Proceedings of the 2018 7th International Conference on Computer and Communication Engineering, ICCCE 2018
16 November 2018, Article number 8539266, Pages 296-300
7th International Conference on Computer and Communication Engineering, ICCCE 2018; Kuala Lumpur; Malaysia; 19 September 2018 through 20 September 2018; Category numberCFP1839D-USB; Code 142740

Frequency Reliant Wireless Power Transfer Link for a Applications of mWatts Devices (Conference Paper)

Adam, I., Khan, S., Zaharuddin, Z., Kader, K.A., Rahman, F.D.A., Nordin, A.N., Musa, N.A.C., Yaacob, M.

Dept. of ECE, International Islamic University (IIUM), Kuala Lumpur, Malaysia

Abstract

View references (14)

In general, the resonant inductive wireless power transfer is superior in power efficiency consequently provides longer transfer range over inductive or capacitive wireless power transfer. For that reason, the theoretical analysis and simulation results of the series-to-series wireless power transfer topology were discussed in this paper. The study is conducted to analyze the effect of the coupling coefficient (k) of the coupling coils to the resonant frequency and input impedance of the transmitting circuit. The analysis is conducted by analyzing the equivalent circuit model by using circuit theory. The equivalent circuit model is developed by using the T-equivalent circuit. Further, the result is validated with the circuit simulation using the ISIS Proteus simulation package. The results of the analysis used in developing the highly efficient series-to-series wireless power transfer. © 2018 IEEE.

SciVal Topic Prominence

Topic: Radio | Electric vehicles | resonant wireless

Prominence percentile: 99.796

Author keywords

Inductive | Input impedance | Resonant | Series-to-series

Indexed keywords

Engineering controlled terms: Circuit simulation | Electric impedance | Electric impedance measurement | Energy transfer | Equivalent circuits | Natural frequencies

Engineering uncontrolled terms: Analysis and simulation | Coupling coefficient (k) | Equivalent circuit model | Inductive | Input impedance | Resonant | Series-to-series | Wireless power transfer

Engineering main heading: Inductive power transmission

Funding details

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia		IIUM
	RIGS 15-147-0147	
	RMC RIGS 16-067-0231	

Funding text

The technical support by colleagues and staff of the UniKL and IIUM are gratefully acknowledged. We also would like to thank the anonymous referees for valuable comments and suggestions. Financial assistance for this research by the IIUM Research Management Center (RMC) via RIGS Grant No RIGS 15-147-0147 and RMC RIGS 16-067-0231 are highly acknowledged

ISBN: 978-153866991-4
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ICCCE.2018.8539266
Document Type: Conference Paper
Publisher: Institute of Electrical and Electronics Engineers Inc.

Magnetics Conference, INTERMAG 2017

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

References (14)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Li, P., Bashirullah, R.
A Wireless Power Interface for Rechargeable Battery Operated Medical Implants
(2007) IEEE Transactions on Circuits and Systems II: Express Briefs, 54 (10), pp. 912-916. Cited 137 times.
doi: 10.1109/TCSII.2007.901613
View at Publisher

2 Harrison, R.R.
Designing efficient inductive power links for implantable devices
(2007) Proceedings - IEEE International Symposium on Circuits and Systems, art. no. 4253079, pp. 2080-2083. Cited 155 times.

3 Adam, I., Kadir, K.A., Khan, S., Nurashikin, A., Mansor, H.
Inductive resonant power transfer and topology consideration
(2018) 2017 IEEE 3rd International Conference on Engineering Technologies and Social Sciences, ICETSS 2017, 2018-January, pp. 1-5.
ISBN: 978-153861611-6
doi: 10.1109/ICETSS.2017.8324197
View at Publisher

4 Schlierf, R., Horst, U., Ruhl, M., Schmitz-Rode, T., Mokwa, W., Schnakenberg, U.
A fast telemetric pressure and temperature sensor system for medical applications
(2007) Journal of Micromechanics and Microengineering, 17 (7), art. no. S06, pp. S98-S102. Cited 30 times.
doi: 10.1088/0960-1317/17/7/S06
View at Publisher

5 Jiang, H., Zhang, J., Lan, D., Chao, K.K., Liou, S., Shahnasser, H., Fechter, R., (...), Roy, S.
A low-frequency versatile wireless power transfer technology for biomedical implants
(2013) IEEE Transactions on Biomedical Circuits and Systems, 7 (4), art. no. 2220763, pp. 526-535. Cited 44

times.
doi: 10.1109/TBCAS.2012.2220763

View at Publisher

6 Johari, R., Krogmeier, J.V., Love, D.J.

Analysis and practical considerations in implementing multiple transmitters for wireless power transfer via coupled magnetic resonance

(2014) IEEE Transactions on Industrial Electronics, 61 (4), art. no. 6517242, pp. 1774-1783. Cited 70 times.
http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=5410131
doi: 10.1109/TIE.2013.2263780

View at Publisher

7 Khan, I.M., Khan, S., Khalifa, O.O.
Wireless transfer of power to low power implanted biomedical devices: Coil design considerations
(2012) 2012 IEEE Int. Instrum. Meas. Technol. Conf, (1), pp. 2584-2588. Cited 9 times.

8 Ahlbom, A., Bergqvist, U., Bernhardt, J.H., Cesarini, J.P., Court, L.A., Grandolfo, M., Hietanen, M., (...), Matthes, R.

Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)

(1998) Health Physics, 74 (4), pp. 494-521. Cited 4068 times.

9 Kurs, A., Karalis, A., Moffatt, R., Joannopoulos, J.D., Fisher, P., Soljacic, M., Soljac, M.
Wireless power transfer via strongly coupled magnetic resonances
(2009) Science (80-.), 83, pp. 83-86.
2007

10 Arshad, A., Khan, S., Alam, A.H.M.Z., Tasnim, R., Gunawan, T.S., Ahmad, R., Nataraj, C.

An activity monitoring system for senior citizens living independently using capacitive sensing technique

(2016) Conference Record - IEEE Instrumentation and Measurement Technology Conference, 2016-July, art. no. 7520405. Cited 14 times.
http://ieeexplore.ieee.org/xpl/conferences.jsp
ISBN: 978-146739220-4
doi: 10.1109/I2MTC.2016.7520405

View at Publisher

11 Torla, A.L., Khan, S., Muthalif, A.G., Azman, A.W., Mustafah, Y.M.

Low voltage DC power supply with spike-blocking features

(2013) Conference Record - IEEE Instrumentation and Measurement Technology Conference, art. no. 6555596, pp. 1161-1164. Cited 3 times.
ISBN: 978-146734622-1
doi: 10.1109/I2MTC.2013.6555596

View at Publisher

12 Nataraj, C., Khan, S., Habaebi, M.H., Muthalif, A.G.A., Arshad, A.

Resonant coils analysis for inductively coupled wireless power transfer applications

(2016) Conference Record - IEEE Instrumentation and Measurement Technology Conference, 2016-July, art. no. 7520343. Cited 8 times.
http://ieeexplore.ieee.org/xpl/conferences.jsp
ISBN: 978-146739220-4

doi: 10.1109/I2MTC.2016.7520343

View at Publisher

13 Zhang, Z., Chau, K.T.

Homogeneous Wireless Power Transfer for Move-and-Charge

(2015) IEEE Transactions on Power Electronics, 30 (11), art. no. 7063268, pp. 6213-6220. Cited 33 times.
http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=4712525
doi: 10.1109/TPEL.2015.2414453

View at Publisher

14 Li, Q., Liang, Y.C.

An Inductive Power Transfer System with a High-Q Resonant Tank for Mobile Device Charging

(2015) IEEE Transactions on Power Electronics, 30 (11), art. no. 7101277, pp. 6203-6212. Cited 16 times.
http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=4712525
doi: 10.1109/TPEL.2015.2424678

View at Publisher

Back to results | 1 of 1

Top of page