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Re:	Call for Contributions on Project 802.20
Abstract	This document provides a glossary for the terminology used in the Project Authorization Request (PAR) for the 802.20 Working Group.
Purpose	For clarification and informational purposes.
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Terminology in the 802.20 PAR

This document provides a glossary for the terminology used in the Project Authorization Request (PAR) for the 802.20 Working Group, for clarification and informational purposes. The two relevant items in the PAR are Items 12 and 18, which describe the scope and characteristics of the standard.

The scope of the PAR (listed in Item 12) is as follows:

> *"Specification of physical and medium access control layers of an air interface for interoperable mobile broadband wireless access systems, operating in licensed bands below 3.5 GHz, optimized for IP-data transport, with peak data rates per user in excess of 1 Mbps. It supports various vehicular mobility classes up to 250 Km/h in a MAN environment and targets spectral efficiencies, sustained user data rates and numbers of active users that are all significantly higher than achieved by existing mobile systems."*

In addition, a table (provided in Item 18) lists "additional information on air interface characteristics and performance targets that are expected to be achieved."

Characteristic	***Target Value***
Mobility	*Vehicular mobility classes up to 250 km/hr (as defined in ITU-R M.1034-1)*
Sustained spectral efficiency	*> 1 b/s/Hz/cell*
Peak user data rate (Downlink (DL))	*> 1 Mbps**
Peak user data rate (Uplink (UL))	*> 300 kbps**
Peak aggregate data rate per cell (DL)	*> 4 Mbps**
Peak aggregate data rate per cell (UL)	*> 800 kbps**
Airlink MAC frame RTT	*< 10 ms*
Bandwidth	*e.g., 1.25 MHz, 5 MHz*
Cell Sizes	*Appropriate for ubiquitous metropolitan area networks and capable of reusing existing infrastructure.*
Spectrum (Maximum operating frequency)	*< 3.5 GHz*
Spectrum (Frequency Arrangements)	*Supports FDD (Frequency Division Duplexing) and TDD (Time Division Duplexing) frequency arrangements*
Spectrum Allocations	*Licensed spectrum allocated to the Mobile Service*
Security Support	*AES (Advanced Encryption Standard)*

** Targets for 1.25 MHz channel bandwidth. This represents 2 x 1.25 MHz (paired) channels for FDD and a 2.5 MHz (unpaired) channel for TDD. For other bandwidths, the data rates may change.*

Roughly in the order in which the words or phrases appear, here are some brief explanatory sentences to clarify the terminology used above. The words or phrases being defined appear in italics.

From Item 12:

- *Interoperable* – Systems that conform to the 802.20 specification should interoperate with each other, e.g., regardless of manufacturer. (Note that this statement is limited to systems that operate in accordance with the same frequency plan. It does not suggest that an 802.20 TDD system would be interoperable with a 802.20 FDD system.)
- *Mobile broadband wireless access systems* – This may be abbreviated as MBWA and may be used specifically to mean "802.20 systems" or systems compliant with a 802.20 standard.
- *Licensed bands below 3.5 GHz* – This refers to bands that are allocated to the Mobile Service and licensed for use by mobile cellular wireless systems operating below 3.5 GHz
- *Optimized for IP Data Transport* – Such an air interface is designed specifically for carrying Internet Protocol (IP) data traffic efficiently. This optimization could involve (but is not limited to) increasing the throughput, reducing the system resources needed, decreasing the transmission latencies, etc.
- *Peak data rates* - The peak data rate is the highest theoretical data rate available to applications running over an 802.20 air interface. As such, the determination of the peak data rate does not take into account overhead bits. The peak data rate can be determined from the combination of modulation constellation, coding rate and symbol rate that yields the maximum data rate.
- *Peak data rates per user (or peak user data rate)* – This is the peak data rate that can be assigned to a single mobile terminal. This "per user" data rate is in contrast to the "aggregate" data rate, which represents the total data rate of the base station, summed over all mobile terminals that are simultaneously communicating with the base station.
- *Various vehicular mobility classes* – Recommendation ITU-R M.1034-1 establishes the following mobility classes or broad categories for the relative speed between a mobile and base station:
    - stationary (0 km/h)
    - pedestrian (up to 10 km/h)
    - typical vehicular (up to 100 km/h)
    - high speed vehicular (up to 500 km /h)
    - aeronautical (up to 1 500 km/h)
    - satellite (up to 27 000 km/h)
- *MAN* – Metropolitan Area Network
- *Cell* - The term "cell" refers to one single-sector base station or to one sector of a base station deployed with multiple sectors.

- *Spectral efficiencies* - The spectral efficiency is measured in terms of bits/s/Hz/cell. (In the case of a sectorized configuration, the spectral efficiency is given as bits/s/Hz/ sector.)
- *Sustained user data rates* – Sustained user data rates refer to the typical data rates that could be maintained by a user, over a period of time in a loaded system. The evaluation of the sustained user data rate is generally a complicated calculation that will involve consideration of typical channel models, environmental and geographic scenarios, data traffic models and user distributions.
- *Active users* - An active user is a terminal that is registered with a cell and is using or seeking to use air link resources to receive and/or transmit data within a short time interval (e.g., within 100 ms).

From Item 18:

- *Sustained spectral efficiency* – Sustained spectral efficiency is computed in a network setting. It is defined as the ratio of the expected aggregate throughput (bits/sec) to all users in an interior cell divided by the system bandwidth (Hz). The sustained spectral efficiency calculation should assume that users are distributed uniformly throughout the network and should include a specification of the minimum expected data rate/user.
- *Peak aggregate data rate per cell* – This is the peak data rate over a cell, or a single sector in the case of a multi-sector deployment. On the downlink, it represents the peak data rate that the base station can send, while on the uplink, it represents the total data rate when all available bandwidth resources are used by mobile terminals transmitting at their peak data rate. The peak aggregate data rate can be larger than the peak user data rate, in which case the mobile terminals supports a lower maximum rate than the base station supports.
- *Airlink MAC Frame RTT* - The round-trip time (RTT) over the airlink for a MAC data frame is defined here to be the duration from when a data frame is received by the physical layer of the transmitter to the time when an acknowledgment for that frame is received by the transmitting station.
- *Bandwidth* – This is the channel bandwidth. Two suggested bandwidths are 1.25 MHz and 5 MHz, which correspond to the bandwidth of one channel (downlink or uplink) for paired FDD spectrum.
- *Cell sizes* – The size of a cell is determined by the maximum distance from the base station to the mobile terminal over which an acceptable communication can maintained or before which a handoff would be triggered.
- *Frequency Arrangements* – The frequency arrangement of the spectrum refers to its allocation for paired or unpaired spectrum bands to provide for the use of Frequency-Division Duplexing (FDD) or Time-Division Duplexing (TDD), respectively. The PAR states that the 802.20 standard should support both these frequency arrangements.
- *Targets for 1.25 MHz channel bandwidth* – This is a reference bandwidth of 2 x 1.25 MHz for paired channels for FDD systems or a single 2.5 MHz channel for TDD systems. This is established to provide a common basis for measuring the

bandwidth-dependent characteristics. The targets in the table indicated by the asterisk (*) are those dependent on the channel bandwidth. Note that for larger bandwidths the targets may scale proportionally with the bandwidth.