

VIA ELECTRONIC FILING

August 5, 2020

Ms. Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: Comments on the FCC's Proposed Rule (Docket No. 20-133): "Modernizing and Expanding Access to the 70/80/90 GHz Bands"

Dear Ms. Dortch,

As medical, public health and scientific professionals, we are writing to express our opposition to the above captioned matter, and herewith submit the following comments on the agency's Notice of Proposed Rulemaking and Order dated June 10, 2020 which purports to modernize and expand commercial access to the 70, 80 and 90 GHz bands.

Our opposition is rooted in the fact that the agency lacks sufficient scientific knowledge to properly assess the potential impact of this dramatically expanded use of the spectrum on the health and safety of people and the environment. We call on you to delay any implementation of this order until such time as the Commission has sought and received input from the scientific community, and brought critical balance to its decision-making process.

We have previously communicated to the agency the scientifically proven biological effects associated with human exposure to high-frequency radiofrequency microwave radiation ("RFR"). In this submission, we focus on the hazards that high frequency RFR poses to the natural world – impacts which must be considered by the FCC's rule-making processes under the mandate of the National Environmental Policy Act (NEPA).

Although the effects of exposure to RFR have been studied since the 1950s, sharper investigative tools are enabling scientists to understand more precisely how these exposures are causing biological harm. Yet, the agency seems either unaware of such research or unconcerned about it. Not only do the words "environment," "health" and "wildlife" fail to appear anywhere in the 38-page document regarding this matter, but there has apparently been no discussion or consideration of these tangential impacts.

As we contemplate increased use of these frequency bands to enable enhanced communications in outer space, for air travel and terrestrially, we would be wise to consider that migratory birds use the earth's magnetic field to navigate. Magnetite is found in a wide variety of organisms and scientists have proven that this substance is used by birds to sense the earth's low energy

magnetic field as a sort of internal compass.¹ Researchers have discovered that RFR disturbs these internal magneto-receptors used for orientation.² Numerous studies have confirmed this propensity for RFR to disrupt avian navigation.^{3 4}

Honey bees, critical to our food supply, are also affected by RFR, particularly in the higher bands. Exposure can cause dielectric heating in the abdomen, and the absorption of RFR in bees is frequency dependent. This frequency dependency is important, since 5G networks will be operating at higher frequencies, as the matter at hand contemplates.^{5 6 7 8}

High frequency RFR can also have profound impacts on other parts of our natural environment by disruption of other complex cellular, biologic and reproductive processes in insects, fish, amphibians, mammals, trees and plants.⁹

We humans interfere with nature at our peril, and the agency's apparent disregard for the potential impacts of dramatically expanding the use of these high-frequency bands on our natural world is deeply disturbing. We urge the Commission, in the strongest possible terms, to proactively seek the guidance of scientific experts who can enlighten agency officials regarding the possible and probable consequences of its proposed actions.

(Signed)

¹ Cadiou H. & McNaughton P. Avian magnetite-based magnetoreception: a physiologist's perspective. *Journey of the Royal Society Interface* 7 (Suppl 2):S193–S205 (2010).

² Balmori A. Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation. *Science of the Total Environment* 518-519 (2015).

³ Balmori A. & Hallberg O. The Urban Decline of the House Sparrow (*Passer domesticus*): A Possible Link with Electromagnetic Radiation. *Electromagnetic Biology and Medicine* 26:41–151 (2007).

⁴ Engel S. et al. Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird. *Nature* 15;509(7500):353-6 (2014).

⁵ Kumar N.R., Sangwan S., Badotra P. Exposure to cell phone radiations produces biochemical changes in worker honey bees. *Toxicology International* 18 (1):70-72 (2011).

⁶ Thielens A., Bell D., Mortimore D.B., Greco M.K., Martens L., Joseph W. Exposure of Insects to Radio-Frequency Electromagnetic Fields from 2 to 120 GHz. *Scientific Reports* 8, 3924 (2018).

⁷ Halabi, N.E., Achkar, R., Haidar, G.A. The effect of cell phone radiations on the life cycle of honeybees. *17th IEEE Mediterranean Electrotechnical Conference* (2014).

⁸ Sharma V.P. & Kumar N.R. Changes in honeybee behaviour and biology under the influence of cellphone radiations. *Current Science* 98(10):1376-1378 (2010).

⁹ Cucurachi S. et al. A review of the ecological effects of radiofrequency electromagnetic fields (RF-EMF). *Environment International* 51C:116-140 (2012).