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Future authorisation of the 1900–1920 MHz band

BT's response to Ofcom's consultation issued on 10 March 2025

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BT Group

Contents

Executive summary

1. **BT welcomes Ofcom's consultation on future use of the 1900-1920 MHz band** following Ofcom's 2024 decision to revoke existing mobile network operators (MNOs)' spectrum access licences, with a 5-year notice. It is important to plan now ahead of 2029, to give certainty to industry and enable investments.
2. **BT agrees that Future Rail Mobile Communication System (FRMCS) in 1900-1910MHz and Emergency Services Network (ESN) Gateways in 1910-1915MHz would represent the most optimal shared use** of the 1900-1920 MHz band from 2029. Earlier access for ESN Gateways would simplify operational transition.
3. Additional geographic shared use could be feasible in the 1900-1910MHz portion of the band, in places not close to railway lines. This should be investigated ahead of the spectrum becoming available for the new uses in 2029.
4. **Ofcom's proposals to leave the 1915-1920 MHz as a guard band should be reviewed before 2029.** The risk of interference with the 2100MHz FDD band uplink frequencies above 1920MHz would be low, given ESN Gateways would rarely operate close to a mobile network base station, and the extra 5MHz would present an improved service for public safety users.. The affected MNO, that does not pay the opportunity cost of maintaining this guard band, may need to accept the low risk of interference if better filters are not used.
5. **For the 1910-1915 MHz to be earmarked for ESN Gateways, it will be important to consider a technology neutral approach**, to enable other mobile technology solutions to deliver the ESN coverage extension in future, that are not Long Term Evolution (LTE) based, including 5G new radio (5GNR) / Sidelink technology.
6. **BT agrees that an opportunity cost based annual fee is appropriate for the 1900-1910 MHz** portion of the band to be used by FRMCS. However, **cost based fees would be appropriate in the 1910-1915 MHz** portion of the band, to be used by ESN Gateways, as there is no credible alternative use, given the restricted power levels.

1 Introduction

BT welcomes Ofcom's consultation on proposals[1] to authorise 1900–1910 MHz for operational rail communications, and 1910–1915 MHz to enable ESN Gateways.

Ofcom's proposals for the 1910-1915 MHz are particularly relevant to BT, which is required to deliver ESN under its contract with the Home Office. The consultation is timely given the decision to revoke the licence for the spectrum in 1900-1910MHz that had been earmarked for this application.

This response follows the structure of the consultation document. In **section 2** we give our views on the potential and most optimal future use cases for the 1900-1920 MHz band. In **section 3** we respond to Ofcom's proposals for FRMCS in 1900-1910 MHz. In **section 4** we respond to the proposals for ESN Gateways in 1910-1915 MHz. In **Section 5** we address the coexistence and technical issues. In **section 6** we discuss annual licence fees. Finally, we address the timing and next steps in **section 7.**

2 Future use of the 1900 MHz band

2.1 Sources of potential demand

Question 1:

Do you agree with our analysis of potential demand for the 1900 MHz band? Are you aware of any other potential demand for this spectrum, including any demand specific to Northern Ireland?

BT agrees with Ofcom's analysis of the potential sources of demand to use the 1900 – 1920 MHz band. We do not currently identify demand for Northern Ireland.

[1] https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/future-authorisation-of-the-19001920-mhz-band/main-documents/consultation-future-authorisation-of-the-19001920-mhz-band.pdf

2.2 Optimal use cases

2.2.1 1900-1910 MHz

Question 2:

Do you agree with our identification of FRMCS as the optimal use of the 1900–1910 MHz spectrum?

Yes, we agree, that would align with the emerging European harmonisation of this band for FRMCS.

2.2.2 1910-1915 MHz

Question 3:

Do you agree with our identification of ESN Gateways as the optimal use of the 1910–1915 MHz spectrum in Great Britain? Do you agree that it is too early to identify an optimal use of the 1910–1915 MHz spectrum in Northern Ireland at present?

Yes, BT agrees that the 1910-1915 MHz band should be made available for ESN Gateways in Great Britain.

BT has no comments in relation to optimal use of 1910-1915 MHz spectrum in Northern Ireland.

2.2.3 1915-1920 MHz

Question 4:

Are you aware of any low power use cases suitable for the 1915–1920 MHz spectrum?

The 1915-1920 MHz spectrum could extend the capacity of the ESN coverage extension in the future and would present an improved service for pubic safety users.

This 1915-1920 MHz guard band is not accounted for in the opportunity cost of the mobile use above 1920 MHz. It would be reasonable to require the network operator over time to improve receiver filtering to reduce risk of interference.

In the case of temporary operation of ESN coverage extenders we consider the risk of interference to adjacent band mobile use to be very low as rarely would an ESN Gateway be positioned where significant interference to the cellular uplink would occur.

Ofcom's modelling described in the consultation does not show the impact of allowing ESN Gateways to operate in 1915-1920MHz, at the same power levels as proposed for 1910-1915MHz, in terms of probability of interference, taking into account the expected low probability of an ESN Gateway being deployed in the interference zone of a mobile base station.

We further note that in a somewhat similar scenario of adjacent sub-band TDD and FDD deployments in the 2500-2690 MHz band, in accordance with the ECC Decision (05)05[2], Ofcom allows the top 5 MHz TDD channel that is adjacent to the FDD uplink band to be used at restricted power and allows the second adjacent 5 MHz TDD channel to be used at standard power.

We therefore suggest that Ofcom keeps open the possibility to allow the ESN Gateway band 1910-1915 MHz to be extended to the 1910-1920 MHz band in future.

3 Authorising of FRMCS in 1900-1910 MHz

Question 5:

Do you have any comments on our proposed authorisation approach for FRMCS?

BT agrees with the proposals.

Question 6:

Do you have any views on our proposed non-technical conditions for the new FRMCS licence?

BT has no comments

Question 7:

Do you have any views on our proposed licensing process for the FRMCS licence?

BT has no comments

Question 8:

Are you aware of any uses that can coexist with FRMCS without creating a risk of harmful interference? If so, please provide evidence.

BT considers that mobile networks uses can coexist with FRMCS, away from railways, provided the base station deployments are coordinated. If similar technology and frame structure were used for the FRMCS and alternative mobile networks use, then the coordination distances would be reduced.

[2] https://docdb.cept.org/download/1664

4 Authorising of ESN Gateways in 1910-1915 MHz

Question 9:

Do you agree with our proposed approach for authorising ESN gateways in 1910–1915 MHz?

Yes, BT agrees with Ofcom's proposed approach for authorising ESN gateways in 1910-1915 MHz.

BT supports a technology neutral approach to licensing this spectrum, including the potential use of 5G NR, rather than LTE, in future.

Whilst the ESN Gateway is currently the preferred means of meeting the requirements of the Home Office for coverage extension, we do not rule out the possibility that other technology solutions could achieve this in future, that may operate in this same spectrum. For example, Sidelink technology could be used to extend coverage as an alternative approach. It is important that Ofcom's decision does not prevent this, and that Ofcom indicates it would be open to considering licence variation requests in the future in this 1910-1915MHz band, to accommodate new technologies to deliver the ESN coverage extension requirements, including 5GNR / Sidelink solutions.

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Earlier access to 1910-1915/1920 MHz than 2029 would simplify the operational transition from the current spectrum used by ESN Gateways. We ask that Ofcom considers this, perhaps via Local Access licensing where the spectrum is currently unused, as this would be consistent with Ofcom's duties to secure optimal and efficient use of the spectrum.

Question 10:

Do you have any views on our proposed non-technical licence terms for the ESN gateways licence?

BT has no comments.

Question 11:

Do you have any views on our proposed licensing process for the ESN gateway licence?

BT supports Ofcom's proposed licensing process for the ESN gateway licence.

Question 12:

Are you aware of any uses that can coexist with ESN Gateways without causing risk of harmful interference? If so, please provide evidence.

BT is not aware of any uses that can coexist with ESN Gateways without causing risk of harmful interference.

5 Coexistence analysis and technical licence conditions

Question 13:

Do you have any comments on our assessment of the coexistence of FRMCS in 1900–1910 MHz with existing DECT and FDD uplinks?

BT has no comments.

Question 14:

Do you have any comments on our assessment of the coexistence of ESN Gateways in 1910–1915 MHz with existing DECT and FDD uplinks?

BT agrees with Ofcom's analysis.

It is not clear that if ESN Gateways were permitted to operate in 1910-1920 MHz, rather than in 1910-1915MHz, the risk of interference to the FDD uplink above 1920MHz would be unacceptable. The ESN Gateway is limited to medium power and would only be used for limited periods in random (typically remote) locations where macro network coverage is poor. The option to increase the bandwidth available to ESN gateways should be explored further, and the ESN licences potentially extended to 10MHz in future, to provide greater capacity for this application, rather than leaving the spectrum unused.

Question 15:

Do you have any comments on our assessment of the coexistence of ESN Gateways in 1910–1915 MHz with FRMCS in 1900–1910 MHz?

BT has no comments.

Question 16:

Do you have any comments on the feasibility of the additional mitigation measures we have identified, or additional suggestions for measures that could further reduce the likelihood and/or impact of interference?

BT has no comments other than in relation to including other bands in the ESN Gateway to mitigate any interference issues with FRMCS. Given the very low risks of this interference

scenario and the significant additional costs and complexity this would entail for the ESN Gateway, this is unlikely to be a feasible mitigation.

Question 17:

Do you have any comments on our proposed technical licence conditions for FRMCS and ESN gateways?

BT has reviewed the proposed technical licence conditions and has no comments.

6 Licence Fees

Question 18:

Do you agree with our provisional conclusion that there is likely to be excess demand for the 1900–1915 MHz band, in future, if cost-based fees were applied; and, therefore, that an AIP fee is appropriate? Please provide any evidence to support your position.

As Ofcom notes, the band has not been used for more than 20 years by the current licensees and the demand for alterative uses, other than the optimal uses that Ofcom has identified, appears uncertain, particularly the portion of the band above 1910 MHz, that Ofcom considers unsuitable for high power use.

For the ESN Gateway use of 1910-1915 MHz, we consider that a cost-based fee would be more appropriate than an AIP based fee. An isolated 5MHz of restricted power spectrum would have limited utility for other uses, and as such the opportunity cost is close to zero.

For the FRMCS use of 1900-1910MHz, we agree there are potentially other competing demands, and that an AIP based fee may be appropriate. This is because the spectrum is being authorised at standard power and a mobile ecosystem is being developed.

Question 19:

Do you agree with our approach to fees, including fee level and adjustments? Please provide any evidence to support your position.

FRMCS in 1900-1910 MHz

We note that as the use of the spectrum is confined to on or near railways, and so long as the railway use does not prevent the spectrum being used for other applications away from railways, some further downward adjustment to the proposed fee could be justified because the railway use is not nationwide but restricted to railways.

BT has some comments on Ofcom's calculations for the proposed level of AIP based fees.

Firstly, in response to the recent consultation on 900/1800/2100 MHz fees[3], BT has provided evidence that the market value of spectrum has declined significantly in real terms in recent years[4], since the 2013 and 2021 UK auctions. That evidence suggests that since 2021 nominal values have fallen by c.14% whereas Ofcom's use of CPI value escalator has increased the values by c.23%. If looking back to 2013, the over statement of spectrum values is much greater still. So, the lower end estimation of value of £16,000 per MHz for the implied fee based on 700 SDL or £113,000 per MHz based on unpaired 2.6GHz, are both overstated. In the case of the unpaired 2.6GHz benchmark, for example, if CPI were not applied to the historic value, it would be £76k per MHz, rather than £113k.

Secondly, and in contrast to treatment of direct auction-based benchmarks, Ofcom's upper values of £396,000 per MHz based on GSM-R, and £277,000 per MHz based on MSS, were AIP fees set long ago, but Ofcom has not inflated these by CPI.

Given the evidence of declining spectrum values, not inflating fees by CPI is more appropriate, and a significantly lower fee than £150,000 per MHz is justified.

ESN in 1910-1915 MHz

As stated above, BT considers that a cost-based fee would be more appropriate than an AIP based fee. However, if an AIP is set, the fee discount for medium power use compared to high power use in the adjacent band, should be more than the 50% proposed. A power level of 37dBm/5MHz vs 65dBm/10MHz is a 25dB difference, which presents a vastly different cell coverage area (depending on the propagation characteristics, it could be a factor of 16 or more). Therefore, if an AIP approach is used, the fee should be at most 10% of that applied to high power use.

7 Next steps

BT welcomes an early decision on the consultation proposals to enable investment decisions well ahead of when the spectrum becomes available in 2029.

We encourage Ofcom to continue to work in advance of 2029 on whether additional uses beyond those proposed could be facilitated in the 1900-1920 MHz band – including in 1900-1910 MHz away from railways, and in the 1915-1920 MHz that is currently proposed as a guard band.

We would be happy to further discuss with Ofcom any of the issues raised in this response.

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[3] https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-on-proposals-for-implementing-revised-alfs-and-notice-of-proposal-to-make-regulations/main-documents/consultation-on-implementation-and-regulations.pdf

[4] https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-review-of-annual-licence-fees/responses-december/aetha-consulting-for-bt.pdf

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