The paper provides a comprehensive evaluation of wet snow dielectric constant models and their application in L-band radiometry of liquid water content in Greenland. While I agree that it is of vital importance to have this type of evaluation, as many people underestimate the influence of the dielectric constant models, there are several issues needed to be resolved before it can be considered for publication:

1. I am concerned about your assumption for the middle-layer in the MEMLS - highly reflective firn layers. You assume that ε_r varies from 5-26 while the imaginary part is fixed to 0.0002. This doesn't make much physical sense to me. For ice-firn mixture it is very unlikely to reach this high real part. If you assume some melting, then the imaginary part should also significantly increase. Please consider to either change the parameterization or justify this parameterization in the paper.

2. The paper has inconsistency in notations and some typos in equations:

- I could not find the definition of "v" in eq. (14.1) and "W" in eq. (16.1).

- Eqs. (17) and (18), β should be replaced by "1/2" and "0.4" respectively.

- The equation numbering is wrong, e.g, there are two eq. (8) and eq. (20) in the paper and eq. (15) has "(15)" and "(15.1)" while other equations start directly with (num.num), e.g. "(16.1)" and "(16.2)".

- eq. (20), there is often no "-" sign before k_0 in the definition of alpha.

3. I am not sure whether it is a good idea to have so many sections for different models - some sections only have 2-3 lines. I suggest either put all the models in one section, or the authors can group the models and put them in different sections, for instance, 2.3.1 - 2.3.3 can formulate a section named, for instance, "Debye-form models" and sections 2.3.8 – 2.3.10 can form a section named "Power-law models".

4. I recommend changing the name of the dielectric mixing model "MEMLS3" to "Matzler model" as the current name can cause some confusions to distinguish with the microwave emission model MEMLS3.

5. Notation consistency also needs to be improved. Examples are given:

- I am particularly concerned about LWA, LWC and volume fraction of liquid water v_w. Is LWC the same as v_w? If so, please keep them the same everywhere in the paper. Furthermore,in Fig. 6, is the notation m_v same as v_w?

- This also occurs in Fig. 4, does the notation twet mean t_{wet}? Please revise them.

- line 413, the percent is written in "percent" and later it is "%", please keep consistency.

6. The authors can consider using different colors to represent the values shown in the blocks for selected tables (e.g. Tables 3,4,5 and 6). This colormap + number approach will greatly enhance the readability of these tables.

7. Caption of Fig. 9 – what is EBM? Perhaps you want to say SAMIMI?

8 . It is a bit surprise to see how big the impact of different dielectric mixing-model is on the retrieved LWA. Could it be associated with other parameterizations? For instance, the dielectric constant of middle layers? It would be good to briefly discuss this in the paper.

9. Line 716: please elaborate "forcing", e.g. weather and environmental conditions?

10. Line 722: "except KAN_U...models seemed to refreeze" -> "except the retrievals using KAN_U...seemed to indicate the sites refreeze slowly..."