



**PENGARUH NILAI LOSS TERHADAP HASIL UKUR
RADIO FREKUENSI DENGAN MENGGUNAKAN
PENGATUR VARIABLE LOSS OTOMATIS**

**Laporan Tugas Akhir
Dipersembahkan kepada
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untuk memperoleh gelar
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ABSTRAK

Peneliti mendesain sistem simulasi pengukuran RF (Radio Frekuensi) yaitu mengukur kekuatan transfer dan penerimaan dari sebuah *handphone* dari pita-pita frekuensi yang telah diatur penggunaannya sesuai peraturan pada kementerian komunikasi dan informasi yaitu mengukur kekuatan transfer dan penerimaan DCS1800, GSM900, WCDMA 2100, WCDMA850, LTE01, LTE03, LTE05, LTE08, LTE40 wifi 2.4 GHz dan 5.0 ghz menunjukkan hasil ukur yang seharusnya dan sesuai dengan standar yang dianjurkan oleh pemerintah.

Pengujian selanjutnya dengan mengatur nilai Loss berdasarkan hasil ukur yang telah dilakukan pada masing-masing pita frekuensi menggunakan program aplikasi yang sederhana yang dapat menghitung nilai *loss* yang dengan menggunakan patokan rumus sederhana $0.2 < Defiasi \leq 2.5$ dimana apabila rata rata hasil ukurnya memiliki *defiasi* lebih besar dari 0.2 db atau lebih kecil atau sama dengan 2.5 db maka program aplikasi akan menghitung dan mengatur secara otomatis nilai *Loss* yang semestinya ditambahkan ataupun di kurangkan pada nilai rata-rata hasil ukur yang tercatat di *Log files* hasil ukur.

Dengan menggunakan nilai *loss* yang telah diatur oleh aplikasi maka dilakukan pengukuran ulang pita-pita frekuensi tersebut diatas, maka dengan nilai *loss* tersebut akan dihasilkan pengukuran yang lebih baik dan sesuai dengan standar, hasil pengukuran ini nantinya yang akan menjadi patokan bahwa *handphone* yang kita gunakan telah memenuhi standar SAR (Specific Absorption Rate) SAR adalah suatu tingkatan radiasi yang seharusnya diterima oleh tubuh manusia walaupun efeknya bisa di hitung dalam jangka yang panjang dan juga keunggulan dalam proses penerimaan data maupun pengiriman data.

Kata kunci: GSM, *Loss*, LTE, *PathLoss*, WCDMA.

ABSTRACT

Researchers designed an RF (Radio Frequency) measurement simulation system, its was measuring the transfer and reception power of a cellphone from frequency bands that has been regulated according to regulations in the Ministry of Communications and Information, which is measuring the transfer and reception power of DCS1800, GSM900, WCDMA 2100, WCDMA850, LTE01, LTE03, LTE05, LTE08, LTE40 wifi 2.4 GHz and 5.0 GHz that show the measurement results that should be accordance with the recommended standards by the government.

The next test is to set the Loss value based on the measurement results that have been carried out on each frequency band using a simple application program which can calculate the loss value using a simple formula benchmark of $0.2 < \text{Defiation} \leq 2.5$ where if the average measurement result has a greater defiation from 0.2 db or smaller or equal to 2.5 db, the application program will automatically calculate and adjust the Loss value which should be added or subtracted from the average value of the measurement results recorded in the measurement results log files.

By using the loss value that has been set by the application, the frequency bands mentioned above are re-measured, then with this loss value a better measurement will be produced and in accordance with the standard, the results of this measurement will later become a benchmark that the cellphone that we used has meets SAR (Specific Absorption Rate) standards. SAR is a level of radiation that should be received by the human body even though the effects can be calculated in the long term and also has advantages in the process of receiving data and sending data.

Keywords: GSM, Loss, LTE, PathLoss, WCDMA

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