Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Proposed 802.16.3 Standard's Responsiveness to ETSI BRAN HIPERMAN Requirements**
Date Submitted	**2001-03-05**
Source(s)	Dr. Demosthenes Kostas Voice: 214 520 8411 Adaptive Broadband Corp. Fax: 214 520 9802 3314 Dartmouth mailto:dkostas @adaptivebroadband.com Dallas, TX 75205
Re:	Proposal is in response to an ETSI BRAN assessment of Standards that are responsive to their HIPERMAN Requirements
Abstract	It proposes that 802.16.3 respond on how well its planned Standard complies to the ETSI BRAN's Functional Requirements for Fixed Wireless Access systems below 11 GHz: HIPERMAN Requirements
Purpose	TG3 to reply to the questions in this contribution on how the proposed 802.16.3 standard complies to the ETSI BRAN; Functional Requirements for Fixed Wireless Access systems below 11 GHz Requirements
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INTRODUCTION

The January 2001 ETSI BRAN meeting approved a Technical Report BRAN/DTR 101 856, "Broadband Radio Access Networks (BRAN); Functional Requirements for Fixed Wireless Access systems below 11 GHz: HIPERMAN on the Requirements". The Working Group intends to consider the compliance of the 802.16.3 (as well as other proposed and existing standards) with the functional requirements of Report BRAN/DTR 101 856. Therefore, the plenary of BRAN#22 decided to open a New Work Item to assess at their Session #23 in April 2001, the compliance of such standards with the HIPERMAN requirements. The results of this assessment will be included in the new revision of the document BRAN/DTR 101 856, and will be considered should ETSI BRAN decide to develop a below 11GHz HIPERMAN standard.

PROPOSAL
It is proposed that 802.16.3 consider replying to the attached Tables 1,2, and 3 questions (by the next ETSI BRAN meeting (4/1/01) on the 802.16.3 proposed Standard's responsiveness to the Requirements in the BRAN/DTR 101 856. Such response will enable ETSI BRAN to include the proposed 802.16.3 standard's responsiveness in the revised BRAN/DTR 101 856

Table 1   Mandatory Requirements

A.2   Recommended Requirements

#	Section		Requirement
R01	4.2	DLC PHY	**Broadband fixed wireless access (BFWA) networks SHOULD support a wide range of applications in use today and be extendable to support future services.**
HIPERACCESS			Complies
HIPERLAN/2			Complies HL/2 is designed for WLAN and for its applications
R02	4.3	DLC PHY	**The main features for HIPERMAN networks SHOULD be:** **[User installable terminals, Interoperable air interface, Very rapid scalable infrastructure deployment, Efficient spectrum usage Modular cost-effective growth (The system SHOULD allow easy customer installation of SUs and it SHOULD be easily expanded.), provision of packet-based services with QoS support.]**
HIPERACCESS			Partially complies, Packet based services with QoS support through CL
HIPERLAN/2			Partially omplies, No terminal installation, but packet based services with QoS support, interoperable air interface
R03	4.5	-	**To counter channel condition variations and maximise spectral efficiency, the system SHOULD be able to trade-off throughput with robustness.**
HIPERACCESS			Complies
HIPERLAN/2			Complies
R04	4.5	DLC	**The system SHOULD be able to support various convergence sublayers.**
HIPERACCESS			Complies
HIPERLAN/2			Complies

R05	4.6.1	-	It SHOULD be demonstrated that the deployment of FWA systems of the FS can coexist with existing services.
HIPERACCESS			
HIPERLAN/2			
R06	4.6.2	PHY DLC	The SU SHOULD be able to operate in half-duplex FDD to reduce equipment cost.
HIPERACCESS			Complies
HIPERLAN/2			Does not comply
R07	4.6.3	PHY DLC	The standard SHOULD offer a choice of channel arrangements which allow coexistence with pre-existing narrow band systems.
HIPERACCESS			Complies
HIPERLAN/2			Complies. Coexistence problems with already existing satellite and radar systems have been taken into account in the DFS mechanism in the standard, and radio link power as well.
R08	4.6.4	SPC PHY	The systems SHOULD be able to operate within frequency assignments which are typically offered in the 3.5 and 10.5 GHz bands which are far from consistent throughout Europe and can be as small as 14 MHz.
HIPERACCESS			Does not comply
HIPERLAN/2			Does not comply
R09	5.1	DLC	For efficient transport of IPv6, TCP/IP header compression over the air interface SHOULD be supported.
HIPERACCESS			Under standardization
HIPERLAN/2			Does not comply
R10	5.1	DLC	It SHOULD be possible to support the emerging IP-QoS efforts.
HIPERACCESS			Under standardization
HIPERLAN/2			Complies
R11	5.2	DLC	The protocols SHOULD support bridged LAN service and Remote LAN access capabilities.
HIPERACCESS			Under standardization
HIPERLAN/2			Complies
R12	7.2.1	-	Jitter generated in the system SHOULD be taken into account in the design of the buffers.
HIPERACCESS			Beyond standard
HIPERLAN/2			Beyond standard
R13	7.3	PHY	Due to the multipath inherent in the targeted frequency bands, the system SHOULD be capable of handling several μs of delay spread with limited performance degradation.
HIPERACCESS			Does not comply
HIPERLAN/2			Does not comply
R14	7.3	SPC	Although optimized for the 3.4-4.2 GHz band, the characteristics of different frequency bands below 11 GHz SHOULD be taken into account when defining HIPERMAN parameters.
HIPERACCESS			Does not comply
HIPERLAN/2			Does not comply
R15	7.3	PHY	The system SHOULD be such that it supports typical link distances as listed in Error! Reference source not found.
HIPERACCESS			Does not comply
HIPERLAN/2			Does not comply
R16	7.3	DLC	Because large distances can be expected between terminal and base station, time delay compensation SHOULD be provided by the standard.
HIPERACCESS			Complies

	HIPERLAN/2		Does not comply
R17	**7.4**	**PHY DLC**	**In TDD mode, a global asymmetry in the range of 10% upstream, 90% downstream to 90% upstream, 10% downstream SHOULD be supported.**
	HIPERACCESS		
	HIPERLAN/2		Complies
R18	**7.4**	**PHY DLC**	**In FDD mode, the modulation type and coding SHOULD be adjustable to maximize total sector capacity and near the capacity asymmetry to the traffic asymmetry.**
	HIPERACCESS		Partially complies
	HIPERLAN/2		Does not comply
R19	**7.6**	**SPC**	**HIPERMAN based systems SHOULD support an availability of at least 99.9% for the ranges as shown in** Error! Reference source not found.**. Rain effects may further deteriorate these numbers depending on the targeted spectrum.**
	HIPERACCESS		Does not apply
	HIPERLAN/2		Does not comply
R20	**7.7**	**PHY DLC**	**The protocols SHOULD allow for different capacities and performance for the system instances.**
	HIPERACCESS		Complies
	HIPERLAN/2		Complies
R21	**7.7**	**PHY DLC**	**The system SHOULD support features to maximize the scalability of a deployment.**
	HIPERACCESS		Complies
	HIPERLAN/2		Does not comply
R22	**7.8.1**	**-**	**The second level of authentication, between the user and the NMS, SHOULD be handled by higher layer protocols.**
	HIPERACCESS		Under standardisation
	HIPERLAN/2		Complies
R23	**7.8.3**	**DLC**	**The system SHOULD allow a cryptographic algorithm to be employed that is internationally applicable.**
	HIPERACCESS		Under standardisation
	HIPERLAN/2		Complies
R24	**8.1.1**	**-**	**In suburban areas HIPERMAN SHOULD be able to support at least 20% penetration of the market, and in urban areas at least 15%. In dense city centre areas HIPERMAN need only to be able to support at least 10% penetration.**
	HIPERACCESS		Complies
	HIPERLAN/2		Does not comply
R25	**8.1.2**	**-**	**In rural areas, HIPERMAN systems SHOULD target clustered households, such as villages, and not isolated houses.**
	HIPERACCESS		Complies
	HIPERLAN/2		Does not comply
R26	**8.1.2**	**-**	**HIPERMAN SHOULD be designed on the assumption that, in each type of region (suburban, urban, city centre) it should support the same penetration of the SOHO and Small Enterprices customer base as the residential customer base.**
	HIPERACCESS		Complies
	HIPERLAN/2		Does not comply
R27	**8.3**	**-**	**The HIPERMAN system SHOULD allow a design to include any functionality necessary to enable the economical installation of subscriber equipment.**
	HIPERACCESS		Partially complies (theoretically possible)

	HIPERLAN/2		Not applicable
R28	**8.3**	**-**	**Easy installation with a minimum of manual configuration SHOULD be the goal.**
	HIPERACCESS		More difficult
	HIPERLAN/2		Partially complies (complies in WLAN scenarios)
R29	**8.5**	**PHY DLC**	**It SHOULD be possible to trade-off service bandwidth against range when deploying a HIPERMAN system.**
	HIPERACCESS		Complies
	HIPERLAN/2		Complies.
R30	**8.7**	**PHY**	**The equipment SHOULD meet relevant regional [EMC] standards [other than ETS 300 019].**
	HIPERACCESS		Complies
	HIPERLAN/2		Complies
R31	**8.8**	**PHY**	**The emerging EMC standard EN 301 753 SHOULD be taken into consideration.**
	HIPERACCESS		
	HIPERLAN/2		
R32	**8.9**	**SPC**	**The coexistence issues SHOULD be handled by ETSI TM4.**
	HIPERACCESS		Not applicable
	HIPERLAN/2		Not applicable

Table 2   Recommended Requirements

A.3   Optional Requirements

#	Section	Layer	Requirement
O01	**4.4**	**DLC**	**The system [ ] MAY support mesh topology.**
	HIPERACCESS		Does not comply (does not support mesh topology).
	HIPERLAN/2		Does not comply (does not support mesh topology).
O02	**4.6.1**	**PHY SPC**	**The standard [ ] MAY be applicable to the range from 2 GHz to 11GHz.**
	HIPERACCESS		Does not comply
	HIPERLAN/2		Does not comply
O03	**4.6.1**	**DLC**	It MAY support other interfaces, e.g. Ethernet, USB, and POTS.
	HIPERACCESS		Under standardization
	HIPERLAN/2		Partially complies
O04	**8.1.1**	**-**	**HIPERMAN systems MAY be installed both in regions of relatively low household densities (rural areas) and regions with very high household densities (urban areas including city centres).**
	HIPERACCESS		Partially complies (theoretically possible)
	HIPERLAN/2		Not applicable
O05	**8.6**	**-**	**As the network grows new BSs MAY be built to increase capacity or extend or "fill-in" coverage.**
	HIPERACCESS		Partially complies (theoretically possible)
	HIPERLAN/2		Complies (in WLAN scenarios)

Table 3   Optional Requirements