

LONG DELAYED ECHOES ON EME-CIRCUITS

Brief review: Long delayed radio echoes have been reported in the literature for almost sixty years. First detailed investigations were carried out by Hals, Strömer and Van der Pol in 1928. LDEs are defined as radio echoes received after transmission with time delays from less than 1s up to 40s. Originally this phenomenon was observed on short-wave and many scientists attempted to solve the puzzle but until now no satisfactory explanation has been found. Anyway, it is generally accepted that round-the-world echoes (multiples of 138 ms) cannot explain the situation. However, there is a strong evidence that LDEs are related to plasmaphysical processes in ionosphere and/or magnetosphere. A remarkable observation was published by H. L. Rassmussen (OZ9CR) in "Ghost echoes on the Earth-Moon path" (Nature, Vol. 257, 1975). He reported ordinary moon-echoes followed by further echoes of his signal with an additional time delay of 2s. This effect continued for 20 minutes. The scientific world was surprised because OZ9CR observed this strange phenomenon on the 23cm-band far outside the short-wave range! Further observations of this kind were published in DUBUS 1/1982 by YU1AW who reported similar echoes on 70cm.

Note to all EME-operators: **have you ever observed long delayed echoes on EME-circuits?** Please send news of your observations to the address given below! Please try to answer the following questions.

Experimental set up

Please report the following station characteristics

1. exact location
2. antenna-type and -gain, polarisation
3. bandwidth during observation
4. total sensitivity

Time of observation

Please give the following information on time of LDE-occurence

1. exact time of observation (UTC)
2. length of observation-period

Conditions during observation

1. What was the actual antenna-heading (Az, El)?
2. What was the actual moon-position?
3. Where there any high-power radio transmitter in your area that were operating at the same time?
4. Did you observe any further strange effects at the same time, e.g. radio noise or unidentified radio signals?
5. Do you have any further comments on conditions during LDE?

Observations made

1. Did you observe your own long delayed echoes?
2. Did you observe ordinary moon-echoes during occurrence of LDE?
3. Did you note any Doppler-shift of the LDEs?
4. Did you note any distortion or any other characteristics of the LDEs?
5. What was the LDEs signal strength?
6. What delay times did you observe?
7. Did you observe CW- or SSB-LDEs?
8. Do you have any further comments on your observations?

Experiments made during LDE-occurence

Did you carry out any tests or experiments during the LDE-occurence? E.g.

1. Did you change antenna heading? What happened?
2. Did you vary the power output?
3. Did you change the frequency?
4. **Do you have any LDE-recordings (e.g. tape)???**
5. Do you have any further comments on your experiments?

The result of this inquiry will be published in DUBUS. Any further LDE-observations (e.g. on short-wave) would also be appreciated!

Please send your Information to: Volker Grassmann, DF5AI
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