Parallel Radio and LASER link Device

Chetan Kumar Mishra, Upunya Basumatary, Namita Das

***Abstract*— Here is a smart technology that uses parallel radio and laser links to move data through the air at high speeds for the backhaul data that powers Internet services. It takes the form of a box with an infrared laser peering out of a small window on the front, and a directional millimetre wave radio beside it. This box can be mounted on towers. The two technologies combines to form a wireless link with an identical box up to 10 kilometres away giving continuous data transmission and an alternative to fibre cables which cannot be sometimes applicable at some situations.**

The main purpose of this parallel radio and laser link device is to replace the old traditional wireless device, used in several applications, with the new technology which would incorporate both laser and radio link to facilitate communication in case of barriers and be a remedy for low cost wireless implementation through air.

Traditional wireless technologies have inherent weaknesses in inclement weather due to specific frequency susceptibilities. Parallel Radio-LASER link device breakthrough innovation was to merge together diverse yet complementary technologies to create a completely new wireless technology: Composite Optical-RF. COR technology delivers far greater performance than the stand-alone component technologies could ever provide on their own, and COR has been proven in multiple field deployments to successfully withstand rain, fog, wind, and other extreme weather scenarios that would cause legacy wireless solutions to fail

***Index Terms*— Radio-LASER, LASER Link, COR.**

I. INTRODUCTION

The rise of Wi-Fi and cellular data services made Internet access more convenient and ubiquitous. But this new technology can upgrade the internet which uses parallel radio and LASER links to move data through the air at high speeds, in wireless hops up to 10 kilometres at a time. It takes the form of a box with an infrared laser peering out of a small window on the front, and a directional millimetre wave radio beside it. A series of such connections can be daisy-chained together to make a link of any length.

This technology delivers far greater performance than the stand-alone component technologies could ever provide on their own, and can be applied in multiple fields successfully withstanding rain, fog, wind, and other extreme weather scenarios that would cause legacy wireless solutions to fail. In future, this technology can be further improved to compensate for the swaying of a cell tower, caused by wind, by actively steering the laser beam. Also high-data speed can also be attained by configuring according to demand. This technology can be used for up gradation of the internet; replace the fibre optical cables and can give continuous flow of data in specific areas such as offices, markets, trade centres.

This device can revolutionize the wireless communications industry with the first true multi-gigabit wireless fibre alternative – providing reliable, ultra-high bandwidth capacity with carrier-grade availability. Our mobile communications solutions have been field-proven during more than ten years of defense applications. By building upon wireless communications technology originally developed for deep space research and military defense applications, this device can continues to deliver an unparalleled combination of bandwidth, availability, and distance.

II. WORKING PRINCIPLE

This technology is installed inside a box with an infrared laser peering out of a small window on the front, and a directional millimetre wave radio beside it. This technique compensate for weaknesses with either technology when used alone. Laser beams are blocked by fog, while millimetre wave radio signals are absorbed by rain. Routing data over both simultaneously provides redundancy and guarantees constant data transmission. The keynote working principle is that the laser part is given the first priority for data transmission with the logic switch and second priority for the radio wave part. So, when there is blockade (e.g., fog) in the former part then the sensor automatically senses the barrier and routes the flow of data to the second part In the second part if it senses a barrier then the sensor automatically switches to the former again. This routing method maintains the flow of data constant over a distance of 10km. This data can reach up to unlimited distance when joined together in multi-hop configuration.

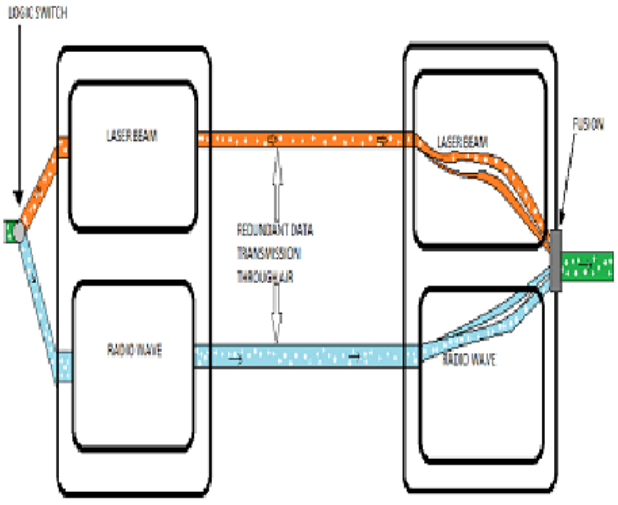

Fig: Data flow through the Parallel LASER-Radio link device

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Chetan Kumar Mishra, pursuing B.Tech at Central Institute of Technology, Kokrajhar under Gauhati University.

Upunya Basumatary, pursuing B.Tech at Central Institute of Technology, Kokrajhar under Gauhati University.

Namita Das working as an Assistant professor at Central Institute of Technology, Kokrajhar.

III. CONCLUSION

As there is the rise of Wi-Fi and cellular data services for internet service. With this technology, it will upgrade the wireless internet services for those who have a growing appetite for mobile data. It will also provide more cheaper and practical alternative to fiber cables, which are very costly and needs man Power. Mobile network operators are in a race to expand existing network capacity and coverage to meet the growing demand of bandwidth-hungry end users and network requirements are rapidly rising from megabits-per-second into the gigabits-per-second capacity range. Fiber penetration rates to cell sites remain low, and deploying new fiber is cost-prohibitive, logistically difficult, and time-consuming. This technique creates the economics and timeline for expanding mobile network infrastructures by shrinking the total cost of production and implementation.

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Chetan Kumar Mishra, pursuing B.Tech at Central Institute of Technology, Kokrajhar under Gauhati University.

Upunya Basumatary, pursuing B.Tech at Central Institute of Technology, Kokrajhar under Gauhati University.

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