

**APPROVAL PAGE**

**SUM-RATE MAXIMIZATION-BASED RADIO RESOURCE  
ALLOCATION OF EMBB, URLLC AND MMTC SERVICES IN 5G  
FOR DOWNLINK**

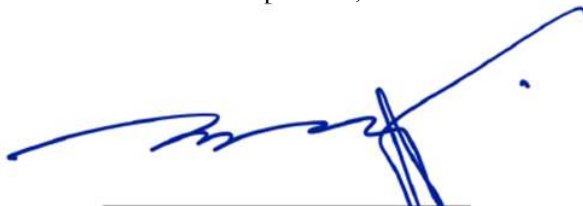
This thesis is approved and authorized to be fulfilled in the Graduate Program  
of Electrical-Telecommunication, School of Electrical Engineering,  
Telkom University

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