**Reviewer (3):**

Thanks for your valuable comments. We updated our paper by proposing a closed form solution for the Time Aware Optimum Frame Length Lopt-TA in terms of the number of tags and the slot duration constant Ct (equation 16). The new proposed equation is new, and is not exist in the state-of-art. The behavior of the new proposed equation is compared with the exact equation (equation 10) and gives almost the same results in the complete range of Ct (Figure 2). Afterwards, we compared our proposal wrt. the proposals of [1] and [2] as follows:

* According to [1], the authors were interested to optimize the mean number of resolved tags in unit time. However in the proposed paper, we optimize the timing efficiency to identify an amount of tags. Comparing our results with the results of [1] :
* The authors did not give a closed form for the optimum frame length. The authors have substituted by all possible values of the frame length to get the frame length that minimizes the total mean time (eqn.20 in [1]). Hence the optimum frame length that corresponding to the minimum mean time is obtained. However, the proposed paper gives a simple closed form equation that relates the optimum frame length to the total number of tags and the slot duration constant Ct.
* The authors got the optimum frame length by optimizing the total mean time to read all tags. However this optimization has no meaning as it gives the same performance of optimizing the efficiency per frame. The attached figure (Figure1) shows the optimum frame length versus the number of tags at different values of the slot duration constant (Ct). This figure gives the same results of figure 2 in [1]. However, the proposed solution is simpler and faster for real time applications.
* In [2], the authors were interested to optimize the mean number of resolved tags in unit time:
  + The authors, proposed efficiency metric in terms of the ratio between the frame length and the number of tags, and the slot duration constant. Afterwards, they find the optimum frame length by searching in this efficiency metric for the value of the frame length which maximizes their proposed efficiency at specific slot duration constant, given that the slot duration constant varies with the working rate. So they did not propose any closed form equation relates the frame length to the number of tags and the slot duration constant.
  + The attached Figure 2 shows the maximum efficiency versus the complete range of the slot duration constant. The blue curve presents the maximum efficiencies for [2] using their method, the black curve presents the maximum efficiencies using the proposed equation. According to the figure, we have almost the same efficiency in the full range using our proposed direct equation.

References:

[1] A. Zanella,“Adaptive Batch Resolution Algorithm with Deferred Feedback for Wireless Systems,” IEEE Transactions on Wireless Communications, 2012.

[2] G. Khandelwal, A. Yener, K. Lee, and S. Serbetli, “ASAP: A MAC protocol for dense and time constrained RFID systems,” in IEEE International Conference on Communications 2006 (ICC ’06), vol. 9, 2006, pp. 4028–4033.

**Reviewer (4):**

Thanks for your valuable comments. We updated our paper by proposing a closed form solution for the Time Aware Optimum Frame Length Lopt-TA in terms of the number of tags and the slot duration constant Ct (equation 16). The new proposed equation is new, and is not exist in the state-of-art.

* According to [1], the authors were the only one who proposed a closed form formula for the optimum frame length in case of unequal slots durations. The authors proposed an equation depends on Lampertw function. This equation can be solved either using the iteration method (in this case we cannot consider it as a direct equation), or using its expansion. Using the fourth order expansion of Lambertw function, their equation diverges from the exact solution in the region of (Ct≤0.2) which expected to be the most important region in the RFID standards. In figure 2 of the updated version of the paper, a comparison between the exact solution (without any approximations), the proposed closed form equation, and [1] which proves that the proposed equation gives more accurate results compared to [1] in the full range of the slot duration constant. Moreover, in [1] figure 3, the authors show the results of using different slots durations and how it maps to increase in the time aware efficiency. This metric of comparison is unfair, because the main innovation here is only in choosing the optimum frame length corresponding to a certain difference in slot duration, which is presented in our paper in figures 4 and 5. These figures present a fair comparison between the total identification time of the proposed frame length which is function of the slot duration constant, and the total identification time of the conventional frame length which assumes L=n using the same value of the slot duration constant. This metric presents the actual gain from only choosing the proposed frame length. However in their comparison, they added the gain of changing the slot duration constant to the gain of their proposed frame length.
* According to [2, 3], the authors defined the same efficiency metric. However, they chose the optimum value of the frame length numerically using lockup tables. In their method, they have to store a table for each rate as shown in [2] table III and [3] table I. According to EPCglobal C1G2 standard the rate can change from 40 kbps to 640 kbps which is a large range of transmission rates. However, in our proposed equation we have a direct solution with neither storage nor searching.

References:

[1] Liu, D.; Zhongxiang Wang; Jie Tan; Hao Min; Junyu Wang, "ALOHA algorithm considering the slot duration difference in RFID system," RFID, 2009 IEEE International Conference on , vol., no., pp.56,63, 27-28 April 2009.

[2] Xunteng Xu; Lin Gu; Jianping Wang; Guoliang Xing; Shing-Chi Cheung, "Read More with Less: An Adaptive Approach to Energy-Efficient RFID Systems," Selected Areas in Communications, IEEE Journal on , vol.29, no.8, pp.1684,1697, September 2011.

[3] Alcaraz, J.J.; Vales-Alonso, J.; Egea-Lopez, E.; Garcia-Haro, J., "A Stochastic Shortest Path Model to Minimize the Reading Time in DFSA-Based RFID Systems," Communications Letters, IEEE , vol.17, no.2, pp.341,344, February 2013