

4G Interactive Heterogeneous Telecommunication System (IHTS)

Sergii Burtovyi, K.S. Sunduchkov

Abstract - In this paper the possible variant of IHTS topology is given.

Keywords - interactive, telecommunication system, optical fiber, satellite radio channel.

I. INTRODUCTION

During designing 4G Interactive heterogeneous telecommunication system with wireless access in millimeter range providing mobile (~ 200 km/h) subscribers with multimedia services many interest questions are appearing. Choice of possible IHTS structure is one of them.

II. SUMMARY

In general outline all options of building IHTS represented at Fig. 1.

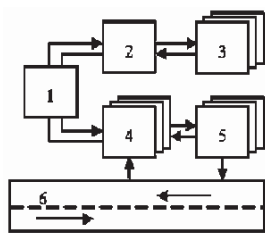


Fig. 1. General IHTS block diagram

Symbol's meaning at Fig.1: 1 – magistral communication line; 2 – switching center of network controlling and forming multimedia services; 3 – content-services providers system (Internet, television programs, movies, games, etc); 4 – request channel's signal receiving centers, multimedia services's signal distribution centers; 5 – base stations system, which is supports wireless access to mobile subscribers; 6 - mobile subscribers's terminal system on transport facility.

The foundation of signal transmission which is completely based on optical fiber using is first between options under study.

Approximate variation of IHTS structure scheme's building is at Fig.2.

In this case IHTS switching center (1) connected with central stations (2) with optical fiber using, which are (also with using of the optical fiber) sharing data flow between base stations (3). Base stations in-turn deliver information to mobile subscribers with using of wireless access.

Traditionally this network may be separated to magistral network, which is transfers all subscriber's traffic, and access

network, which is ensures traffic transfer from magistral line to subscriber.

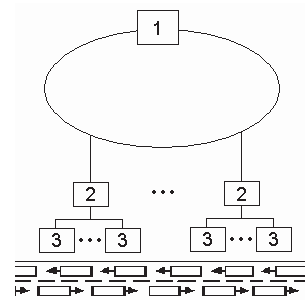


Fig. 2. IHTS structure scheme variant with using optical fiber in the capacity of magistral communication line

Traditionally this network may be separated to magistral network, which is transfers all subscriber's traffic, and access network, which is ensures traffic transfer from magistral line to subscriber.

Synchronous Digital Hierarchy (SDH) can be used at the level of magistral line, because this technology ensures safe and flexible digital structure, and it is able to use possibilities of the capacity and transmission speed, that are optical fiber allows.

And at the IHTS's access level can be used two technologies: 1) wavelength-division multiplexing (WDM) – technology, which allows transmitting few informational channels in one optical fiber at the same time and on different frequencies (in this case directional coupler is necessary to tap informational signal to each base station); 2) passive optical networks (PON) - technology, which main idea is using only one passive combined module for transferring information to base stations multitude and receiving information from them.

III. CONCLUSION

Such kind of system, which can deliver multimedia services to mobile subscribes (~ 200 km/h), hasn't realized yet and there is requirement of it, so Interactive Heterogeneous Telecommunication System is actual in nowadays.

REFERENCES

- [1] Ilchenko M. E., Sunduchkov K. S. and others "4G Interactive heterogeneous telecommunication system with wireless access in millimeter range providing mobile subscribers with multimedia services", 2008

Sergii Burtovyi – National Technical University of Ukraine "Kyiv Polytechnic Institute", Metalistiv Str., 7, Kyiv, 03057, UKRAINE, E-mail: wapito@ukr.net