

## INTISARI

Kualitas isyarat terima dapat berfluktuasi atau bahkan turun drastis akibat pudaran lintasan-jamak (pudaran selektif-frekuensi). Penerimaan dengan antena-jamak merupakan salah satu metode yang diharapkan dapat mengatasi hal ini. Berbagai teknik penerimaan dengan antena-jamak untuk sistem berbasis penjamakan pembagian frekuensi ortogonal (*orthogonal frequency division multiplexing*, OFDM), termasuk televisi digital, telah diusulkan. Meskipun demikian, aspek kompleksitas dan kompatibilitas dalam implementasi masih perlu dipertimbangkan lebih lanjut.

Penelitian ini bertujuan untuk memformulasikan suatu teknik antena-jamak yang kompleksitasnya rendah namun kompatibilitasnya tinggi untuk dapat diterapkan pada penerima DVB-T2 (*digital video broadcasting terrestrial second generation*). Dalam teknik ini, digunakan dua antena. Setiap saat, pesawat penerima televisi diumpani isyarat frekuensi radio yang dipilih dari salah satu antena, dengan pemilihannya dikendalikan oleh suara/gambar terpulihkan.

Unjuk-kerja teknik usulan dievaluasi berdasar keberhasilan penerimaan. Dalam suatu durasi singkat tertentu, suatu penerimaan didefinisikan sebagai berhasil jika suara/gambar terpulihkan tidak secara menerus terjeda dalam durasi tersebut. Evaluasi tersebut dilaksanakan melalui simulasi dan implementasi. Data yang digunakan pada simulasi diperoleh dari pengukuran-lapangan penerimaan lincah/bergerak luar-ruang di sejumlah rute. Dalam implementasi, uji-lapangan dilakukan pada penerima bergerak-semu dalam-ruang.

Baik simulasi maupun implementasi menginformasikan bahwa teknik antena-ganda berpenala-tunggal yang diusulkan mampu meningkatkan porsi keberhasilan penerimaan, relatif terhadap setara antena-tunggalnya. Sebagai ilustrasi kuantitatif, kenaikan tersebut mendekati 27 % dan 20 %, berturut-turut berdasar simulasi dan implementasi.

**Kata-kunci:** antena-jamak, suara/gambar terpulihkan, penerima DVB-T2, keberhasilan-penerimaan.

## **ABSTRACT**

*The quality of the received signal may fluctuate or even drop drastically due to multipath fading (frequency selective fading) phenomenon. Multiple-receive-antenna is one of the techniques for mitigating this problem. Various techniques for the Orthogonal Frequency Division Multiplexing (OFDM) systems, including Digital Television (DTV), have been proposed. Nevertheless, the complexity and compatibility aspects in implementation is yet needed to be considered further.*

*This research aims to formulate a low-complexity-high-compatibility multiple-receive-antenna technique applicable for the Digital Video Broadcasting Terrestrial second generation (DVB-T2) receiver. In this proposed technique, two antennas are provided. At any instant, the TV-set's aerial input is fed by the Radio Frequency (RF) signal selected from the antennas, in which the selection process is controlled by the recovered sound/picture.*

*The performance of the technique is evaluated based on the reception success. During the predetermined short interval, a reception was defined successful when the recovered sound/picture was not continuously paused during this duration of time. Such performance evaluation was carried-out using both simulation and implementation. The data used in the simulation was obtained from field-measurement of a mobile-outdoor receiving-system on several routes. In the implementation, a field-test was performed on a pseudo-moving-indoor receiving-system.*

*Both simulation and implementation informed that the proposed single-tuner dual-antenna technique was able to increase the portion of the reception success with respect to its equivalent single-antenna receiving-technique. As quantitative illustrations, such increase of approximately 27% and 20% were observed in the simulation and implementation, respectively.*

**Key-words:** *multiple-antenna, recovered sound/picture, DVB-T2 receiver, reception-success*