# IEEE 802.16 Working Group on Broadband Wireless Access

## http://WirelessMAN.org

Dr. Roger B Marks
NIST
325 Broadway, MC 813.00
Boulder, CO 80303 USA
Tel: +1 303 497 3037
Fax: +1 303 497 7828
mailto:marks@nist.gov
26 January 2001

Dr. Roberto Macchi
Chair, ETSI WG-TM4
Siemens ICN SpA
V. le Piero e Alberto Pirelli 10
Milan 20126
ITALY
mailto:roberto.macchi@icn.siemens.it

Dear Roberto:

On behalf of IEEE 802.16, I thank TM4 for your letter (our file IEEE 802.16l-00/01) commenting on Draft IEEE 802.16.2/D1-2000 and updating us on TM4 work items.

The new TM4 Work Items are of high interest for our 2-11 GHz air interface project, carried out in our Task Group 3. We are also interested in the new Work Item EN/TM 4130 (Revision of all 1-3 GHz and 3-11 GHz standards), and we wonder if its scope includes definitions of new equipment types. We are discussing the possibility of studying in detail coexistence issues below 11 GHz and we therefore welcome the information on relevant new ETSI work items.

Regarding your interesting and valuable comments on the Draft, we have incorporated many of them as submitted into our formal comment process by your liaison, Barry Lewis. In addition, we have the following remarks on the stimulating observations of the WG-TM4 Antenna Working Party:

**Antenna RPE and Gain**
We have not specified antenna gain figures because we consider the RPE, not the gain, as contributing to coexistence. The gain may well need to be specified for system design purposes but not, we believe, for coexistence purposes. However, the draft recommends maximum EIRP levels (absolute maximum and lower normal levels), so that gain need not be specified purely from the coexistence point of view.

**Hub Antenna RPE below the horizon limits**
Below the horizon, we define the pattern as a minimum limit in order to avoid nulls that would cause subscriber stations to transmit at an unnecessarily high level and thereby endanger coexistence. Above the horizon, the Draft defines a maximum limit, as in ETSI TM4 standards.

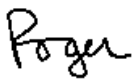
**Size of Subscriber Antennas**

The IEEE RPEs were developed with coexistence in mind. Simulations were carried out using patterns taken from a number of sources, including ETSI TM4. It was found that:

1. "better" antennas improved coexistence
2. the effect is not always very strong because many coexistence issues arise from main beam interference
3. even the "best" antennas could not resolve all coexistence issues
4. antenna requirements to achieve intrasystem performance targets often dominate the choice.

Our opinion is that more stringent specifications do not necessarily mean larger antennas. For example, a 0.3 m subscriber antenna can meet all of our RPE classes, and currently available smaller antennas can meet some of the RPE classes. There is, however, a cost implication. As a result of all of these considerations, we have recommended the use of the best antennas consistent with system economics.

Sincerely,



Dr. Roger B. Marks
Chair, IEEE 802.16 Working Group on Broadband Wireless Access

cc: Jim Carlo, Chair, IEEE 802 LAN/MAN Standards Committee
Barry Lewis, ETSI WG-TM4 Liaison to IEEE 802.16
Marianna Goldhammer, IEEE 802.16 Liaison to ETSI WG-TM4