The increase distance of communication for WiMax system

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Abstract - In the absence of "direct visibility" (mode NLOS), at high frequencies and at high data rates that are typical for systems of WiMAX, the size of the coverage area for base station can be very small. In these circumstances, to ensure the required distance to the subscriber and the necessary information capacity can be used wireless relay lines.

Keywords – Intersymbol interference, interchannel crosstalk, many flights of broadcasting line.

I. INTRODUCTION

Systems of WiMAX, a next-generation system, high-speed wireless communications, is now widely used in constructing the future of broadband access [5]. However, in the absence of "direct visibility" at high frequencies and at high data rates that are characteristic of these systems, the size of the coverage area for base station can be very small. In these circumstances, to ensure the required distance to the subscriber and the necessary information capacity can be used by wireless radio relay lines.

II. CALCULATION OF PARAMETERS SIGNALS OF WiMAX

The network consists of one base station (BS) and several radio relay stations (RS) Fig. 1. The total duration of the frame for RS can be divided into two parts. In continuation of the first part of the RS works as a base station, serving local customers, the combined local traffic [3]. During the second half of the frame RS liaises with the nearby RS or BS in accordance with relay traffic. In downward direction digital stream from WANC (Wide Area Network - Global Network Computing) arrives at the BS first, and then passed on to the appropriate RS.

Compared with the traditional plan, in which each BS is connected to WANC through wire lines, microwave relay multi-span can substantially increase the coverage area of one BS without any wire connections. Through this system cost can be reduced.

According to calculations at N = 64 an acceptable level of interchannel crosstalk without adjusting Nyquist plot can be achieved if the channel is not more than one flights of broadcasting line [4]. If N = 512, the same conditions provided in the presence of the channel to five flights of broadcasting line.

In accordance with the terms and conditions have been discussed previously calculated value of $\xi$ as a function of $\partial t/\partial t$. The results of calculations for different numbers flights of broadcasting line shown in Fig. 2.

III. CONCLUSION

As a means of increasing the size of service area separate base station offered a multi-span microwave relay (flights of broadcasting line). Analyzed reducing user information capacity, which accompanies the application multispan microwave transmission lines, used to enlarge the coverage in the WiMAX. Are calculated power interchannel crosstalk. It is shown that an increase in the number of overflights achievable user data capacity is sharply reduced, increasing the power of interchannel crosstalk. Using high-order modulation schemes and increase the number of sub-channels in the structure of the transmitted signal can significantly increase the achievable capacity of access and reduce the effects of multipath propagation.

REFERENCES

3. The site materials http://www.rri.com.ua/ru