**ANNEX 2**

**CEPT roadmap for 5G and beyond**

The [ECC strategic plan 2020-2025](https://cept.org/files/16100/ECC%2820%29093%20Annex%2012_ECC%20Strategic%20Plan%202020-2025.pdf) identifies wireless broadband and connectivity as a major topic to be studied during this period. This roadmap aims to identify relevant ECC actions in order to respond to this objective.

It builds on the [previous CEPT roadmap for 5G](https://www.cept.org/Documents/ecc/57839/ecc-20-055-annex-15_cept_5g_roadmap) which was maintained between 2016-2020. ECC#52 decided to finalise the previous roadmap and to commence a new future looking roadmap.

The roadmap will be regularly reviewed in order to report on the progress of ECC activities as well as to update the list of actions where appropriate.

**History:**

* Version 1 approved by ECC#54 20 November 2020 (as a living document)
* Version 2, approved by ECC#55, March 2021

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| Topics  | Related ECC activity  |
| 1. **Harmonisation**
 |
| Mandate to CEPT about mm-wave bands above 24 GHz (40.5-43.5 GHz & 66-71 GHz)  | * 66-71 GHz - CEPT Report 78;
* 40.5-43.5 GHz:

WI PT1\_34 (ECC Decision)WI PT1\_37 (CEPT Report)WI PT1\_39 (ECC Recommendation) |
| Revision of EC and CEPT framework for 900 and 1800 MHz (EC Mandate) | * WI PT1\_14 – revise ECC/DEC/(06)13
* WI PT1\_24 – CEPT Report 80 (sent into PC at ECC#55)
 |
| Review of existing conditions in 2.3-2.4 GHz for suitability for 5G | * WI PT1\_28 – review of existing conditions
* WI PT1\_29 – revise ECC/DEC/(14)02
 |
| Develop relevant frameworks for cross-border coordination, including synchronisation, of 5G networks | * WI PT1\_21 – revised ECC Rec (15)01 for 3.4-3.8 GHz, possible future activity for 1427-1517 MHz
* WI PT1\_22 – 26 GHz new ECC Rec
* WI PT1\_31 (ECC Report) and ECC Rec (20)03: 3.4-3.8 GHz synchronisation
 |
| 1. **WRC-23**
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| CPG activities on WRC-23 agenda items in relation to IMT, in particular on AI 1.1, 1.2, 1.3, 1.4, 1.5 and Art. 21.5 | Relevant activities in the CPG, its PTs and ECC PT1 |
| 1. **Other spectrum challenges**
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| Investigate new sharing opportunities and challenges that new technologies (e.g. AAS) can bring. | WI PT1\_39 - 40 GHz mobile and satellite sharing WI PT1\_36 – guidance for application of LRTC in 3.4-3.8 GHz for indoor small cellsWI\_PT1\_40 - compatibility between MFCN operating in 3400-3800 MHz and Radio Altimeters (RA) operating in 4200-4400 MHz |
| Carry out activities on FS channelling, potentially suitable for 5G backhauling.  | * WI SE19\_44 – PMP via AAS
 |
| Investigate the impact of the use of spectrum for 5G in higher frequency bands (>24 GHz) in relation with general authorisation regime, | ECC Report 317 (26 GHz) |
| Develop techniques for measurements and modelling of AAS | * WI SE21\_25 – field measurement techniques
* WI PT1\_35 – modelling techniques
* WI\_PT1\_41 - Coverage availability and performance aspects for 5G-NR
 |
| Further studies on the role of satellite in future cellular networks, in particular for rural connectivity and backhaul | CEPT satellite workshop (dates TBC)ECC Report 280 |
| Update regulatory conditions for mobile communications on aircraft to allow 5G use | WI PT1\_27 – revision of ECC/DEC/(06)07 to allow 5G non-AAS for MCA in 1800 MHzWI PT1\_38 - EC MCA Mandate |
| Monitor the evolution of technologies for possible regulatory opportunities or challenges:* New antenna technology and intelligent surfaces
* AI and machine learning, e.g. for channel modelling, propagation, interference predictions
* Blockchain for spectrum management
* Network densification
 | Any specific actions to be agreed by the ECC. |
| Investigate regulatory options and challenges for frequencies in the ‘THz’ range | Any specific actions to be agreed by the ECC. |