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| **Radiocommunication Study Groups** |  |
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| **17 May 2010** |
| **English only** |
| Working Party 5A |
| LIAISON STATEMENT TO EXTERNAL ORGANIzATIONS |
| Compatibility of broadband wireless access systems and fixed-satellite service networks in the 3 400-4 200 MHz band |

# 1 Introduction

Working Party 5A (WP 5A) is working conjointly with Working Party 4A (WP 4A) on the development of an ITU-R Report on “*Studies on compatibility of broadband wireless access (BWA) systems and fixed-satellite service (FSS) networks in the 3 400-4 200 MHz band*”. WP 4A advised WP 5A of the most recent status of this work in its most recent liaison statement ([Document 5A/464](http://www.itu.int/md/R07-WP5A-C-0464/en)).

This liaison statement as well as the most recent version of the text of the report ([Annex 5 to Document 4A/368](http://www.itu.int/md/R07-WP4A-C-0368/en)) were reviewed by WP 5A at its May 2010 meeting. It can be noted that WP 4A is of the view that the Report has reached a mature state. As a consequence, it was considered appropriate by WP 5A to send this report to external organizations in order to inform them of the progress of the work and to provide an opportunity to submit comments or suggestions that they might have, prior to its approval.

WP 4A, in developing the report, has included the recent study performed by the WiMAX Forum (Document [5A/419](http://www.itu.int/md/R07-WP5A-C-0419/en)), which used the up-to-date set of characteristics for BWA systems, in the text for the PDN Report. WP 5A has been informed by WP 4A that a second study (submitted to WP 4A in Document [4A/319](http://www.itu.int/md/R07-WP4A-C-0319/en)) reviewed the WiMAX Forum study and that this second study showed that the results of both studies lead to separation distances in the same orders of magnitude.

WP 5A developed a reply liaison statement to WP 4A on matters raised in Document 5A/464. This is attached for information.

WP 5A looks forward to receiving any comments and suggestions that you might have in time for the next meeting of WP 5A. This will be held from 8 to 19 November, 2010, in Geneva.

The deadline for contributions to that meeting is 1600 hours UTC, 1 November 2010.

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Attachment

LIAISON STATEMENT TO WORKING PARTY 4A

Compatibility of broadband wireless access systems and fixed-satellite service networks in the 3 400-4 200 MHz band

Source: Document 5A/TEMP/215 (Rev.1)

# 1 Introduction

Working Party 5A (WP 5A) thanks Working Party 4A (WP 4A) for its most recent liaison statement ([Document 5A/464](http://www.itu.int/md/R07-WP5A-C-0464/en)). It appreciates the updates on the progress of the work and the additional information and clarifications which were provided. In this liaison statement, WP 5A comments on a number of issues as they were raised in WP 4A’s liaison statement and provides updates on the consideration of the topic at WP 5A’s May 2010 meeting.

# 2 Propagation model parameters and interference assessment

WP 5A notes the comments of WP 4A on the use of the propagation models in Recommendation ITU-R P.452-13 in the compatibility studies, and provides the comments below (in the same order) on the matters raised.

In particular:

− WP 5A notes that, when doing studies, different administrations may employ different tools. The extent that these tools can model the detailed parameters of Recommendation ITU-R P.452-13 varies from the case where every parameter can be modelled individually to the case where the implementation of Recommendation ITU‑R P.452-13 does not allow for every parameter can be configured individually. In addition WP 5A notes that there are tools that can only implement Recommendation ITU-R P.452-13 based on actual terrain data. WP 5A agrees with WP 4A that both categories of tools can be used in developing studies for inclusion in the preliminary draft new Report, as long as the assumptions used in each study are clearly specified. WP 5A notes that Recommendation ITU-R P.452 covers the case of point to point interference paths. The case of point to area interference assessment, when considering, for example, interference into multiple FSS earth stations at unknown locations, is likely to require other propagation models.

− As WP 4A has noted, the proposed parameters in Document 5A/419 indicate a fixed latitude and longitude for the transmitting and receiving stations. While the BWA base station will be at a fixed location, in practice the user terminal equipment could be considered fixed, mobile or nomadic. Use of terrain data would facilitate sharing when considering interference from a base station or a fixed user terminal, whereas taking account of terrain data when assessing the level of interference from nomadic or mobile user terminals becomes a complex issue. In Recommendation ITU-R S.1856[[1]](#footnote-1) it is shown that the interference contribution from a mobile user terminal was substantially less significant than that from a base station. Such a situation could also apply in the BWA/FSS case as the base station has higher transmit power, higher maximum antenna gain and is within Line-of-sight (LoS) or near-LoS of the FSS earth station whereas the mobile user terminal has much less power, less antenna gain, and most likely has no-LoS to the FSS earth station. WP 5A request WP 4A’s view on this aspect.

− WP 5A notes that use of fixed station locations for both the base station and the user equipment can then be related to the terrain characteristics, which when taken in isolation would seem to limit the scope of the studies to one specific terrain characteristic. When considered in conjunction with the point raised above about the base station interference dominating, this would allow for interference assessment using actual terrain data for the worst-case situation.

− WP 5A notes the concern of WP 4A on the use of clutter parameters and can agree that such studies would need to be done with care. WP 5A agrees the proposed clutter parameters should not be used for the determination of coordination contours. However, in sharing studies, WP 5A is of the view that clutter effects could well be appropriate and should be considered when developing the conclusions of the draft report.

− In response to WP 4A’s enquiry about potential interference aggregation effects, WP 5A notes that a base station antenna system could consist of one, two or three sectoral antennas, depending on the deployment decided by the network operator. Each individual antenna can be modelled by using the relevant Reference radiation pattern of Recommendation F.1336-2. For example, an antenna system intended to provide coverage over 360 degrees of azimuth would thus consist of three sectoral antennas, typically spaced 120 degrees apart in the horizontal plane. Each of the three antennas would have a −3 dB horizontal beamwidth of typically 60 degrees or 90 degrees, with each using the relevant reference radiation pattern of Recommendation ITU‑R F.1336‑2[[2]](#footnote-2).

– Frequency reuse may be 1 or 3. Frequency reuse 1 is where all three antennas on a base station site operate on the same frequency. Frequency reuse 3 is where each of the three antennas on a base station site operates on a different frequency. Those frequencies are then similarly reused on all other base station sites in the network. There may be other frequency reuse schemes which lead to less aggregate interference than the above two frequency reuse schemes.

# 3 Updated studies

WP 5A notes that WP 4A has included the recent study performed by the WiMAX Forum ([Document 5A/419](http://www.itu.int/md/R07-WP5A-C-0419/en)), which used the up-to-date set of characteristics for BWA systems, in the text for the PDN Report. WP 5A is pleased to note that a second study (submitted to WP 4A in [Document 4A/319](http://www.itu.int/md/R07-WP4A-C-0319/en)) reviewed the WiMAX Forum study and that this second study showed that the results of both studies lead to separation distances in the same orders of magnitude.

# 4 Status of the PDN Report

WP 5A notes that the most recent version of this PDN Report may be found in [Annex 5 to Document 4A/368](http://www.itu.int/md/R07-WP4A-C-0368/en) and finds the updates to Annex A and Annex B appropriate. WP 5A agrees that it is appropriate to keep only the most up to date studies in the text. WP 5A noted WP 4A’s comment that “At this stage the studies have been incorporated almost entirely, and there might be room for further optimization of the summaries”. WP 5A considers that care will be needed if further optimization of the summaries is attempted in order that no important substance is lost.

# 5 Information on FSS earth station usage

WP 5A appreciates the difficulties inherent in obtaining precise information on the deployment of receiving earth stations in this frequency band. The point raised in the preceding liaison statement from WP 5A (“What is the density of use of the various sub-bands by earth stations licensed by national regulators?”) was intended to see whether a sub-range of the full range 3 400-4 200 MHz, such as 3 400-3 700 MHz, was less heavily used by FSS receiving earth stations. If that type of information is not available, it still would be appropriate, in any case, to encourage administrations to make the most detailed information possible available when undertaking bilateral or multilateral coordination or sharing discussions.

# 6 Examples of national regulatory/technical solutions

WP 5A confirms its support for the inclusion of Annex D in the PDN Report.

# 7 Conclusion

WP 5A notes that WP 4A is of the view that the Report has reached a mature state and that it will be proposed to be upgraded from PDN Report to a draft new Report at WP 4A’s next meeting in July 2010. WP 5A would prefer that this draft report be considered for approval only after conclusion of the review of the draft report by WP 5A at its November 2010 meeting. In that connection, it may still be useful to consider the possibility of a joint meeting between the two Working Parties in order to finalize the draft report.

WP 5A also notes the views of WP 4A on the possible approaches that could be considered to reach a timely completion of the work. At its May 2010 meeting, WP 5A agreed that the most recent version of the PDN Report be circulated to external organizations responsible for dealing with BWA matters in order provide an opportunity for them to provide their comments and suggestions. These would be considered at the next WP 5A meeting to be held in November 2010. The possibility for WP 5A to complete its consideration of the text of the report at that November 2010 meeting will depend, in part, on the nature of the comments and suggestions received from these organizations as well as those received from administrations and Sector Members involved in the work of WP 5A.

**Status**: For action

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1. Recommendation ITU‑R S.1856 – “Methodologies for determining whether an IMT station at a given location operating in the band 3 400 3 600 MHz would transmit without exceeding the power flux-density limits in the Radio Regulations Nos. 5.430A, 5.432A,.432B and 5.433A” [↑](#footnote-ref-1)
2. At its May 2010 meeting, WP 5A updated Report ITU-R M.2116 (“Characteristics of broadband wireless access systems operating in the land mobile service for use in sharing studies”) to include information on base station antenna characteristics. See the relevant Annex 11 to the Chairman’s Report (Document 5A/513). [↑](#footnote-ref-2)