

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Revision of Parts 2 and 15 of the Commission's	)	ET Docket No. 03-122
Rules to Permit Unlicensed National	)	RM - 10371
Information Infrastructure (U-NII) devices in	)	
the 5 GHz band	)	
	)	

**Via the ECFS**

**COMMENTS OF AGERE SYSTEMS**

Agere Systems (“Agere”) hereby respectfully offers its Comments on the Notice of Proposed Rulemaking (the “NPRM”) in the above-captioned Proceeding.

Agere is a leading manufacturer of Wireless Local Area Network (“WLAN” or “RLAN”) devices and equipment compliant to the IEEE 802.11 family of standards that operate at transmission rates of up to 54 Mbps in the 2.4 GHz and 5 GHz bands.

Agere actively participates in the IEEE 802.11 Local Area Network Standards Committee’s Task Groups, where the extensions to the 802.11 standard for Dynamic Frequency Selection (“DFS”) and Transmit Power Control (“TPC”) were developed.

We also have been active in the ITU-R JRG-8A/9B efforts, WRC-03, and the joint industry/U.S. government project groups on DFS/TPC, that led to agreement between industry and NTIA/DoD on required interference mitigation techniques such as DFS that became part of the U.S. position to WRC-03, and are currently working on test methodologies for DFS.

Agere is actively developing 5 GHz products based on the IEEE 802.11 standards. As such, Agere is an interested party in this proceeding and appreciates the opportunity to present these timely filed comments for the Commission’s consideration.

## INTRODUCTION

1. On January 15, 2002, the Wireless Ethernet Compatibility Alliance (“WECA”), now known as the Wi-Fi Alliance, filed a Petition for Rulemaking (the “WECA Petition”) with the Commission, seeking the allocation of an additional 255 MHz of spectrum from 5470-5725 MHz for use by Radio Local Area Networks (“RLANs”).
2. The WECA Petition sought to achieve two major goals – a) the allocation of the additional spectrum necessary to meet the future needs of RLANs and b) global harmonization of spectrum allocated for use by RLANs that would both promote economies of scale, resulting in lower costs for users of RLAN technology, and facilitate a regulatory regime that would allow the users of portable RLAN client devices to enjoy the significant benefits of freedom of roaming across borders in today’s ever more global society and economy.
3. In Europe, the bands 5150-5350 MHz (already available for use by RLANs in the US under the Commission’s “U-NII” rules) and 5470-5725 MHz had already been allocated on a *PRIMARY* basis for use by high performance RLANs.<sup>1</sup>
4. At WRC-03, without opposition by a single ITU Member State Administration, the conference adopted a Resolution (“Resolution COM5/16”) and corresponding changes to the Table of Frequency Allocations, adding *PRIMARY* allocations to the Mobile Service in the bands 5150-5350 and 5470-5725 MHz, for wireless access systems, including RLANs, as described in ITU-R Recommendation M.1450.<sup>2</sup>
5. Agere commends the Commission for adopting the instant NPRM, proposing to make the band 5470-5725 MHz available for use by wireless access systems, including RLANs, in the US. We will comment in more detail on the Commission’s proposals in the following sections of these Comments.

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<sup>1</sup> See ERC/DEC/(99)23

<sup>2</sup> See Final Acts, WRC-03, Resolution COM5/16 and corresponding changes to Article 5 of the ITU Radio Regulations

**THE BODY OF COMMENT IN RESPONSE TO THE WECA PETITION SUPPORTS BOTH THE NEED AND THE FEASIBILITY OF ALLOCATING ADDITIONAL 5 GHZ SPECTRUM FOR USE BY WIRELESS ACCESS SYSTEMS, INCLUDING RLANS**

6. In response to the WECA Petition, seventeen comments and ten reply comments were filed. The overwhelming majority of the commenters supported WECA's proposal, citing both the benefits of additional system capacity and the promise of new technologies capable of providing higher data rates than currently available.

**COMMENTS ON DFS**

7. In the NPRM, the Commission proposes to require the use of an interference mitigation mechanism known as Dynamic Frequency Selection ("DFS") to assure the protection of incumbent users in the bands 5250-5350 and 5470-5725 MHz.<sup>3</sup>

8. Agere recognizes the requirement for DFS, noting that sharing studies done both in the ITU-R and between U.S. industry and NTIA/DoD have shown that DFS, with the thresholds and other parameters specified are, in fact, necessary to assure protection of critical government radar systems with which wireless access systems, including RLANS, will share the bands referenced above.

9. We also note that WRC-03 adopted changes to the ITU Radio Regulations that require wireless access systems, including RLANS, to implement DFS within the global *PRIMARY* allocation to the Mobile service that is intended for use by such devices. Since the ITU Radio Regulations are a treaty obligation, we believe that the Commission must require the use of DFS in these bands according to Resolution COM5/16 (WRC-03) and the referenced ITU-R Recommendation on DFS characteristics.

10. In light of the fact that the ITU Radio Regulations and Table of Allocations, as amended by WRC-03 clearly intend that the subject bands be used for wireless access systems, including RLANS,<sup>4</sup> and the acknowledged need<sup>5</sup> for this spectrum to accommodate future growth of such systems, we believe that the Commission should reject the concept of "narrowband U-NII devices."

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<sup>3</sup> See the NPRM, at 21-23.

<sup>4</sup> See Resolves 1, Resolution COM5/16 (WRC-03), which reads as follows: "that the use of these bands by the mobile service is for the implementation of WAS including RLANS as described in Recommendation ITU-R M.1450;"

<sup>5</sup> See the NPRM, at 11, Resolution 736 (WRC-2000), and Agenda Item 1.5 (WRC-03).

11. Furthermore, in the interest of brevity and avoiding repetition, we would make the following observations in support of the more detailed technical discussion embodied in the *Comments of IEEE 802* (of which we are aware because of our participation in that body):

- In systems where multiple devices operate under the control of a central controller, only the central controller should be required to implement the radar detection function of DFS.
- We support the proposals of IEEE 802 vis a vis DFS requirements for systems that do not operate under the control of a central controller.
- In light of the fact that the ITU Radio Regulations and Table of Allocations, as amended by WRC-03 clearly intend that the subject bands be used for wireless access systems, including RLANs,<sup>6</sup> and the acknowledged need<sup>7</sup> for this spectrum to accommodate future growth of such systems, we believe that the Commission should reject the concept of “narrowband U-NII devices.” (This refers to questions in the NPRM regarding bandwidth correction factors for “U-NII devices with receive bandwidths less than 1 MHz.)

### **TRANSMIT POWER CONTROL**

12. In the NPRM, the Commission proposes to require Transmit Power Control (“TPC”) in the band 5470-5725 MHz.<sup>8</sup>

13. Agere supports this proposal, noting that this requirement is also embodied in the ITU Radio Regulations modifications enacted by WRC-03, and we further note that the newly modified ITU Radio Regulations also require the use of TPC in the 5250-5350 MHz band.<sup>9</sup>

14. The text of the NPRM states that “*TPC will allow the transmitter to operate at less than the maximum power for most of the time.*”<sup>10</sup>

15. However, we believe that it would be more accurate and appropriate to state that “*TPC will allow the transmitter to operate at less than the maximum power in many situations.*”

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<sup>6</sup> See Resolves 1, Resolution COM5/16 (WRC-03), which reads as follows: “*that the use of these bands by the mobile service is for the implementation of WAS including RLANs as described in Recommendation ITU-R M.1450.*”

<sup>7</sup> See the NPRM, at 11, Resolution 736 (WRC-2000), and Agenda Item 1.5 (WRC-03).

<sup>8</sup> See the NPRM, at 24.

<sup>9</sup> See Resolution COM5/16 (WRC-03)

<sup>10</sup> See the NPRM, at 24.

16. The reason for this distinction is that the ability to reduce power via TPC, while maintaining reasonable performance, is not a time factor, but rather a location/propagation/cell size factor. Over a large population of devices it is highly probable, statistically, that the goal of an overall average power reduction of 3 dB, to provide additional mitigation of interference potential to the EESS and SRS will be achieved, and that is the primary purpose of TPC.

17. Again, in the interest of brevity and avoiding repetition, we would make the following observations in support of the more detailed technical discussion embodied in the *Comments of IEEE 802*:

- The “triggering mechanism” for TPC will be implementation dependent and should not be codified in the Commission’s rules.
- To specify a particular “trigger mechanism” for TPC, e.g., Received Signal Strength Indication (“RSSI”), for example, is an unnecessary requirement that will constrain receiver architectures unnecessarily.
- Thus, we recommend that the Commission strive to specify *behavior*, rather than implementation details, because the behavior is what is required and manufacturers should be free to produce innovative solutions to achieve that required behavior.
- This approach will spur competition to produce innovative technologies that reduce costs, power consumption, etc. – all to the benefit of the users of such devices.
- Because of the nature of the TPC requirement, timing is not a critical issue and TPC Timing should not be “over specified” Because of the statistical nature of TPC’s required net result in real world environments, over a very large population of devices, we believe that a regulatory requirement for a TPC activation time of something on the order of 30 seconds would be entirely adequate and would not impose an unnecessary burden on device manufacturers.
- Devices that operate 3 dB or more below the regulatory EIRP Limit need not and should not be required to implement TPC.

## TEST PROCEDURES

18. The Commission also seeks comment “...on the extent to which devices under development that may have unique or novel transmission waveforms may require special measurement instrumentation settings (e.g., integration times) that differ from those used for measuring compliance for existing U-NII band devices.”
19. Current WAS/RLAN equipment, at least according to the IEEE 802 family of standards, was designed to comply with currently specified measurement techniques.
20. A joint industry/U.S. government 5 GHz Project Team has been established, under the auspices of NTIA to address the testing issues involved in DFS and TPC in order to assure that adequate test procedures are developed to provide the required protection of incumbent users of the subject bands, including critical U.S. government radar systems.
21. Through our own participation, we are aware of significant industry participation in this activity, and we note that appropriate Commission staff members are also participating.
22. The intent and goal of this group is to cooperatively develop test methodologies and plans that will satisfy the needs of both industry and government users of the subject bands, with the hope that the Commission will adopt the resulting test methodologies and plans.
23. Because the bands in question were allocated regionally on a *PRIMARY* basis in Europe by the ERC (99)23 Decision several years ago, *and that decision imposed both DFS and TPC requirements*, a significant body of work on radio conformance testing has already been done under the auspices of ETSI, with participation by both industry members and regulators.
24. This work, embodied in *ETSI EN 301 893 V1.2.2 (2003-06)*, which is, in our opinion quite complete and mature, has been input by industry to the 5 GHz Project Team as a baseline starting point, with the expectation that this will speed the process and, hopefully, result in common testing requirements between the U.S. and European administrations.
25. Therefore, we recommend that detailed issues relating to test procedures be developed and coordinated in that venue and input to the FCC’s public comment process when completed.

## COMMENTS ON TRANSITION PERIODS

26. In the NPRM, the Commission proposes transition periods for both the 5250-5350 and 5470-5725 MHz bands to allow a reasonable opportunity for manufacturers to complete design, implementation, and certification of new equipment that will comply with the requirements for DFS and TPC functionality.

27. Since the band 5470-5725 MHz is a “new” spectrum for wireless access systems, including RLANs, in the U.S., the proposal that the rules therefore would take effect on the effective date of the new rules seems entirely reasonable and appropriate.

28. However, the transition periods proposed for the 5250-5350 MHz band, where equipment is currently authorized and shipping under the current rules (which do not require DFS or TPC functionality) raise some potentially serious issues.

29. Agere would recommend a transition period keyed to the availability of Commission-approved test procedures, rather than the publication of the Report and Order in the Federal Register.

30. Likewise, the proposal for a two year period, during which manufacturers would be permitted to ship previously certified products, should, in our opinion, also be keyed to the availability of Commission-approved test procedures, rather than the publication of the Report and Order in the Federal Register.

31. While the proposed two year period allows an additional year for shipping previously certified products, compared to the one year period after which new certifications would require compliance with the new rules, that two years may not be fully available due the lag in certification of new products, as alluded to above.

32. Therefore, we respectfully request that the Commission carefully consider the timing of transition periods for both new equipment certifications and sales of previously certified equipment in light of these concerns.

Respectfully submitted,

/s/

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