ABSTRAK

Dwi Widyaningsih
Teknik Elektro

Perancangan dan Implementasi Antena Mikrostrip untuk Aplikasi DVB-T2 Menggunakan Metode *Half-cut*.

Perkembangan teknologi sangat pesat dan beragam, terutama dalam penyampaian informasi melalui siaran televisi digital merupakan kebutuhan global sudah mulai banyak diminati saat ini, baik didalam maupun luar negeri. Peraturan KOMINFO No. 23/PER/M.KOMINFO/11/2011 standar frekuensi siaran televisi digital 478 MHz – 694 MHz. Antena untuk DVB-T2 yaitu *wideband* dengan nilai *bandwidth* lebar. Metode yang digunakan *half-cut* untuk menghasilkan nilai *bandwidth* lebar dan dimensi sederhana. Simulasi menggunakan *software* CST *Microwave Studio* 2016. Pabrikasi menggunakan substrat FR-4 dengan ε_r 4,3 tanδ 0,0265 dan h 1,66 mm. Hasil simulasi terbaik yaitu antena mikrostrip F dengan fa 478 MHz, fb 708 MHz, fc 567 MHz, *return loss* -40,71 dB, *bandwidth* 236 MHz, VSWR 1,02, impedansi masukan 56,88 Ω, *gain* 4,15 dBi dan pola radiasi *omnidirectional*. Hasil pengukuran menunjukkan bahwa antena ini dapat diimplementasikan untuk aplikasi DVB-T2 menerima 15 stasiun siaran TV digital. Kuat sinyal terendah RTV-1 HD sebesar 30%, sedangkan kuat sinyal tertinggi TVRI Nasional sebesar 67% dengan kualitas sinyal masing-masing 99%.

Kata kunci:
Antena Mikrostrip, *Wideband*, *Half-cut*, DVB-T2.

ABSTRACT

Dwi Widyaningsih
Electrical Engineering

Design and Implementation of Microstrip Antennas for DVB-T2 Applications Using the Half-cut Method.

The development of technology is very rapid and diverse, especially in the delivery of information through digital television broadcasts is a global need that has begun to be in great demand today, both domestic and foreign. KOMINFO Regulation No. 23/PER/M.KOMINFO/11/2011 standard digital television broadcast frequency 478 MHz - 694 MHz. The antenna for DVB-T2 is wideband with a wide bandwidth value. The method used is half-cut to produce bandwidth width and simple dimensions. Simulation using CST Microwave Studio 2016 software. Manufacturing using FR-4 substrate with ε_r 4.3 tanδ 0.0265 and h 1.66 mm. The best simulation results are microstrip antenna F with fa 478 MHz, 708 MHz fb, 567 MHz fc, -40.71 dB return loss, 236 MHz bandwidth, VSWR 1.02, 56.88 Ω input impedance, 4.15 dBi gain and radiation pattern omnidirectional. The measurement results show that this antenna can be implemented for DVB-T2 applications to receive 15 digital TV broadcast stations. The lowest signal strength of RTV-1 HD is 30%. While the highest signal strength of National TVRI is 67% with signal quality of 99% each.

Key words:
Microstrip antenna, Wideband, Half-cut, DVB-T2.