Project	**IEEE 802.16j Mobile Multihop Relay Task Group**
Title	**Proposed Definition of Combined Coverage and Capacity**
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Source(s)	Roger Peterson Eugene Visotsky r.peterson@motorola.com Motorola 1301 E. Algonquin Road, Schaumburg, IL 60196 USA
Re:	IEEE 802.16j Task Group on Mobile Multihop Relay
Abstract	This contribution proposes a definition of Combined Coverage and Capacity for use in the comparison of MMR proposals.
Purpose	For discussion regarding submission C80216j-06/071.
Notice	
Release	
Patent Policy and Procedures	

Definition of Combined Coverage and Capacity

1 Introduction

This contribution defines an alternative definition for Combined Coverage and Capacity. It is requested that this definition be considered to replace the definition of the same term contained within C80216j-06/071.

2 Definition of Combined Coverage and Capacity

The following definition is proposed:

Combined Coverage and Capacity Index: The number *N* of simultaneous users per cell (e.g. MMR-cell or legacy cell) than can be supported achieving a target information throughput $R\min$ with a specified coverage reliability.

Coverage reliability for a particular system (cell radius, shadow fading environment, relay station placement, and so on) with a particular number of users n each requiring information throughput $R\min$ is calculated using a static system simulator. The static simulator shall model all other-user interference affects using appropriate path loss models and power control models (if any). The static simulator shall model a scheduler and resource manager that allocates resources to as many users as possible and all relays supporting those users such that the target information throughput is $R\min$ achieved. The static system simulator is run repeatedly with each run modeling a different instance of random drops of n mobile stations. Each simulator run results in $n_{s,i}$ mobile stations being served with the required information throughput and $n_{b,i}$ mobile stations being blocked due to insufficient carrier to interference plus noise ratio and/or insufficient time-frequency resources. $n \quad n_{b,i} \quad n_{s,i}$. In this equation, i is an index identifying a particular simulation run. Coverage reliability is a function of n and is:

$$\frac{1}{M \quad n} \sum_{i \ 1}^{M} n_{s,i}$$

where M is the total number of simulation runs. The Combined Coverage and Capacity Index *N* is the largest n for which

$$\frac{1}{M \quad n} \sum_{i \ 1}^{M} n_{s,i} \quad x$$