

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum

ELECTRONICALLY FILED *EX PARTE* COMMENTS

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

Dear Ms. Dortch:

Engineers for the Integrity of Broadcast Auxiliary Service Spectrum (EIBASS) hereby submits its *ex parte* filing in response to the March 19, 2010, "Request for Immediate Ruling" filed by Wireless Strategies, Inc. (WSI). This WSI filing pertains to the WT Docket 07-121 rulemaking, addressing "distributed radiating elements" (DREs) antennas for point-to-point microwave paths. This proposal has also come to be referred to as "microwave white spaces."

As previously explained, this rulemaking falls within the purview of EIBASS since under the "harmonization" principle adopted by the Commission in the ET Docket 01-75 rulemaking concerning Part 74 Broadcast Auxiliary Services (BAS) stations, the BAS fixed-link rules are intended to mimic, wherever possible, the Part 101 fixed-link rules. Therefore, the WT Docket 07-121 proceeding has a potential impact to Part 74 BAS spectrum operations. Further, in the March 16, 2010, General Docket 09-40 National Broadband Plan (NBP), the Commission recommended, at page 93, to "revise Parts 74, 78 and 101 of its rules to allow for increased spectrum sharing among compatible point-to-point microwave services."

While EIBASS agrees that more efficient use of spectrum is always a desirable goal, there must be a reasonable technical basis for such new-found spectrum use, and EIBASS submits that this latest WSI filing raises a substantial question about its initial claim, namely that it has developed a physically small DRE microwave antenna capable of meeting "all applicable Commission rules."¹ In EIBASS' view, this would mean meeting FCC Category A performance requirements, and not just FCC Category B performance requirements.

If WSI really has developed a commercially practical, physically small, phased-array DRE antenna, why would WSI now file in support of allowing use of Category B antennas in frequency congested areas?

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EIBASS would expect that WSI would not want to see any such antenna relaxation if it had available a physically-small microwave antenna meeting Category A requirements. However, if this claim is inaccurate, and its DRE antenna can only meet Category B performance requirements, then EIBASS could understand why WSI would favor a relaxation of the microwave antenna performance requirements for frequency congested areas.

However, if it turns out that the WSI claim of meeting Category A specifications proves to be false, then what about meeting even Category B performance requirements? Perhaps the mystery WSI DRE antenna has a problem there, as well.

As the Society of Broadcast Engineers, Inc. (SBE), the National Spectrum Managers Association (NSMA), and EIBASS have all previously noted in this proceeding, WSI has failed to provide any credible, independent evidence that its DRE antenna can meet the FCC performance requirements for microwave antennas.² So, while EIBASS has nothing against a new technology that would offer microwave antennas that are smaller, lighter weight, and have less wind load than conventional parabolic-reflector antennas, EIBASS takes the same position as did the late Dr. Carl Sagan regarding alleged close encounters of the third kind: extraordinary claims require extraordinary proof. But, in WSI's case, no proof at all has been submitted. Thus, until such time as WSI submits credible antenna pattern measurements for its DRE antenna, done by a recognized laboratory or engineering firm, and further made available for peer review by all interested parties, EIBASS submits that the declaratory ruling desired by WSI is not warranted. Indeed, after almost three years since its original filing, the lack of documentation regarding its DRE antenna technology should cause the Commission to consider terminating this rulemaking without action.

Microwave White Spaces

Insofar as the "microwave white spaces" portion of the WSI Request for Declaratory Ruling, EIBASS continues to believe that the WSI assumption that there are useable areas between the straight line portions of a microwave antenna's radiation pattern envelope (RPE), where the actual side lobes of the parabolic dish antenna are below the RPE line, is a flawed assumption. The problem with the WSI approach is that the exact off-axis direction and amplitude of these side lobes vary from antenna to antenna due to manufacturing tolerances, and can also vary due to distortions to the antenna's parabolic reflector surface as a result of the shipping and erection process. Indeed, EIBASS suspects that the precise directions and amplitudes of the side lobes of a parabolic dish antenna will vary with temperature, as the surface of the metal parabolic reflector expands and contracts due to the extremes in temperature that microwave dishes must typically endure. Thus, unless WSI is willing to measure the RPE of each and every antenna, and track those RPEs by the antenna's serial number and possibly also monitor the antenna's temperature, it would not be possible to know with certainty over a given RPE "step" exactly how far the actual antenna lobes are below the RPE line. And without this information the microwave "white spaces" that WSI claims to exist in the vicinity of a frequency coordinated path, based on an antenna's RPE as opposed to its actual side lobes, cannot be taken advantage of.

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Of course, WSI has not proposed a licensing scheme that would require measuring the individual side lobes of the specific serial number microwave antenna actually used at a particular transmitting or receiving site, since doing so would be impractical. And even if such precise data for individual antennas was available, the Commission's ULS, and microwave station licenses, do not allow tracking not only the make and model of an authorized antenna, but also its serial number.

EIBASS Would Not Object To Allowing Category B Antennas in all Microwave Bands Under the WT Docket 07-54 Conditions

WSI asks the Commission to extend the decision reached in the September 10, 2007, Report & Order to WT Docket 07-54, concerning microwave stations in the 11 GHz Private Operational Fixed Service (POFS) band, to all microwave bands and services. In the 07-54 R&O, the Commission concluded that there was justification for allowing the use of Category B microwave antennas, even in frequency congested areas, so as to allow smaller Category B antennas to be used for backhaul purposes by parties wanting to deploy expanded wireless services. However, parties electing to employ such reduced-performance antennas do so subject to two critical caveats: 1) if another party demonstrates that the use of a Category B antenna is precluding a new microwave path, and that use of a Category A antenna would allow the new path, then the existing path using the Category B transmitting antenna would be obligated to upgrade to a Category A antenna (presumably bearing whatever costs might be necessary to allow use of the larger, heavier, and greater wind load Category A antenna); and 2) a link using only a Category B receiving antenna could not object to a proposed new path if there would be no predicted interference to the existing path when studied on the basis of a Category A receiving antenna rather than the actual Category B receiving antenna.

EIBASS notes that the purpose for establishing minimum antenna standards was to ensure efficient use of limited microwave spectrum. As noted in the Docket 07-54 R&O, the issue is not one of interference to existing microwave paths as a result of the use of a sub-Category A transmitting antenna, because regardless of the transmitting antenna used by the newcomer path, the newcomer must demonstrate protection of all existing paths; that is, even a newcomer path using a Category A transmitting antenna would have the potential to cause interference to an existing path. But, once licensed, a microwave station with too broad of a transmitting antenna RPE or too broad of a receiving antenna RPE has the potential to preclude future new paths. Thus, by only allowing paths using at least Category A antennas in frequency congested areas, and at least Category B antennas in all other areas, the Commission maximizes the use of limited spectrum by minimizing the preclusive impact of each new microwave path. But, since Category A antennas (at least conventional ones) are generally larger, heavier, and more expensive than Category B antennas, there is an offsetting effect, in that the Category A antennas required for paths in frequency congested areas might make it impractical to construct a link using such antennas, and so the path never gets built. So, like many spectrum allocation issues, it's a balancing act between competing engineering and economic realities.

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However, given the caveats 1 and 2 discussed in the prior paragraphs, EIBASS would not object to the Commission extending the policies adopted for the 11 GHz POFS band to microwave bands used by Part 74 BAS stations. That is, if a newcomer licensee is willing to take the risk of being forced to upgrade its transmitting and/or receiving antenna(s) from Category B to Category A (or, alternatively, accept the interference resulting from the use of a receiving antenna meeting only Category B performance requirements), then EIBASS believes that it would be reasonable to allow the newcomer to do so. However, in that event the cutting-corners station with Category B antennas should not be allowed to argue later that it should not be forced to upgrade because of the cost of doing so; even if doing so would require the substitution of an entirely new tower to be capable of supporting a larger sized, heavier, and greater wind load Category A antenna. That is, it is a big gamble that the sub-Category A licensee is electing to take.

EIBASS notes that in the most frequency congested areas, new links must often specify transmitting and receiving antennas far exceeding the Category A standards in order to frequency coordinate: A super-Category A transmitting antenna in order to demonstrate nonexistence of interference to existing links, and a super-Category A receiving antenna in order to reject interference from existing links. Thus, in many frequency congested areas the Category A versus Category B issue will be moot. However, allowing the use of Category B antennas in frequency congested areas, with caveats, is a spectrum tool that EIBASS sees no reason to disdain.

Respectfully,

/s/ Dane E. Ericksen

/s/ Richard A. Rudman

Dane E. Ericksen

Richard A. Rudman

¹ See the June 7, 2007, WIS *Request for Declaratory Ruling*, at Page 7.

² WSI has only supplied a tabulation of claimed side lobe suppressions in dB versus off-axis angles from the antenna's main beam; something that anyone with simple word processing software could generate. A 2007 SBE request for documentation of actual antenna range measurements by a credible entity has yet to be provided. The Commission needs to ask itself why. One would think that if WSI really had developed a cost-effective, phased array, physically small microwave antenna that it would be only too happy to let an independent laboratory measure the antenna's performance and write a report, for peer review by any interested party. WSI could then sell its new-technology antenna to parties wanting to build broadband network microwave backhuls in frequency congested areas using its innovative technology antenna; that is, WSI wouldn't need any relaxed new rules if its DRE antenna can already meet microwave Category A antenna requirements, as it claims.