**Comments on ECC Deliverable**

**“Draft ECC Report 358”**

**1 Sources**

**Administration/Company/Entity:** United Kingdom

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**2 General Comments**

[Please provide here any general comments which do not contain specific change proposals or which are not related to specific sections of the deliverable. Please leave blank if not applicable]

**3 Proposals related to the ECC Deliverables**

**Note:** Contributors shall use the following table to provide comments. It is also encouraged to provide as an annex a separate document showing the proposals with track changes. Minor editorial corrections do not need to be recorded in the table. The table is used in the resolution meeting to record how each proposal is addressed.

*The* following information must be included.

* **Comment number**: Sequential numbering of comments in the format “XX/1”, “XX/2” etc, where “XX” is the organisation name or a suitable abbreviation. Administrations may use CEPT country codes
* **Section number/Clause**: Relevant section number of the deliverable, use numbers where applicable e.g. “1.1”, “A1.4”, “List of abbreviations”
* **Paragraph/Figure/Table**: Paragraph number in section, e.g. “1”,”2”.. or Figure/Table, e.g. “Figure 1”, “Table 2”
* **Type of comment**: “General”, “Technical” or “Editorial” depending on the nature of the proposed changes
* **Comment**: Background/justification for proposed changes
* **Proposed change**: Proposed modifications shown in revision marks where possible. For more complicated changes (e.g. proposed deletion/addition of whole sections) or changes to tables it is sufficient to refer to the annex including the changes

| **Comment number** | **Section number**  **Clause** | **Paragraph**  **Figure**  **Table** | **Type of comment**  (General,  Technical or  Editorial) | **Comment** | **Proposed change** |
| --- | --- | --- | --- | --- | --- |
| UK/1 | 0  Executive Summary | Power levels and antenna heights studied for WBB LMP  Para 1 | General | The current categorisation of WBB terminals contains both *types* of terminals (fixed, mobile), and *use cases* for the terminals (FWA, IoT). However, the *use case* is not relevant when defining a WBB terminal, so this categorisation should *only* capture the *types* of terminals that fall under the definition. | WBB terminals (fixed/installed, and mobile/nomadic) |
| UK/2 | 0  Executive Summary | In-band coexistence of WBB LMP with FS and FSS  Para 1 | Editorial | Editorial changes to improve readability. | Regarding FS coexistence, one of the studies shows the importance that real terrain data are taken into account in the coexistence assessments, because the impact of real terrain data on spectrum propagation can result in not only reduced, but also increased separation distances required between WBB LMP and FS, |
| UK/3 | 0  Executive Summary | In-band coexistence of WBB LMP with FS and FSS  Para 1 | Technical | The separation distances and exclusion zones determined in this ECC Report are calculated using MCL for a worst-case realistic scenario, which for example assumes that the WBB LMP BS antenna is azimuthally angled towards the victim FS or FSS, and transmitting at maximum licenced power.  Therefore, further coordination mechanisms such as azimuthal offset of the WBB BS antenna away from the FS victim receiver, or reduced transmit power at the WBB BS, could allow for deployment of a WBB LMP BS within the exclusion zone determined in this ECC Report.  Additional text has been added to clarify what is meant by “exclusion zone” to ensure that this nuance is captured. | and therefore impact the areas in which WBB LMP BS deployments need to be excluded in lieu of any further coordination mechanisms[[1]](#footnote-1) (exclusion zones) accordingly. |
| UK/4 | 0  Executive Summary | In-band coexistence of WBB LMP with FS and FSS  Para 2, 3, 4 | Editorial | Editorial changes to improve readability. | Based on the analyses, it is not possible to define generic technical conditions that guarantee the protection of FS, including its long-term development. Instead, a case-by-case analysis is required. In addition, due to the large separation distances that may be necessary, coexistence between FS and both low and medium power WBB systems may require cross border coordination and related bilateral or even multilateral agreements among neighbouring countries on a case-by-case basis.  It is also not possible to define generic technical conditions that guarantee the protection of FSS, including its long-term development, but instead a case-by-case analysis is needed. In addition, due to the large separation distances that may be necessary, coexistence between FSS and both low and medium power WBB systems may require cross border coordination and related bilateral or even multilateral agreements among neighbouring countries on a case-by-case basis.  Nevertheless, appropriate mitigation techniques can be applied to facilitate coexistence between WBB and FS/FSS systems, both at national level and with the neighbouring countries. |
| UK/5 | 0  Executive Summary | Studies on WBB LMP networks with no synchronisation to other WBB LMP nor to MFCN  Para 3, 4 | Editorial | Editorial changes to improve readability. | Some studies show that coordination between unsynchronised 3GPP WBB LMP networks and MFCN networks below 3.8 GHz could be reduced through the definition of out of band emission limits, receiver blocking levels and/or frequency separation requirements. The following were investigated:   * 60 MHz frequency separation for WBB MP to accommodate MFCN blocking; * out of band emission level of -45 dBm/MHz conducted per BS (sector) below 3800 MHz for LP and MP non-AAS BS (sector) and -45 dBm/MHz TRP per BS for MP AAS BS (sector); * WBB LMP receiver blocking level of -15 dBm below 3800 MHz for wanted signal level: P\_ref\_sens +6 dB.   In addition to the above technical conditions, studies identified the following possible components for coordination processes which could improve co-existence between WBB LMP and MFCN (below 3.8 GHz): to be considered for impoving   * Pfd or field strength values at the WBB LMP local area network coverage border; * physical separation between WBB LMP and MFCN Macro BSs; * synchronisation or semi-synchronisation between MFCN and WBB LMP networks. |
| UK/6 | 0  Executive Summary | Semi-synchronised operation of WBB LMP  Para 1 | General | Clarifying that the semi-synchronisation mentioned in this paragraph is a specific sub-case of semi-synchronisation, and is defined later in the document. | Studies were also performed for semi-synchronised operation with DL to UL modifications for WBB LMP operating based on 3GPP technical specifications (as defined in Section 2.1.4), showing that this particular specific sub-case of semi-synchronised operation can ensure the same protection of MFCN base stations below 3.8 GHz as synchronised operation. |
| UK/7 | 0  Executive Summary | Other aspects regarding the shared use of the frequency band 3.8-4.2 GHz for WBB LMP  Para 1, 2 | Editorial | Editorial changes to improve readability. | There is a balance to be struck between how much coordination an Administration is able to carry out at a local level between WBB LMP networks and incumbent services, and how restrictive the harmonised technical conditions on WBB LMP need to be. Some of the technical conditions that were studied in this report would reduce to a certain extent the amount of coordination needed when assigning frequencies to WBB LMP installations.  In order to facilitate the deployment of terrestrial wireless broadband systems providing local-area network connectivity, administrations may want to be able to complement certain aspects of their use of the band 3.8-4.2 GHz to national and/or local level circumstances, managing the remaining coordination requirements not addressed by the harmonised technical conditions (for example through the definition of synchronisation and/or frequency separation requirements). CEPT is developing a toolbox for administrations to provide guidance on the approach to coexistence in the band. There may be also a need to further develop relevant cross border recommendations. |
| UK/8 | 6.2.2  Study 2 | Para 2 | Technical | See UK/3.  Additional comment:  The study from Italy uses the maximum licenced WBB LMP BS power with the antenna set with 0deg downtilt and azimuthally aligned with the victim BS.  Therefore, further coordination mechanisms such as azimuthal offset of the WBB BS antenna away from the FS victim receiver, or reduced transmit power at the WBB BS, could allow for deployment of a WBB LMP BS within the exclusion zone determined in this study.  To clarify that further coordination could allow WBB LMP BS deployments within the exclusion zone determined in this study, additional text is added. | (i.e. geographical area where WBB BS transmitters are not allowed in lieu of any further coordination mechanisms[[2]](#footnote-2)) |
| UK/9 | 6.2.4  Summary and Conclusions | Para 3 | Editorial | Editorial changes to improve readability. | One of the studies shows the importance that real terrain data are taken into account in the coexistence assessments, because the impact of real terrain data on spectrum propagation can result in not only reduced, but also increased separation distances required between WBB LMP and FS, |
| UK/10 | 6.2.4  Summary and Conclusions | Para 3 | Technical | See UK/3. | and therefore impact the areas in which WBB LMP BS deployments need to excluded in lieu of any further coordination mechanisms[[3]](#footnote-3) (exclusion zones) accordingly. |
| UK/11 | 6.2.4  Summary and Conclusions | Para 4, 5 | Editorial | Editorial changes to improve readability. | In conclusion, according to the analyses, it is not possible to define generic technical conditions that guarantee the protection of FS, including its long-term development. Instead, a case-by-case analysis is required. In addition, due to the large separation distances that may be necessary, coexistence between FS and both low and medium power WBB systems may require cross border coordination and related bilateral or even multilateral agreements among neighbouring countries on a case-by-case basis.  Nevertheless, appropriate mitigation techniques can be applied to facilitate coexistence between WBB and FS systems, both at national level and with the neighbouring countries. |
| UK/12 | 6.3.8  Summary and Conclusions | Para 2, 4, 5 | Editorial | Editorial changes to improve readability. | Some studies show that the real terrain should be taken into account in the coexistence assessments, because the impact of real terrain data on spectrum propagation can result in not only reduced, but also increased separation distances required between WBB LMP and FSS. Resulting separation distances from those studies range in 5.3-17.2 km for WBB Low Power stations and 17.5-70 km for WBB Medium Power stations when considering long term protection criterion. One study considering the real terrain and the short-term protection criteria indicated separation distances of up to 9.3 km for WBB LP and 35 km for WBB MP for one earth station example.  The results of Study 5 suggest a coordination distance around an FSS ES location of 40km is suitable to protect FSS ES receivers, below which the use of one or combination of some of the various mitigation techniques presented in that study could be implemented to minimize the interference received and reduce the required separation distance between the WBB LMP and the FSS earth station.  According to the analyses, it is not possible to define technical conditions that guarantee the protection of FSS, including its long-term development, but instead a case-by-case analysis is needed. In addition, coexistence between FSS and both low and medium power WBB systems may require cross border coordination and related bilateral or even multilateral agreements among neighbouring countries on a case-by-case basis.  Appropriate mitigation techniques can be applied to facilitate coexistence between WBB and FSS systems, both at national level and with the neighbouring countries. |
| UK/13 | 7.1.1  Study 1 [Nokia] | Para 2 | Technical | The analysis and results in A2.1.1 rely on the out-of-band emissions mask defined in Table 5 of this document, so it is not correct to say that no BEM elements are contained in the study results. Proposed to resolve this by deleting this sentence. |  |
| UK/14 | 7.1.8  Summary and Conclusions | Issue 2  Para 1 | Editorial | Editorial changes to improve readability, including removing duplication of references to receiver blocking and 60 MHz separation. | Study 7 suggests that defining only a strict BEM will not solve the interference problems from unsynchronised WBB LMPs to MFCN below 3.8 GHz, as the MFCN receiver blocking also needs to be considered. Study 3 and Study 7 conclude that, to prevent unsynchronised WBB LMPs causing interference to MFCN below 3.8 GHz due to the MFCN receiver blocking, a 60 MHz frequency separation is needed between the two networks. Study 3 suggests that for Medium Power AAS BS operating in 3860-4200 MHz, an OOBE of -35 dBm/MHz TRP can provide sufficient protection, but in Rural Areas with large cell size of 5G MFCN network, an OOBE of WBB MR AAS BS should be -54 dBm/MHz TRP. |
| UK/15 | 7.1.8  Summary and Conclusions | Issue 4  Para 1 | General | See UK/1. | WBB terminals (fixed/installed, and mobile/nomadic) |
| UK/16 | 7.1.8  Summary and Conclusions | Conclusions  Para 1 and Table 54 | General | While studies 2 and 3 suggest a particular WBB terminal power limit to aid in coexistence, no studies highlight particular WBB BS power limits to aid in coordination.  WBB BS power is not highlighted as one of the four issues identified by the studies.  Therefore, the WBB BS powers given are simply the assumptions used in the studies.  No specific WBB BS power limits should be given as levels which reduce the need for coordination.  While the UK does not see it necessary to note WBB BS power in this section, if any mention of WBB BS power is deemed necessary by the group, then this should simply be a high level statement of “reducing the WBB BS power limit would also reduce the need for coordination. | As a result of the studies, the following technical conditions for unsynchronised WBB LMPs in 3.8-4.2 GHz could be used to reduce the need for coordination with MFCN BS below 3.8 GHz.  Studies 2 and 3 suggested a WBB terminal power limit to reduce the need for coordination - Table 54.  Table 54: Terminal In-block power limit in 3800-4200 MHz   |  |  |  | | --- | --- | --- | |  |  |  | |
| UK/17 | 7.1.8  Summary and Conclusions | Conclusions  Table 54 | General | See UK/1. | |  |  |  | | --- | --- | --- | | WBB Terminals (fixed/installed, and mobile/nomadic) | 28 dBm EIRP | Power Control activation is obligatory | |
| UK/18 | 7.1.8  Summary and Conclusions | Conclusions  Para 2 | Editorial | Editorial changes to improve readability, clarify which studies this suggestion comes from, and clarify what technical condition could be suggested in future ECC guidance to reduce the need for coordination | Studies 3, 6 and 7 suggested lower out of band emission level below 3800 MHz (to protect MFCN). Studies 3 and 7 assumed minimum separation distance of 100 m, while Study 6 assumed conditions with smaller cell sizes, which will reduce the coordination cases - Table 55. |
| UK/19 | 7.1.8  Summary and Conclusions | Conclusions  Para 3 | Editorial | Editorial changes to improve clarify which studies this suggestion comes from. | Study 6 suggested a receiver blocking level below 3800 MHz (to tolerate interference from MFCN) - Table 56. |
| UK/20 | 7.1.8  Summary and Conclusions | Conclusions  Para 5 | Editorial | Editorial changes to improve readability | Through physical separation: |
| UK/21 | 7.1.8  Summary and Conclusions | Conclusions  Para 6 | Editorial | Editorial changes to improve readability. | In order to facilitate the deployment of terrestrial wireless broadband systems providing local-area network connectivity, administrations may want to be able to complement certain aspects of their use of the band 3.8-4.2 GHz to national and/or local level circumstances, managing the remaining coordination requirements not addressed by the harmonised technical conditions (for example through the definition of synchronisation and/or frequency separation requirements). CEPT is developing a toolbox for administrations to provide guidance on the approach to coexistence in the band. |

1. Further coordination could include azimuthal offset of the WBB BS antenna away from the FS victim receiver, additional downtilt on WBB BS antenna, reduced transmit power at the WBB BS, etc. [↑](#footnote-ref-1)
2. Further coordination could include azimuthal offset of the WBB BS antenna away from the FS victim receiver, reduced transmit power at the WBB BS, etc. [↑](#footnote-ref-2)
3. Further coordination could include azimuthal offset of the WBB BS antenna away from the FS victim receiver, additional downtilt on WBB BS antenna, reduced transmit power at the WBB BS, etc. [↑](#footnote-ref-3)