

DAFTAR PUSTAKA

- [1] Badan Nasional Penanggulangan Bencana, “Geoportal Data Bencana Indonesia,” 2021. <https://gis.bnpb.go.id/>. (accessed Aug. 07, 2021).
- [2] Badan Penanggulangan Bencana, “Fokus Bidang Teknologi Kebencanaan,” *Webinar Rakernas Penguatan Ekosistem Inovasi Teknologi BPPT*, 2021.
- [3] I. Amadou, B. Foubert, and N. Mitton, “LoRa in a haystack: a study of the LORA signal behavior,” in *2019 International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Oct. 2019, pp. 1–4. doi: 10.1109/WiMOB.2019.8923319.
- [4] P. D. P. Adi and A. Kitagawa, “Performance Evaluation of E32 Long Range Radio Frequency 915 MHz based on Internet of Things and Micro Sensors Data,” *International Journal of Advanced Computer Science and Applications*, vol. 10, no. 11, 2019, doi: 10.14569/IJACSA.2019.0101106.
- [5] A. S. Ayuningtyas, U. K. Usman, and I. Alinursafa, “Analisis Perencanaan Jaringan Lora (Long Range) Di Kota Surabaya,” *eProceedings of Engineering*, vol. 7, no. 2, 2020.
- [6] N. Hashim, F. Idris, T. N. A. Tuan Ab Aziz, S. H. Johari, R. Mohd Nor, and N. Ab Wahab, “Location tracking using LoRa,” *International Journal of Electrical and Computer Engineering (IJECE)*, vol. 11, no. 4, p. 3123, Aug. 2021, doi: 10.11591/ijece.v11i4.pp3123-3128.
- [7] J. Courjault, B. Vrigneau, O. Berder, and M. R. Bhatnagar, “How robust is a LoRa communication against impulsive noise?,” in *2020 IEEE 31st Annual International Symposium on Personal, Indoor and Mobile Radio Communications*, Aug. 2020, pp. 1–6. doi: 10.1109/PIMRC48278.2020.9217348.
- [8] M. Suryanegara, A. S. Arifin, M. Asvial, K. Ramli, M. I. Nashiruddin, and N. Hayati, “What are the Indonesian Concerns About the Internet of Things (IoT)? Portraying the Profile of the Prospective Market,” *IEEE Access*, vol. 7, pp. 2957–2968, 2019, doi: 10.1109/ACCESS.2018.2885375.
- [9] S. P. Mohanty, U. Choppali, and E. Kougianos, “Everything you wanted to know about smart cities: The Internet of things is the backbone,” *IEEE*

- Consumer Electronics Magazine*, vol. 5, no. 3, pp. 60–70, Jul. 2016, doi: 10.1109/MCE.2016.2556879.
- [10] Teknologi Terkini, “Penjelasan dan Cara Kerja Konsep Internet of Things,” *mobnasesemka.com*, Apr. 2016. mobnasesemka.com/internet-of-things/ (accessed Jun. 03, 2022).
- [11] Semtech, “What are LoRa and Lorawan?” <https://lora-developers.semtech.com/documentation/tech-papers-and-guides/lora-and-lorawan/> (accessed Jun. 01, 2022).
- [12] Kementerian Komunikasi dan Informatika Republik Indonesia, “Peraturan Menteri Komunikasi dan Informatika Nomor 1 Tahun 2019 tentang Penggunaan Spektrum Frekuensi Radio Berdasarkan Izin Kelas,” 2019
- [13] F. Gustiyana, M. Amanaf, and D. Kurnianto, “IMPLEMENTASI PROTOKOL LORAWAN PADA PERANGKAT MONITORING KELEMBAPAN TANAH PERTANIAN,” *Conference on Electrical Engineering, Telematics, Industrial technology, and Creative Media (CENTIVE)*, vol. 2, no. 1, pp. 209–214, Mar. 2020, [Online]. Available: <http://conferences.ittelkom-pwt.ac.id/index.php/centive/article/view/102>
- [14] H. Mroue, A. Nasser, B. Parrein, S. Hamrioui, E. Mona-Cruz, and G. Rouyer, “Analytical and Simulation study for LoRa Modulation,” in *2018 25th International Conference on Telecommunications, ICT 2018*, Sep. 2018, pp. 655–659. doi: 10.1109/ICT.2018.8464879.
- [15] S. Devalal and A. Karthikeyan, “LoRa Technology - An Overview,” in *2018 Second International Conference on Electronics, Communication and Aerospace Technology (ICECA)*, Mar. 2018, pp. 284–290. doi: 10.1109/ICECA.2018.8474715.
- [16] A. Shoim and others, “ANALISA SISTEM MONITORING TURBIN ANGIN OTOMATIS BERBASIS LONG-RANGE (LoRa) WIRELESS,” Fakultas Teknik Universitas Jember.
- [17] Shenzhen Dragino Technology Development, “Arduino Shield Featuring LoRa Technology,” 2020. <https://www.dragino.com> (accessed Jun. 01, 2022).

- [18] S. Sagir, I. Kaya, C. Sisman, Y. Baltaci, and S. Unal, "Evaluation of Low-Power Long Distance Radio Communication in Urban Areas: LoRa and Impact of Spreading Factor," in *2019 Seventh International Conference on Digital Information Processing and Communications (ICDIPC)*, May 2019, pp. 68–71. doi: 10.1109/ICDIPC.2019.8723666.
- [19] U. Noreen, A. Bounceur, and L. Clavier, "A study of LoRa low power and wide area network technology," in *2017 International Conference on Advanced Technologies for Signal and Image Processing (ATSIP)*, May 2017, pp. 1–6. doi: 10.1109/ATSIP.2017.8075570.
- [20] The Things Network, "RSSI and SNR." <https://www.thethingsnetwork.org/docs/lorawan/rssi-and-snr/> (accessed Jun. 01, 2022).
- [21] M. Yafiz, I. Suandi, and R. Rachmawati, "Analisis Perbandingan Kinerja Jaringan 4G LTE antara Provider Smartfren dan Indosat Ooredoo di Wilayah Kota Lhokseumawe," *Jurnal Litek: Jurnal Listrik Telekomunikasi Elektronika*, vol. 17, no. 2, p. 29, Jan. 2021, doi: 10.30811/litek.v17i2.1961.
- [22] I. D. G. Paramartha Warsika, N. M. A. E. Dewi Wirastuti, and P. K. Sudiarta, "ANALISA THROUGHPUT JARINGAN 4G LTE DAN HASIL DRIVE TEST PADA CLUSTER RENON," *Jurnal SPEKTRUM*, vol. 6, no. 1, p. 74, May 2019, doi: 10.24843/SPEKTRUM.2019.v06.i01.p11.
- [23] P. Dani Prasetyo Adi and A. Kitagawa, "A performance of radio frequency and signal strength of LoRa with BME280 sensor," *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol. 18, no. 2, p. 649, Apr. 2020, doi: 10.12928/telkomnika.v18i2.14843.
- [24] Adnan, M. Rizal, and A. A. Ilham, "Performance of LoRa Gateway based Energy Consumption and Different Frame Sizes," in *2018 2nd East Indonesia Conference on Computer and Information Technology (EIconCIT)*, Nov. 2018, pp. 159–162. doi: 10.1109/EIconCIT.2018.8878628.
- [25] U. K. Usman, "Propagasi Gelombang Radio Pada Teknologi Seluler," *Konferensi Nasional Sistem Informasi (KNSI) 2018*, 2018.

- [26] T. Mahmood, H. K. AL-Qaysi, and A. S. Hameed, "The Effect of Antenna Height on the Performance of the Okumura/Hata Model Under Different Environments Propagation," in *2021 International Conference on Intelligent Technologies (CONIT)*, Jun. 2021, pp. 1–4. doi: 10.1109/CONIT51480.2021.9498395.
- [27] M. I. Nashiruddin and A. Hidayati, "Coverage and Capacity Analysis of LoRa WAN Deployment for Massive IoT in Urban and Suburban Scenario," in *2019 5th International Conference on Science and Technology (ICST)*, Jul. 2019, pp. 1–6. doi: 10.1109/ICST47872.2019.9166450.
- [28] K. Udofia, F. Nwiido, and A. Jimoh, "Okumura-Hata Propagation Model Tuning Through Composite Function of Prediction Residual," *Mathematical and Software Engineering*, vol. 2, pp. 93–104, Aug. 2016.
- [29] U. Etuk Uyoata, "LoRa Network Planning Using Empirical Path Loss Models," in *2022 IEEE Nigeria 4th International Conference on Disruptive Technologies for Sustainable Development (NIGERCON)*, Apr. 2022, pp. 1–5. doi: 10.1109/NIGERCON54645.2022.9803130.
- [30] S. Haykin and B. van Veen, *Signals and Systems*. Wiley, 2002. [Online]. Available: <https://books.google.co.id/books?id=F1OCQgAACAAJ>
- [31] B. Sklar, *Digital communications fundamentals and application*. England: Pearson Education Limited, 2014. ISBN: 1292026065.
- [32] R. C. Dixon, *Spread Spectrum Systems with Commercial Applications Third Edition*. A Wiley-Interscience Publication, 1994. ISBN: 0471883093.
- [33] D. Torrieri, *Principles of Spread-Spectrum Communication Systems*. Cham: Springer International Publishing, 2015. doi: 10.1007/978-3-319-14096-4.
- [34] S. Paul, D. Guha, A. Chatterjee, S. Metha, and A. Shah, "Comparison between Conventional Network and ANN with Case Study," *International Research Journal of Engineering and Technology*, vol. 4, pp. 1795–1803, Aug. 2017.
- [35] F. Dhaifina, B. S. Nugroho, and M. I. Maulana, "Perancangan Dan Realisasi Antena Biquad Yagi Dan Antena Biquad Omnidirectional Sebagai Repeater Pasif Untuk Meningkatkan Daya Terima Sinyal Wcdma," *eProceedings of Engineering*, vol. 4, no. 3, 2017.

- [36] Dosen Pendidikan, “Repeater,” 2021. dosenpendidikan.co.id/ (accessed Aug. 01, 2022).
- [37] Electronic Tutorials, “Introduction to the Amplifier.” Accessed: Jul. 10, 2022. [Online]. Available: electronics-tutorials.ws/amplifier
- [38] *Wireless Communications & Networking*. Elsevier, 2007. doi: 10.1016/B978-0-12-373580-5.X5033-9.
- [39] RTL-SDR, “About RTL-SDR.” www.rtl-sdr.com (accessed Jun. 06, 2022).
- [40] I. Apriyanti, G. Siregar, and M. A. Dalimunthe, “FINANCIAL FEASIBILITY OF RICE RED RICE FARMING Oryza nivara (CASE STUDY: VILLAGE OF SARAN PADANG, DOLOK SILAU SUBDISTRICT, SIMALUNGUN REGENCY),” *JASc (Journal of Agribusiness Sciences)*, vol. 1, no. 1, 2018.
- [41] Dragino, “Datasheet LoRa Shield,” 2022. https://www.dragino.com/downloads/index.php?dir=datasheet/EN/&file=Datasheet_Lora_Shield.pdf (accessed Jun. 01, 2022).
- [42] Arduino, “What is Arduino?,” 2018. arduino.cc (accessed Jun. 01, 2022).
- [43] Shenzhen Dragino technology development co.LTD, “LG02 Dual Channels LoRa IoT Gateway,” *Dragino Technology Co., LTD*. Dragino Technology Co., LTD. (accessed Jul. 01, 2022).