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| **Radiocommunication Study Groups** |  |
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| **29 November 2013** |
| **English only** |
| Annex 12 to Working Party 5A Chairman’s Report |
| Working document on Operational guidelines for the deployment of broadband mobile systems for local coverage in the frequency bands below 6 GHz |

*[Editor’s note: The type of the working document (Recommendation, Report or Handbook) will be determined once the content of the document becomes mature.]*

# 1 Scope

*[Editor’s note: “local coverage” should be defined. The term “local coverage” needs further study and should be replaced with other better wording to avoid confusion with local area network.]*

This working document is intended to provide operational guidelines for the deployment of mobile broadband system[[1]](#footnote-1) using the frequency bands below 6 GHz for local coverage. Basic concept and framework are clarified to characterize the operation of local coverage in the frequency bands below 6 GHz which leads to typical use cases of the local coverage and operational guidelines.

# 2 Basic concept and framework

*[Editor’s note:*

*This section should address the following;*

*– A definition of local coverage will be reviewed such as size of coverage, area limitation, and concept of so-called hot spot from technical and operational view points and for various use cases. (e.g. hot-spot).*

*[Nomadic and low mobility usage could be considered for operation of local coverage. [Editor’s note: this could be considered for the development of definition.]]*

*[Applications of local coverage will focus on [cost-efficient] [Editor’s note: rewording is required.] broadband mobile data transmission.] [Editor’s note: this could be considered for the development of definition.]*

– *Local coverage is intended to serve for a limited area having very high density of traffic demands. It is assumed that such local coverage is deployed mainly in urban areas or for indoor usage.*

*– A sufficiently wide frequency band could be used for such local coverage in order to provide large transmission capacity and high throughput for practical broadband mobile applications. Being suitable for local coverage, higher frequencies are assumed, where a wider frequency band could be available.*

*– The proposed operational guidelines to be developed are not intended for a specific wireless access technology.*

– *The study will explore generic guidelines to enhance the use of local coverage within [the existing wireless access framework]. [Editor’s note: clarification needed.]. It should be noted that the existing and conventional framework is kept intact for macro-cell mobile systems such as IMT in licensed bands and Radio LAN in unlicensed bands*.

*– [Mobility management functions of high complexity for macro-cell mobile systems are not necessarily required.] [Editor’s note: this could be defined after the identification of use cases.]*

*– The study on local coverage should consider various operational conditions including unlicensed band shared by multiple operators, unlicensed band shared by registered radio stations, licensed band shared by multiple operators, licensed band exclusively used by a single operator.*

*– The study is intended to develop guidelines for the effective operation of local coverage and the efficient use of frequency spectrum. To this end, the study may include control and management functions for stable operation of broadband mobile systems.*

*– The study subjects may also include integrated use of macro cell and local coverage of homogeneous mobile systems as well as interworking between heterogeneous mobile systems.*

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# 3 Use cases

The following use cases may be considered for deployment of broadband mobile systems by local coverage in frequency bands below 6 GHz. These examples will fall under the scope of operational guidelines discussed in Section 2. A study should clarify various use cases that characterize the typical use of local coverage in frequency bands below 6 GHz.

*[Editor’s note: the list below is not an exhaustive one. WG 5A-2 will discuss further items to be added.]*

*[Editor’s note:*

*This section should address the following;*

– *Traffic off-loading from macro-cell mobile systems to other broadband mobile systems*

*– Dedicated use for high-end heavy-use data transmission*

*– Applications requiring high throughput*

*– Applications requiring managed throughput [Editor’s note: “managed throughput” needs to be clarified.])*

*– Multicast and [distribution / broadcast] capability to a limited area.*

*]*

# 4 Operational guidelines

*[Editor’s note: Some preliminary examples are provided as follows for the functionality of network management and radio resource management to facilitate initial studies.]*

Operational guidelines will be dependent on various use cases. Operational guidelines should be studied for typical operational scenarios of local coverage. It is currently assumed that operational guidelines may be categorized into network management functions and radio resource management functions. Some of the operational guidelines may be used as optional.

## 4.1 Network management function

*[Editor’s note: the following items provide preliminary outline for this section.]*

– Monitoring and management of base stations and mobile stations

– Monitoring and management of traffic loading of base station and mobile station

– Access admission control for mobile station by base station to maintain required throughput per user

– Authentication process of mobile station by base station.

It is assumed that these functions are implemented within a broadband mobile network operated by a single service provider.

## 4.2 Radio resource management functions

*[Editor’s note: the following items provide preliminary outline for this section.]*

– Radio signal sensing for nearby base and mobile stations

– Control of frequency channel selection by base station

– Transmit power control for base station

– Transmit power control for mobile station by base station

– Priority control of radio resource assignment for delay-sensitive traffic

– Access admission control for mobile stations to maintain minimum acceptable throughput performance (e.g. by switching connection of mobile stations of extremely low throughput around the edge of area coverage)

– Integrated implementation of radio resource management functions through cognitive capabilities.

These functions were originally intended for optimized operation of a single broadband mobile network. These functions may also be applicable across multiple broadband mobile networks.

## 4.3 Control and management functions required

*[Editor’s note: the following items provide preliminary outline for this section.]*

– Initiation of operation of mobile station in accordance with the control by base station

– Access control of mobile station by base station

– Monitoring of operational conditions of mobile station by base station

– Forced termination of mobile station operation by the control of base station.

1. Mobile broadband system refers to the systems in Recommendation ITU-R M.1801-2. [↑](#footnote-ref-1)