for optical microwave signal generators
Optical transmission of microwave signals becomes increasingly important. Techniques using beat between optical carriers of semiconductor lasers are promising if efficient optical phase locked loops are realized. A highly efficient GaAs MMIC optoelectronic phase detector for a 2-10 GHz OPLL is reported

General information
State: Published
Organisations: Department of Electromagnetic Systems, Department of Photonics Engineering
Authors: Bruun, M. (Intern), Gliese, U. B. (Intern), Petersen, A. K. (Intern), Nielsen, T. N. (Intern), Stubkjær, K. (Intern)
Pages: 499-502
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Journal: IEEE - MTT-S International Microwave Symposium. Digest
Volume: 1
ISSN (Print): 0149-645X
Ratings:
Scopus rating (2016): SJR 0.379 SNIP 0.542 CiteScore 0.84
Scopus rating (2015): SJR 0.272 SNIP 0.544 CiteScore 0.27
Scopus rating (2014): SJR 0.277 SNIP 0.269 CiteScore 0.29
Scopus rating (2013): SJR 0.416 SNIP 0.563 CiteScore 0.57
ISI indexed (2013): ISI indexed no
Scopus rating (2012): SJR 0.448 SNIP 0.663 CiteScore 0.76
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 0.54 SNIP 0.832 CiteScore 0.96
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.508 SNIP 0.736
Scopus rating (2009): SJR 0.612 SNIP 0.869
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.613 SNIP 0.625
Scopus rating (2007): SJR 0.81 SNIP 0.673
Scopus rating (2006): SJR 0.759 SNIP 0.703
Scopus rating (2005): SJR 0.952 SNIP 1.063
Scopus rating (2004): SJR 0.991 SNIP 0.996
Scopus rating (2003): SJR 1.083 SNIP 1.014
Scopus rating (2002): SJR 1.011 SNIP 0.943
Scopus rating (2001): SJR 1.177 SNIP 1.115
Scopus rating (2000): SJR 0.796 SNIP 0.991
Scopus rating (1999): SJR 0.587 SNIP 0
Original language: English
Electronic versions:
A 4 Gb/s 2-level to 2 Gsymbol/s 4-level converter GaAs IC for semiconductor optical amplifier QPSK modulators

The design of a 50 Ω impedance matched two-to-four level converter GaAs IC for two-electrode semiconductor optical amplifier (SOA) modulators is presented. The designed IC exhibits eye diagrams with eye openings of better than 0.30 V and a spacing between adjacent output signal levels of 0.33 V for output symbol rates of up to 2 Gsymbol/s corresponding to input bit rates of up to 4 Gb/s. A novel differential super buffer output driver is applied, for which output reflection coefficients |S22| of less than -12 dB for frequencies up to 10 GHz are obtained. A 1 Gb/s optical QPSK microwave link transmission experiment using a packaged sample of the designed IC and a two-electrode semiconductor optical amplifier phase modulator has been conducted.

General information
State: Published
Organisations: Department of Photonics Engineering, Technical University of Denmark
Authors: Riishøj, J. (Ekstern), Nielsen, T. N. (Intern), Gliese, U. B. (Intern)
Pages: 1277-1281
Publication date: 1994
Main Research Area: Technical/natural sciences

Publication information
Volume: 29
Issue number: 10
ISSN (Print): 0018-9200
Ratings:
  - BFI (2017): BFI-level 2
  - Web of Science (2017): Indexed Yes
  - BFI (2016): BFI-level 2
  - Scopus rating (2016): SJR 1.745 SNIP 2.819 CiteScore 4.64
  - BFI (2015): BFI-level 2
  - Scopus rating (2015): SJR 3.629 SNIP 2.92 CiteScore 5.14
  - BFI (2014): BFI-level 2
  - Scopus rating (2014): SJR 3.288 SNIP 3.277 CiteScore 4.84
  - BFI (2013): BFI-level 2
  - Scopus rating (2013): SJR 3.145 SNIP 3.713 CiteScore 5.23
  - ISI indexed (2013): ISI indexed yes
  - BFI (2012): BFI-level 2
  - Scopus rating (2012): SJR 3.324 SNIP 3.635 CiteScore 5.2
  - ISI indexed (2012): ISI indexed yes
  - BFI (2011): BFI-level 1
  - Scopus rating (2011): SJR 3.282 SNIP 3.36 CiteScore 5.37
  - ISI indexed (2011): ISI indexed yes
  - BFI (2010): BFI-level 1
  - Scopus rating (2010): SJR 2.251 SNIP 2.935
  - BFI (2009): BFI-level 1
  - Scopus rating (2009): SJR 2.787 SNIP 3.292
  - BFI (2008): BFI-level 2
Highly linear and transparent 3-18 GHz optical microwave link

A highly linear optical microwave link transmitter based on heterodyne phase-locked DFB lasers is presented. The transmitter is transparent for FM and PM input signals with carrier frequencies ranging from 3-18 GHz. Distortion-free transmission of a 7.6 GHz FM PAL video signal over 25 km of optical fibre is demonstrated.
Phase noise reduction by self-phase locking in semiconductor lasers using phase conjugate feedback

A theoretical analysis of the behavior of the frequency/phase noise of semiconductor lasers with external phase conjugate feedback is presented. It is shown that the frequency noise is drastically reduced even for lasers with butt-coupled phase conjugate mirrors. In this laser system, the phase noise takes a finite-low value corresponding to a state of first-order self-phase locking of the laser. As a result, the spectral shape of the laser signal does not remain Lorentzian but collapses around the carrier to a delta function with a close to carrier noise level of less than -137 dBc/Hz. The total phase variance of this laser signal, in a 20 GHz noise bandwidth, is less than 0.002 rad².
4 Gb/s two-level to 2 symbol/s four-level converter GaAs IC for semiconductor optical amplifier modulators
A design of a 50 Ω impedance matched two-to-four level converter GaAs IC for two-electrode semiconductor optical amplifier modulators is presented. Eye diagrams with good eye openings and 0.33 V spacing between adjacent logic levels are demonstrated for input bit rates up to 4 Gb/s. A novel differential super buffer output driver is applied and output reflection coefficients |S22| of less than -12 dB for frequencies less than 10 GHz are obtained

General information
State: Published
Organisations: Department of Photonics Engineering, Department of Electromagnetic Systems, Technical University of Denmark
Authors: Riishøj, J. (Ekstern), Nielsen, T. N. (Intern), Gliese, U. B. (Intern), Stubkjær, K. (Intern)
Pages: 299-301
A 3-18 GHz Microwave Signal Generator Based On Optical Phase Locked Semiconductor DFB Lasers

General information
State: Published
Organisations: Department of Electromagnetic Systems, Department of Photonics Engineering
Authors: Gliese, U. B. (Intern), Nielsen, T. N. (Intern), Bruun, M. (Intern), Christensen, E. L. (Intern), Stubkjær, K. (Intern)
Pages: 5-6
Publication date: 1993

Host publication information
Title of host publication: Proceeding of the 15th Annual Gallium Arsenide Integrated Circuit Symposium
Publisher: IEEE
ISBN (Print): 07-80-31393-3
Main Research Area: Technical/natural sciences
Electronic versions:
Riishøj.pdf
DOIs: 10.1109/GAAS.1993.394447

Bibliographical note
Copyright: 1993 IEEE. Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the IEEE
Source: orbit
Source-ID: 264821
Publication: Research - peer-review › Article in proceedings – Annual report year: 1993

A wideband heterodyne optical phase-locked loop for generation of 3-18 GHz microwave carriers

General information
State: Published
Organisations: Department of Photonics Engineering, Department of Electromagnetic Systems
Authors: Gliese, U. B. (Intern), Nielsen, T. N. (Intern), Bruun, M. (Intern), Christensen, E. L. (Intern), Stubkjær, K. (Intern), Lindgren, S. (Ekstern), Broberg, B. (Ekstern)

Bibliographical note
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A wideband heterodyne optical phase-locked loop for generation of 3-18 GHz microwave carriers

Experimental results of a wideband heterodyne second-order optical phase-locked loop with 1.5-μm semiconductor lasers are presented. The loop has a bandwidth of 180 MHz, a gain of 181 dBHz, and a propagation delay of only 400 ps. A beat signal of 8 MHz linewidth is phase locked to become a replica of a microwave reference source close to carrier with a noise level of -125 dBc/Hz. The total phase variance of the locked carrier is 0.04 rad² and carriers can be generated in a continuous range from 3 to 18 GHz. The loop reliability is excellent with an average time to cycle slip of 1011 s and an acquisition range of 640 MHz
Coherent Optical Generation of a 6 GHz Microwave Signal with Directly Phase Locked Semiconductor DFB Lasers

Experimental results of a wideband heterodyne second order optical phase locked loop with 1.5 µm semiconductor lasers are presented. The loop has a bandwidth of 180 MHz, a gain of 181 dB/Hz and a propagation delay of only 400 ps. A beat signal of 8 MHz linewidth is phase locked to become a replica of a microwave reference source close to carrier with a noise level of ≈125 dBc/Hz. The total phase variance of the locked carrier is 0.04 rad² and carriers can be generated in a continuous range from 3 to 18 GHz. The loop reliability is excellent with an average time to cycle slip of 10¹¹ seconds and an acquisition range of 640 MHz.

Recent advances in semiconductor optical amplifiers and their applications

The authors review recent advances in SOAs (semiconductor optical amplifiers) and some of their applications. SOAs are under rapid development to achieve polarization independent gain, low facet reflectivities, good coupling to optical fibers, and high saturation power. The package SOA can be made compact and possibly inexpensive, but its main advantage is the potential for optoelectronic integration. SOAs may be used as boosters and preamplifiers, but in the case of multichannel systems attention must be given to the inherent nonlinear behavior that is due to the short lifetime of the injected carrier density. On the other hand, short lifetime will allow SOAs to be used as gates, modulators, detectors, and frequency converters for signals with gigabit per second data rates.
Reduction of AM-induced penalty in DPSK receivers by sum-square demodulation

A DPSK (differential phase shift keying) demodulator which is insensitive to the amplitude modulation induced by semiconductor optical amplifier phase modulators is proposed. The demodulator consists of only two additional power dividers/combiners, compared to a traditional DPSK demodulator. Analysis shows that the receiver penalty caused by amplitude modulation can be reduced from 2-4 dB to zero. The demodulator is demonstrated in a 2.5-Gb/s DPSK system experiment using an optical amplifier as phase modulator.
Efficient Optical Phase modulation using A Semiconductor Optical Amplifier

General information
State: Published
Organisations: Department of Electromagnetic Systems, Technical University of Denmark

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Electronic versions:
Nielsen.pdf
DOIs:
10.1109/68.122391
Laser linewidth requirements and improvements for coherent optical beam forming networks in satellites

A coherent optical beam forming network using phase-locked semiconductor lasers as sources is presented. For this scheme the spectral purity of the intermediate frequency derived from mixing the signals from two semiconductor lasers is considered. The relationship between the linewidths of the lasers in a satellite transmitter and the phase error at the detector of a microwave differential quaternary phase-shift keying earth station receiver is analyzed. The demands placed on the linewidths from the point of view of phase stability requirements are calculated using quaternary phase-shift keying modulation at data rates of 33 and 131 Mb/s. It is shown that a substantial improvement in performance can be achieved when phase locking the two lasers to each other is feasible.
Optical generation of microwave signals by the use of phase locked semiconductor lasers

General information
State: Published
Organisations: Department of Electromagnetic Systems, Department of Photonics Engineering
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DOIs:
10.1109/50.81982

Optical generation of microwave signals by the use of phase locked semiconductor lasers
Projects:

**Explain - (EXplorative network PLAniNg)**

xxxx

Department of Photonics Engineering

Tele Danmark Development

Ericsson Telecom AB

DataKomm A/S

University of Copenhagen

Period: 01/01/1999 → …

Number of participants: 4

Project participant:

Limal, Emmanuel (Intern)

Fenger, Christian (Intern)

Gliese, Ulrik Bo (Intern)

Project Manager, organisational:

Dittmann, Lars (Intern)

**Financing sources**

Source: Unknown

Name of research programme: Ukendt

Amount: 0.00 Danish Kroner

**Optical phase locked loops for phased array communication antennas**

US Army project dealing with the design and construction of the worlds first packaged semiconductor laser optical phase locked loop (OPLL) for optical generation and transmission of microwave signals. The Technical University of Denmark contributes with system level studies, general OPLL studies, design and construction of microwave and control electronics, and detailed OPLL design and simulation.

Department of Electromagnetic Systems

Department of Electrical Engineering

GEC-Marconi Materials Technology Limited

University College London

Period: 01/07/1996 → 31/03/1998

Number of participants: 1

Project Manager, organisational:

Gliese, Ulrik Bo (Intern)

Project
**Advanced Mobile Communication Networks**

The project deals with advanced mobile communication networks for future broadband mobile communications. Main emphasis is placed on the design and construction of a wireless ATM access system that enables seamless mobile connectivity to the B-ISDN. This includes development of media access protocols, data link control protocols, quality of service control protocols, switching and handover protocols, and base station and mobile unit hardware. In addition, studies on management and techno-economics of the network backbone infrastructures are carried out. The project has been moved to COM by Dec. 31, 1998.

Department of Electromagnetic Systems

Period: 01/01/1994 → 31/12/1998

Number of participants: 5

Project participant:

Nielsen, Søren Nørskov (Intern)

Bruun, Marlene (Intern)

Liu, Hong (Intern)

Le, Khanh Hoang (Intern)

Project Manager, organisational:

Gliese, Ulrik Bo (Intern)

Project