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ELECTROMAGNETIC COMPATIBILITY ANALYSIS OF SRI LANKAN RAILWAY NETWORK: COMPATIBILITY OF RAILWAY SIGNALING SYSTEM FOR RAILWAY ELECTRIFICATION

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Makuralage Rasika Kumudu Kumari Koongahavita
(149287 R)

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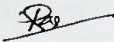
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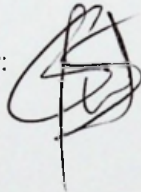
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ABSTRACT

Efficiency of the transportation system is an indicator which shows the development of the country. In Sri Lanka 20 percent of passengers use train transportation. Recently demand for rail transportation systems has been increased with the increment of rail transportation facilities. As more than 40 percent of employees use rail transportation passenger transportation is the main target of Sri Lanka Railways than the good transportation.

Railway signaling system is to cater the traffic requirements by utilizing the limited resources like trains and tracks. The loss due to failure of signal system is uncountable as human lives and human hours loss except to the loss of damages to properties.

Train detection is a main input for reliable signaling system. DC track circuits are used in Sri Lanka Railway signaling system to detect train on rails. In this scenario the current flow through rails is in milliamphere range.

Induced voltages due to external forces could be affected to change the current value and direction of power flow. This postgraduate research thesis describes the effect of electromagnetic interference on track circuit due to transmission lines and further effect due to electrification systems.

Electromagnetic interference level was measured under the different transmission lines and suitable model was selected to further calculations. Safe margin levels was introduced to keep with tracks for rated current flows.

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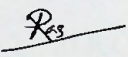

M.R.K.K. Koongahavita

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LIST OF ABBREVIATIONS

AC	- Alternating current
CEB	- Ceylon Electricity Board
CLS	- Color Light System
DC	- Direct current
ECTC	- Electronic Centralized Traffic Control
EMF	- Electro Magnetic Field
MFD	- Magnetic Flux Density
OHE	- Over Head Equipment
TSR	- Train Shunt Resistance
TSS	- Traction Sub Station
SLR	- Sri Lanka Railways
VPI	- Vital Processing Interlocking