

Comments by Reviewer 1

The main issue of the paper is the organization and presentation. The manuscript is organized and presented more as a technical report than a scientific paper.

Specifically, it lacks of a section providing a technical background and an analysis of the related work.

The introduction does not properly introduce the context of the research.

The adopted solution, the SmartMesh IP, is presented only from a high level, if possible it should be presented more in details.

Thank you for your review.

We added a related work section that describes the context in details and explains why we chose the SmartMesh IP solution.

Other (minor) issue

- The authors mention that the SmartMesh IP exploits multi-hop communication. How is that achieved? Is the RPL protocol exploited?

The routing protocol that is used in SmartMesh IP is proprietary.

- In Section 4.1 the authors state that "Fig.6 shows that the RSSI difference never exceeds a couple of dB.". From Fig.6(b) looks that in some cases that happen. Can the authors comment further on that? Could the link symmetry highlighted in these results guaranteed by TSCH channel hopping?

Indeed it is important to note that the RSSI that we present is averaged over the 15 IEEE802.15.4 frequencies. We added a precise percentage of outliers. We consider less than .4% a negligible value.

Comments by Reviewer 2

First, the SmartMesh IP technology should be detailed. Second the authors must present the state-of-the-art concerning (i) other experimental initiatives in the area and/or (ii) other technologies similar to SmartMesh IP to justify the use of this technology.

The authors should explain “what is” the SmartMesh IP technology. Is this a “new” network architecture? Which layers does it implements? It also implements the monitoring application? All these questions are emerged from the third paragraph of Section 2.

We added a more detailed network stack description and a “related work” where we explain why we chose SmartMesh IP.

The authors state that ‘Several wireless technologies operate in the same building, including Wi-Fi, Bluetooth and other IEEE802.15.4-based networks. “ How difficult is to produce a heat map of the environment to support the results presented in Section 3.2?

Thank you for pointing that out ! We fully agree that more measurements about the interferences was necessary. We’ve added a plot that show the PDR per channel and showed that the interferences match the channels used by WiFi.

The authors should also clarify the process of adding nodes to the network. How the handshake is started? Messages are exchanged between the new node and the SmartMesh IP manager through multihop communication? In addition, nodes send HR_* messages to gateway periodically or store these messages locally? Please provide more details about these issues in Section 2.

The handshake mechanism is proprietary, we can not disclose that information. The HR messages are sent periodically. That information is detailed in Section 3.

I understand the use of Friis transmission model in the agriculture use case but I am not convinced the use of this model in the smart building environment is appropriate. I also do not understand why -40 dB is a reasonable value to adjust the model. Please discuss these points in the first paragraph of Section 3.1.

Indeed a transmission model like the LogNormal model or either the Ricean or Rayleigh models would be more adapted to indoor deployment. In our case, we don’t use the transmission model to prove anything. We only observe that point are between Friis equation and Friis minus 40dB. We added some notes to address that concern.

Please provide more details about the data and control traffic in Section 3.3., i.e., the size of data and control messages, the time interval between messages or the transmission rate, if the both messages – data and control -- are considered to compute losses. With these details in mind, readers can estimate the network throughput, for example.

We added the size of control message in Section 3. Although is slotted scheduling networks, we tend on using the number of packet per second as a throughput unit.

How does the criteria adopted by SmartMesh IP to infer a bad link (Section 3.2) impacts stability? I believe this criteria is the main reason for the results obtained in Section 4.2.

You are right. Of course selecting only links with high PDR is one good way of getting stable links. However, if channel hopping was not used, this rule would not apply as the PDR could drastically decrease due to a specific interference on a channel and cause this link to be unstable. What TSCH brings is resilience to interference on specific channels.