

## DAFTAR ISI

<b>LEMBAR PENGESAHAN .....</b>	<b>ii</b>
<b>LEMBAR PERNYATAAN ORISINALITAS .....</b>	<b>iii</b>
<b>ABSTRAK .....</b>	<b>iv</b>
<b>ABSTRACT .....</b>	<b>v</b>
<b>KATA PENGANTAR.....</b>	<b>vi</b>
<b>DAFTAR ISI.....</b>	<b>viii</b>
<b>DAFTAR TABEL .....</b>	<b>xii</b>
<b>DAFTAR GAMBAR.....</b>	<b>xiv</b>
<b>DAFTAR LAMPIRAN .....</b>	<b>xvi</b>
<b>DAFTAR ISTILAH .....</b>	<b>xvii</b>
<b>BAB I PENDAHULUAN.....</b>	<b>1</b>
1.1. Latar Belakang .....	1
1.2. Rumusan Masalah .....	2
1.3. Tujuan Penelitian.....	3
1.4. Manfaat Penelitian.....	3
1.5. Batasan dan Asumsi Penelitian .....	3
1.6. Sistematika Penulisan.....	4
<b>BAB II LANDASAN TEORI .....</b>	<b>5</b>
2.1. Literatur Terkait Teori.....	5
2.2. <i>Fifth Generation (5G)</i> .....	9
2.3. <i>3 Key Parameter Of 5G New Radio</i> .....	9
2.3.1. <i>Enhanced Mobile Broadband (eMBB)</i> .....	10
2.3.2. <i>Massive Machine Type Communication (mMTC)</i> .....	10
2.3.3. <i>Ultra-Reliable Low Latency Communication (URLLC)</i> .....	11
2.4. Arsitektur Jaringan 5G .....	11

2.4.1.	<i>Stand Alone (SA)</i> .....	11
2.4.2.	<i>Non-Stand Alone (NSA)</i> .....	12
2.5.	<i>Global Spektrum Frekuensi 5G</i> .....	14
2.5.1.	<i>Low-Frequency Bands</i> .....	14
2.5.2.	<i>Medium-Frequency Bands</i> .....	14
2.5.3.	<i>High-Frequency Bands</i> .....	15
2.6.	<i>Interferensi</i> .....	15
2.7.	<i>Dynamic Spectrum Sharing (DSS)</i> .....	16
2.8.	<i>Coverage Planning</i> .....	17
2.8.1.	<i>Link Budget 4G LTE</i> .....	17
2.8.2.	<i>Link Budget 5G NR</i> .....	18
2.8.3.	<i>Model Propagasi SUI Model</i> .....	19
2.8.4.	<i>Model Propagasi Urban Macro (UMa)</i> .....	19
2.9.	<i>Capacity Planning</i> .....	21
2.9.1.	<i>Estimasi Jumlah Penduduk</i> .....	22
2.9.2.	<i>Estimasi Jumlah User</i> .....	22
2.9.3.	<i>Demand Traffic</i> .....	23
2.9.4.	<i>Proyeksi Throughput</i> .....	24
2.9.5.	<i>User Throughput</i> .....	24
2.9.6.	<i>Perhitungan Site Capacity</i> .....	25
2.10.	<i>Radio Key Performance Indicator (KPI) 4G LTE</i> .....	25
2.10.1.	<i>Reference Signal Received Power</i> .....	25
2.10.2.	<i>Signal-to-Interference-plus-Noise Ratio</i> .....	25
2.11.	<i>Radio Key Performance Indicator (KPI) 5G NR</i> .....	26
2.11.1.	<i>Synchronization Signal Reference Signal Received Power</i> .....	26
2.11.2.	<i>Synchronization Signal Signal to Noise and Interference Ratio</i> .	26

2.11.3.	<i>Throughput</i> .....	26
<b>BAB III METODOLOGI PENELITIAN .....</b>		<b>28</b>
3.1.	Alur Penelitian.....	28
3.2.	5G Key Performance Indicator Berdasarkan IMT 2020.....	30
3.3.	Software Yang Digunakan.....	31
3.4.	Survei Lokasi Penelitian .....	31
3.5.	Jumlah Penduduk .....	32
3.6.	Spektrum Frekuensi Di Indonesia .....	33
3.7.	<i>Coverage Planning</i> .....	34
3.7.1.	<i>Link Budget</i> .....	34
3.7.2.	Model Propagasi <i>Urban Macro</i> (UMa) .....	35
3.7.3.	Jumlah <i>Site</i> .....	36
3.8.	<i>Capacity Planning</i> .....	36
3.9.	Perancangan Pengujian.....	36
3.9.1.	Skenario 1 (LTE).....	36
3.9.2.	Skenario 2 (NR) .....	37
3.9.3.	Skenario 3 (LTE+NR) DSS .....	37
<b>BAB IV PENGUMPULAN DAN PENGOLAHAN DATA .....</b>		<b>38</b>
4.1.	<i>Coverage Planning</i> .....	38
4.1.1.	4G LTE.....	38
4.1.2.	5G NR .....	38
4.2.	<i>Capacity Planning</i> .....	39
<b>BAB V ANALISIS DAN PEMBAHASAN.....</b>		<b>43</b>
5.1.	<i>Coverage Planning</i> .....	43
5.1.1.	4G LTE.....	43
5.1.2.	5G NR .....	44

5.2.	<i>Capacity Planning</i> .....	46
5.3.	Skenario Simulasi .....	48
5.4.	Hasil Simulasi Skenario 1 (LTE) .....	49
5.5.	Hasil Simulasi Skenario 2 (NR) .....	52
5.6.	Hasil Simulasi Skenario 3 (DSS) .....	55
5.7.	Hasil Simulasi Interferensi .....	58
5.8.	Perbandingan Skenario Simulasi .....	59
5.8.1.	Parameter SS-RSRP .....	59
5.8.2.	Parameter SS-SINR .....	60
5.8.3.	Parameter <i>Throughput</i> .....	61
5.9.	Perbandingan Frekuensi 1800 MHz dan 2300 MHz .....	62
<b>BAB VI KESIMPULAN DAN SARAN</b> .....		<b>63</b>
6.1.	Kesimpulan .....	63
6.2.	Saran .....	64
<b>DAFTAR PUSTAKA</b> .....		<b>65</b>
<b>LAMPIRAN</b> .....		<b>68</b>