

ESTIMATION OF PARAMETERS OF A RECEIVED SIGNAL IN A SINGLE-FREQUENCY NETWORK DVB-T2

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The second-generation digital terrestrial television broadcasting system DVB-T2 [1] provides greater flexibility and spectral efficiency of the system compared to its predecessor DVB-T, and is most focused on the deployment of single-frequency networks SFN (Single Frequency Network) [2]. Important advantages of the SFN cluster are such as efficient use of the allocated radio frequency spectrum, the ability to receive a signal from an alternative direction, reducing the area of shadow zones, etc. However, in the service area of the SFN cluster, mutual interference of the signals transmitted in the combined frequency channel of the group of transmitters occurs. The aim of this study is to evaluate the effect of frequency selective fading of the total signal at the input of the DVB-T2 receiver on the quality of the received signal. This article provides a brief description of the architectural model of the SFN DVB-T2 cluster [1,3,4,5]. In the practical part of the study, an assessment was made of the quality indicators of the received signal in a SFN DVB-T2. In order to fulfill the research task, in laboratory conditions, was mounted a circuit simulating the operation of the SFN cluster. Applying two signals simultaneously to the input of the measuring device made it possible to identify how the qualitative parameters of the DVB-T2 received signal change, depending on the difference in levels and time delays of the signal at the input of the measuring device. As a result of the analysis of the obtained measurement results [6], conclusions are drawn regarding methods for assessing the quality of the received signal in single-frequency digital terrestrial broadcasting networks.

Keywords: *Service zone; DVB-T2; SISO; SFN; MER; CBER, LBER, T2 Gateway, Guard Interval, T2-MI interface.*

References

1. *ETSI TS 102 831*. Technical Specification Digital Video Broadcasting; Implementation guidelines for a second generation digital terrestrial television broadcasting system (DVB-T2), p. 19.
2. “Handbook on Digital Terrestrial Television Broadcasting Networks and Systems Implementation,” *Edition of 2016, ITU-R*, p. 52.
3. *ETSI TS 102 773 V1.1.1* (2009-09). Digital Video Broadcasting (DVB); Modulator Interface (T2-MI) for a second generation digital terrestrial television broadcasting system (DVB-T2)
4. BYKOVSKIY, M., DOTOLEV, V., LASHKEVCH, A., NOSOV, V., RIKHTER, S., SOROKIN, G., TARASOV, S. Osnovy chastotnogo planirovaniya setey televizionnogo veshchaniya [Basics of frequency planning television network]. *Edition: Moscow, Goryachaya liniya – Telekom Publ.*, 2015, p. 129-138, 145-146.
5. MAMCHEV, G., “Features of functioning of synchronous regional network of terrestrial digital broadcasting” In: *Siberian State University of Telecommunications and Informatics UDK 621.397.6, Novosibirsk*, 2012, p. 64.
6. *ETSI TR 101 290*. Digital Video Broadcasting; Measurement guidelines for DVB systems.