

Comments on "A shaped reflector antenna for 60-GHz indoor wireless LAN access points"

Citation for published version (APA):

Smulders, P. F. M., Khusial, S., & Herben, M. H. A. J. (2002). Comments on "A shaped reflector antenna for 60-GHz indoor wireless LAN access points". *IEEE Transactions on Vehicular Technology*, 51(6), 1681-1681. <https://doi.org/10.1109/TVT.2002.807482>

DOI:

[10.1109/TVT.2002.807482](https://doi.org/10.1109/TVT.2002.807482)

Document status and date:

Published: 01/01/2002

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

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- [3] T. S. Rappaport, *Wireless Communications: Principles and Practice*. Englewood Cliffs, NJ: Prentice-Hall, 1996.
- [4] M.-S. Alouini and A. Goldsmith, "A unified approach for calculating the error rates of linearly modulated signals over generalized fading channels," *IEEE Trans. Commun.*, vol. 47, pp. 1324–1334, Sept. 1999.
- [5] M. K. Simon and M.-S. Alouini, "A unified approach for the probability of error for noncoherent and differentially coherent modulations over generalized fading channels," *IEEE Trans. Commun.*, vol. 46, pp. 1625–1638, Dec. 1998.
- [6] A. J. Goldsmith and S. G. Chua, "Variable-rate variable-power M-QAM for fading channels," *IEEE Trans. Commun.*, vol. 45, pp. 1218–1230, Oct. 1997.
- [7] A. Goldsmith and S. G. Chua, "Adaptive coded modulation for fading channels," *IEEE Trans. Commun.*, vol. 46, pp. 595–602, May 1998.
- [8] M.-S. Alouini and A. Goldsmith, "Adaptive M-QAM modulation over Nakagami fading channels," in *Proc. Communication Theory Mini-Conf. (CTMC-VI) in Conjunction With IEEE Global Commun. Conf. (GLOBE-COM'97)*, Phoenix, AZ, Nov. 1997, pp. 218–223.
- [9] M.-S. Alouini, X. Tang, and A. Goldsmith, "An adaptive modulation scheme for simultaneous voice and data transmission over fading channels," *IEEE J. Select. Areas Commun.*, vol. 17, pp. 837–850, May 1999.
- [10] W. C. Y. Lee, "Level crossing rates of an equal-gain predetection diversity combiner," *IEEE Trans. Commun.*, vol. COM-18, pp. 417–426, Aug. 1970.
- [11] —, "Mobile radio performance for a two-branch equal-gain combining receiver with correlated signals at the land site," *IEEE Trans. Veh. Technol.*, vol. VT-27, pp. 239–243, Nov. 1978.
- [12] M. F. Adachi and J. D. Parsons, "Effects of correlated fading on level crossing rates and average fade durations with predetection diversity reception," *Proc. Inst. Elect. Eng. Commun., Radar, Signal Processing*, vol. 135, pp. 11–17, Feb. 1988.
- [13] S. Mukherjee and H. Viswanathan, "Minimum duration outages for diversity systems," in *Proc. IEEE Global Telecomm. Conf. (GLOBECOM'98)*, Sydney, Australia, Nov. 1998, pp. 3663–3668.
- [14] M. D. Yacoub, J. E. V. Bautista, and L. G. de Rezende Guedes, "On higher order statistics of the Nakagami- m distribution," *IEEE Trans. Veh. Technol.*, vol. 48, pp. 790–793, May 1999.
- [15] N. Youssef, T. Munakata, and M. Takeda, "Fade statistics in Nakagami fading environments," in *Proc. IEEE Int. Symp. Spread Spectrum Techniques and Applications*, Mainz, Germany, 1996, pp. 1244–1247.
- [16] A. Abdi and M. Kaveh, "Level crossing rate in terms of the characteristic function: A new approach for calculating the fading rate in diversity systems," *IEEE Trans. Commun.*, vol. 50, pp. 1397–1400, Sept. 2002.
- [17] A. Abdi, A. Barger, and M. Kaveh, "A parametric model for the distribution of the angle of arrival and the associated correlation function and power spectrum at the mobile station," *IEEE Trans. Veh. Technol.*, vol. 51, pp. 425–434, May 2002.
- [18] K. V. Mardia, *Statistics of Directional Data*. London, U.K.: Academic, 1972.
- [19] I. S. Gradshteyn and I. M. Ryzhik, *Table of Integrals, Series, and Products*, 5th ed. San Diego, CA: Academic, 1994.
- [20] J. Komaili, L. A. Ferrari, and P. V. Sankar, "Estimating the bandwidth of a normal process from the level crossings of its envelope," *IEEE Trans. Acoust., Speech, Signal Processing*, vol. ASSP-10, pp. 1481–1483, Oct. 1987.
- [21] M. K. Simon, S. M. Hinedi, and W. C. Lindsey, *Digital Communication Techniques—Signal Design and Detection*. Englewood Cliffs, NJ: Prentice-Hall, 1995.
- [22] Y. C. Ko, A. Abdi, M. S. Alouini, and M. Kaveh, "Average outage duration of diversity systems over generalized fading channels," in *Proc. IEEE Wireless Commun. Net. Conf. (WCNC'2000)*, Chicago, IL, Sept. 2000, pp. 216–221.
- [23] M. D. Yacoub, C. R. C. M. da Silva, and J. E. V. Bautista, "Second-order statistics for equal gain and maximal ratio diversity-combining reception," *Electron. Lett.*, vol. 36, pp. 382–384, Feb. 2000.
- [24] X. Qi, M.-S. Alouini, and Y.-C. Ko, "Closed-form analysis of dual-diversity equal-gain combiners over Rayleigh channels," in *Proc. IEEE Veh. Technol. Conf. (VTC'2000)*, Birmingham, AL, May 2002, pp. 1559–1563.
- [25] N.-C. Beaulieu, "An infinite series for the computation of the complementary probability distribution function of a sum of independent random variables and its application to the sum of Rayleigh random variables," *IEEE Commun. Mag.*, vol. 26, pp. 1463–1474, Sept. 1990.
- [26] N. C. Beaulieu and A. A. Abu-Dayya, "Analysis of equal gain diversity on Nakagami fading channels," *IEEE Trans. Commun.*, vol. 39, pp. 225–234, Feb. 1991.
- [27] A.-A. Abu-Dayya and N.-C. Beaulieu, "Microdiversity on Rician fading channels," *IEEE Commun.*, vol. 42, pp. 2258–2267, June 1994.
- [28] Y.-C. Ko, M.-S. Alouini, and M. K. Simon, "An MGF-based numerical technique for the outage probability evaluation of diversity systems," *IEEE Trans. Commun.*, vol. 49, pp. 12–14, Sept. 2000.
- [29] C. L. Turin, "The characteristic function of Hermitian quadratic forms in complex normal variables," *Biometrika*, vol. 47, pp. 199–201, 1960.
- [30] P. C. Fannin and A. Molina, "Analysis of mobile radio channel sounding measurements in inner city Dublin at 1.808 GHz," *Proc. Inst. Elect. Eng. Commun.*, vol. 143, pp. 311–316, 1996.
- [31] J. P. Rossi, J. P. Barbot, and A. J. Levy, "Theory and measurement of the angle of arrival and time delay of UHF radiowaves using a ring array," *IEEE Trans. Antennas Propagat.*, vol. 45, pp. 876–884, May 1997.

Comments on "A Shaped Reflector Antenna for 60-GHz Indoor Wireless LAN Access Points"

A. Kumar

I. INTRODUCTION

A shaped reflector antenna principles and theory of [1] are based on the papers described by Kumar [2]–[4]. These papers described the X-band, circularly polarized shaped beam telemetry antenna suitable for retransmitting the radar data back to an earth terminal. The telemetry coverage area extends in all directions from nadir to 6° above the horizon as seen from the earth station. These telemetry antennas were used for the European Space Agency (ESA) ERS-1 and the Canadian Space Agency (CSA) RADARSAT-1 satellites. The reflector was shaped using geometrical optics (GO) and the design satisfy the Snell's law for a reflecting surface and the principle of energy conservation.

The authors of the above paper [1] have used the same principle, and similar types of radiation patterns are produced. However, two points are different in the above paper: 1) the design frequency (60 GHz) and 2) the application of antenna for indoor wireless LAN access points. Therefore, the authors should have referenced [2] and [3] in their paper [1].

I appreciate the authors [1] using a shaped reflector antenna for 60 GHz indoor wireless LAN access points.

REFERENCES

- [1] P. F. M. Smulders, S. Khushial, and M. H. A. J. Herben, "A shaped reflector antenna for 60-GHz indoor wireless LAN access points," *IEEE Trans. Veh. Technol.*, vol. 50, pp. 584–591, Mar. 2001.
- [2] A. Kumar, "Highly shaped beam telemetry antenna for the ERS-1 satellite," in *Proc. Montech '86 IEEE Conference on Antennas and Communication*, 1986, IEEE Cat. No. TH0156-0.
- [3] —, "Highly shaped beam telemetry antenna for the ERS-1 satellite," *Inst. Elect. Eng. Proc.*, vol. 134, pp. 106–108, 1987.
- [4] —, "Circularly polarized satellite antenna feed with microstrip components," presented at the Presented at the 40th Annual IEEE Broadcast Technology Symposium, 1990.

Manuscript received November 29, 2001; revised May 17, 2002.

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Digital Object Identifier 10.1109/TVT.2002.807482