



REFERENSI

- [1] A. Nurizar, “Digital Television Regulation and its Impact on Indonesia towards Society 5.0,” *Komunikator*, vol. 12, no. 2, pp. 106–115, 2020, doi: 10.18196/jkm.122039.
- [2] S. Atapattu, C. Tellambura, and H. Jiang, *Energy Detection for Spectrum Sensing in Cognitive Radio*, 1st ed. New York: Springer New York, 2010.
- [3] A. W. Oppenheim, A. S. Willsky, and S. H. Nawab, *Signal & Systems*, 2nd ed. New Jersey: Prentice Hall, 1997.
- [4] R. N. Bracewell, “The Fourier Transform,” *Sci. Am.*, vol. 260, no. 6, pp. 86–95, 1989, doi: doi.org/10.1038/scientificamerican0689-86.
- [5] B. Porat, *A Course in Digital Signal Processing*. New York: John Wiley & Sons, Inc., 1996.
- [6] R. G. Lyons, *Understanding Digital Signal Processing*, 3rd ed. Boston: Prentice Hall, 2011.
- [7] J. W. Cooley and J. W. Tukey, “An Algorithm for the Machine Calculation of Complex Fourier Series,” *Math. Comput.*, vol. 19, no. 90, pp. 297–301, 1965, doi: <https://doi.org/10.1090/s0025-5718-1965-0178586-1>.
- [8] R. D. Yates and D. J. Goodman, *Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers*, 2nd ed. New Jersey: Wiley, 2004.
- [9] C. Walck, *Hand-book on Statistical Distribution for experimentalists*. Stockholm: Stockholm University, 1996.
- [10] S. Ross, *A First Course Probability*, 8th ed. New Jersey: Pearson Education, 2010.
- [11] H. Taub and D. L. Schilling, *Principles of Communication Systems*, 2nd ed. New York: McGraw-Hill Book Company, 1986.
- [12] M. J. Evans and J. S. Rosenthal, *Probability and Statistics The Science of Uncertainty*, 2nd ed. New York: W. H. Freeman and Company, 2010.
- [13] R. E. Walpole, R. H. Myers, S. L. Myers, and K. Ye, *Probability & Statistics for Engineers & Scientists*, 9th ed. Boston: Pearson Education, 2011.
- [14] Xycooon, “Statistics - Econometrics - Forecasting,” *Office for Research Development and Education*. https://www.xycooon.com/nor_uncenteredmoment4.htm (accessed Jun. 21, 2022).
- [15] P. Stoica and R. Moses, *Spectral Analysis of Signals*. New Jersey: Prentice Hall, 2005.
- [16] M. H. Hayes, *Statistical Digital Signal Processing and Modeling*. New York: John Wiley & Sons, Inc., 1996.
- [17] A. Nasser, H. A. H. Hassan, J. A. Chaaya, A. Mansour, and K. C. Yao, “Spectrum Sensing for Cognitive Radio: Recent Advances and Future Challenge,” *Sensors*, vol. 21, no. 7, pp.



- [18] FCC, “Spectrum Policy Task Force, ET Docket No. 02-135,” 2002.
- [19] M. R. Dzulkifli, M. R. Kamarudin, and T. A. Rahman, “Spectrum occupancy of Malaysia radio environment for cognitive radio application,” in *IET International Conference on Wireless Communications and Applications (ICWCA 2012)*, 2012, pp. 1–6, doi: 10.1049/cp.2012.2071.
- [20] B. El Khamlichi, C. Abdelaali, L. Ahmed, and J. El Abbadi, “A quantitative investigation of spectrum utilization in UHF and VHF bands in Morocco: The road to cognitive radio networks,” in *SITA 2016 - 11th International Conference on Intelligent Systems: Theories and Applications*, Oct. 2016, pp. 1–6, doi: 10.1109/SITA.2016.7772293.
- [21] D. Nur, N. Umar, A. Dini, S. Manjang, Dewiani, and Wardi, “Survey Utilisasi Spektrum Frekuensi Kota Makassar Untuk Aplikasi Jaringan Kognitif Sensor Nirkabel,” in *Seminar Nasional Teknik Elektro dan Informatika (SNTEI) 2017*, 2017, pp. 101–105, doi: 10.31227/osf.io/2vguk.
- [22] M. Song, C. Xin, Y. Zhao, and X. Cheng, “Dynamic Spectrum Access : From Cognitive Radio to Network Radio,” in *IEEE Wireless Communications*, 2012, pp. 23–29, doi: 10.1109/MWC.2012.6155873.
- [23] E. Axell, G. Leus, E. G. Larsson, and H. V. Poor, “Spectrum Sensing for Cognitive Radio : State-of-the-Art and Recent Advances,” *IEEE Signal Process. Mag.*, vol. 29, no. 3, pp. 101–116, 2012, doi: 10.1109/MSP.2012.2183771.
- [24] Y. Arjoune and N. Kaabouch, “A Comprehensive Survey on Spectrum Sensing in Cognitive Radio Networks: Recent Advances, New Challenges, and Future Research Directions,” *Sensors*, vol. 19, no. 1, pp. 1–32, 2019, doi: 10.3390/s19010126.
- [25] D. M. M. Plata and Á. G. A. Reátiga, “Evaluation of Energy Detection for Spectrum Sensing Based on the Dynamic Selection of Detection-Threshold,” *Procedia Eng.*, vol. 35, pp. 135–143, 2012, doi: 10.1016/j.proeng.2012.04.174.
- [26] F. Yu, M. Huang, and H. Tang, “Biologically inspired consensus-based spectrum sensing in mobile Ad Hoc networks with cognitive radios,” *IEEE Netw.*, vol. 24, no. 3, pp. 26–30, 2010, doi: 10.1109/MNET.2010.5464224.
- [27] B. B. Murti, R. Hidayat, and S. B. Wibowo, “Spectrum Sensing Using Adaptive Threshold Based Energy Detection in Cognitive Radio System,” in *2021 4th International Seminar on Research of Information Technology and Intelligent Systems, ISRITI 2021*, 2021, pp. 614–617, doi: 10.1109/ISRITI54043.2021.9702818.
- [28] K. Kockaya and I. Develi, “Spectrum Sensing in Cognitive Radio Networks: Threshold



- Optimization and Analysis," *Eurasip J. Wirel. Commun. Netw.*, vol. 2020, no. 255, pp. 1–19, 2020, doi: 10.1186/s13638-020-01870-7.
- [29] E. Rebeiz, P. Urriza, and D. Cabric, "Experimental Analysis of Cyclostationary Detectors Under Cyclic Frequency Offsets," in *2012 Conference Record of the Forty Sixth Asilomar Conference on Signals, Systems and Computers (ASILOMAR)*, 2012, pp. 1031–1035, doi: 10.1109/ACSSC.2012.6489175.
- [30] A. F. Eduardo and R. G. G. Caballero, "Experimental Evaluation of Performance for Spectrum Sensing: Matched Filter vs Energy Detector," in *IEEE Colombian Conference on Communication and Computing (IEEE COLCOM 2015)*, 2015, pp. 1–6, doi: 10.1109/ColComCon.2015.7152105.
- [31] A. Ivanov, K. Tonchev, V. Poulikov, and A. Manolova, "Probabilistic Spectrum Sensing Based on Feature Detection for 6G Cognitive Radio: A Survey," *IEEE Access*, vol. 9, pp. 116994–117026, 2021, doi: 10.1109/ACCESS.2021.3106235.
- [32] K. Lei, Y. Tan, X. Yang, and H. Wang, "A K-means clustering based blind multiband spectrum sensing algorithm for cognitive radio," *J. Cent. South Univ.*, vol. 25, no. 10, pp. 2451–2461, 2018, doi: 10.1007/s11771-018-3928-z.
- [33] L. W. Couch, *Digital and Analog Communication Systems*, 8th ed. New Jersey: Pearson Education, 2013.
- [34] C. R. Stevenson, G. Chouinard, Z. Lei, W. Hu, S. J. Shellhammer, and W. Caldwell, "IEEE 802.22: The First Cognitive Radio Wireless Regional Area Network Standard," *IEEE Commun. Mag.*, vol. 47, no. 1, pp. 130–138, 2009, doi: 10.1109/MCOM.2009.4752688.
- [35] R. Tandra and A. Sahai, "SNR Walls for Signal Detection," *IEEE J. Sel. Top. Signal Process.*, vol. 2, no. 1, pp. 4–17, 2008, doi: 10.1109/JSTSP.2007.914879.
- [36] R. Arroyo-Valles, S. Maleki, and G. Leus, "Distributed Wideband Spectrum Sensing for Cognitive Radio Networks," in *2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2014, pp. 7263–7267, doi: 10.1109/ICASSP.2014.6855010.
- [37] YLab, "Understanding Frequency Bands and Bandwidth – YLab." https://www.ylab.ca/frequency_bands_and_bandwidth/ (accessed May 13, 2022).
- [38] R. K. Dubey and G. Verma, "Improved Spectrum Sensing for Cognitive Radio Based on Adaptive Threshold," in *2015 Second International Conference on Advances in Computing and Communication Engineering*, 2015, pp. 253–256, doi: 10.1109/ICACCE.2015.70.