

## ***Interactive comment on “Unknown high-frequency (7–12 kHz) quasi-periodic VLF emissions observed on the ground at $L \sim 5.5$ ” by Jyrki Manninen et al.***

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We thank both referees for their valuable and interesting comments. We appreciate very much that they were willing to spend their time helping us to improve our paper. We did our best to use all the comments and suggestions to improve the manuscript.

- We have changed ‘Unknown’ to ‘New’ in the title.
- We have corrected everywhere the upper frequency to ‘12 kHz’.
- The end of the emission is not a consequence of the filtering method. Unfortunately, we could not find a plausible source of such strong signal rejection. Some speculation could be attributed to a sudden drop of the flux of trapped electrons at the geomagnetic flux tube, where the wave-particle interaction is taking place.

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- A possible explanation why the second set of “bullets” is only observed at lower frequencies could be that it is as a result of a time-shift of the wave generation region to higher L-shells.
- The size of the ionospheric exit points is not possible to determine with only two-component (magnetic NS and EW) receiver. We would need either the third component (Z, electric) or one or two similar receivers within a couple of hundreds of kilometres from KAN. Based on the polarisation and ellipticity of the waves
- All technical corrections have been made according to referees’ suggestions.

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