EDGES MEMO #280

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To: EDGES Group

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Subject: Beam chromaticity and ground loss for lowband on 5×5 m ground plane

Figure 1 shows the beam chromaticity and chromaticity of beam and loss for the lowband antenna on the original high band ground plane with extensions. The loss is shown separately in Figure 2. The beam and loss were derived using FEKO with a 5×5 m ground plane on soil with dielectric constant and conductivity of 2e-2 S/m. The curves in Figure 1 are the residuals with 5 physical terms removed. At each GHA the second entry is with loss included from which it can be seen that the relatively large loss on a small ground plane doesn't significantly add to the frequency structure. However, a layer of rock below the soil could significantly add to the frequency structure. See memo #263 for cases with non uniformity in the soil.

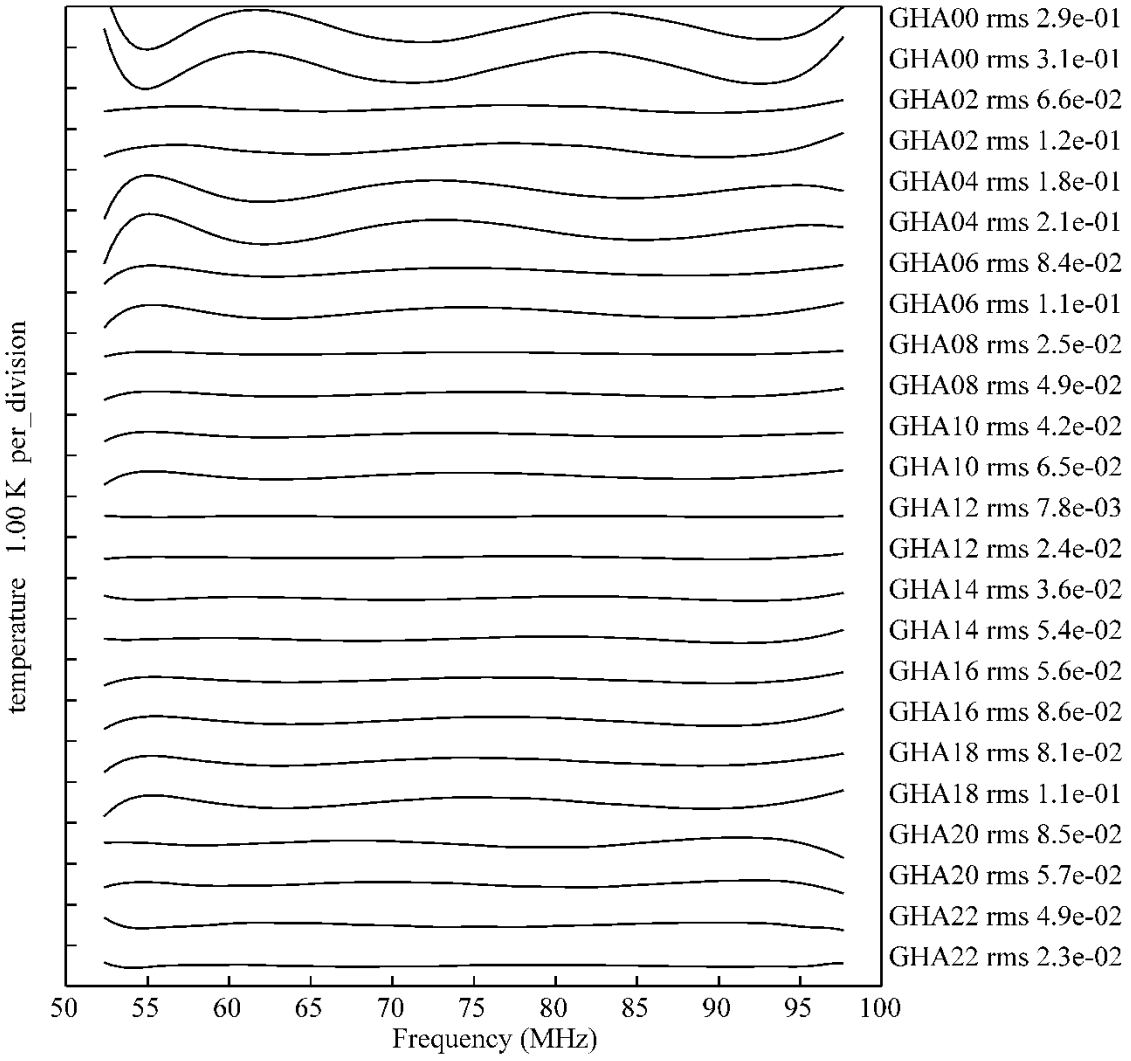

Figure 1. Residuals for 5 physical terms removed of chromaticity for lowband antenna on 5×5 m ground plane.

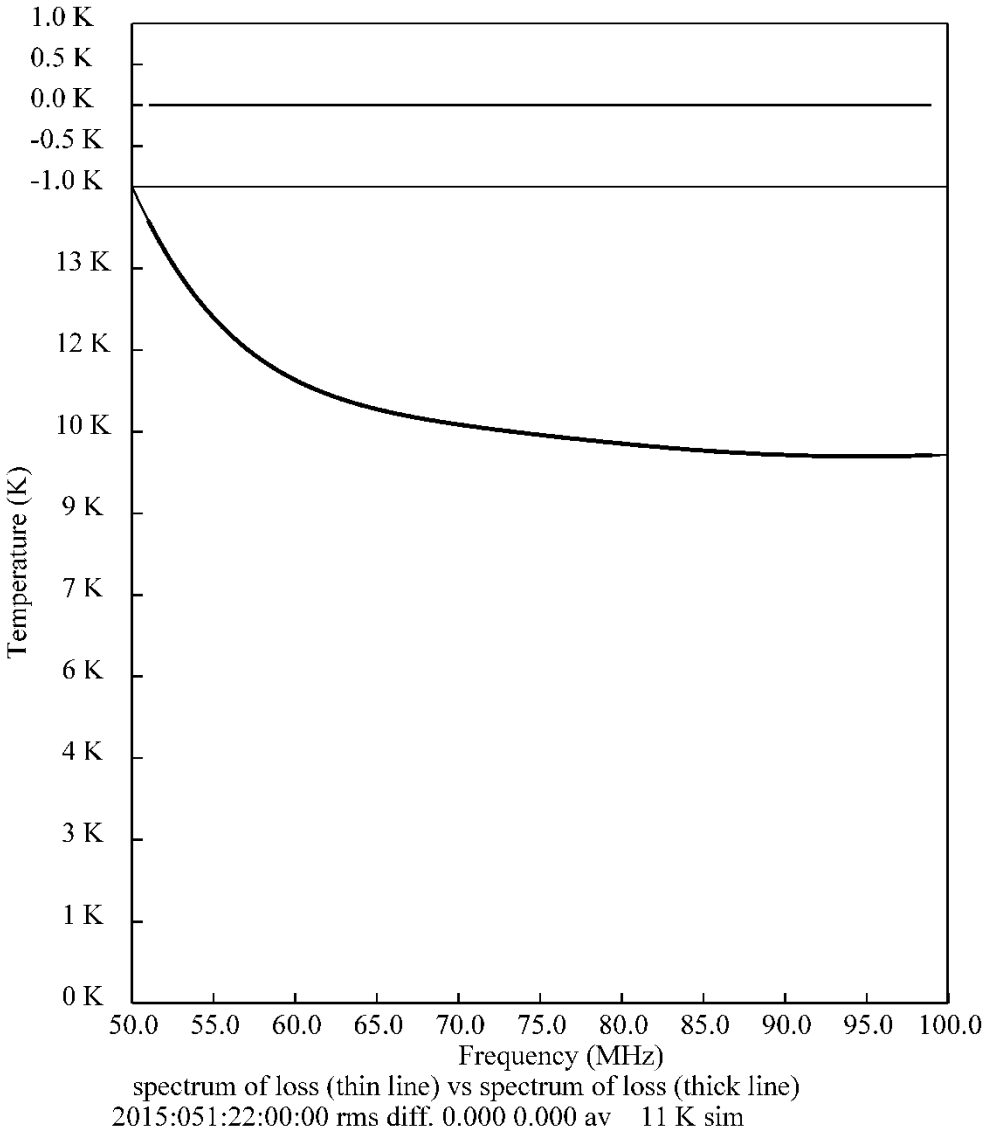

Figure 2. Ground loss expressed in terms of added temperature at 300 K.