Decision to amend the licence exemption conditions for the use of certain Short-Range Devices

Ofcom's decision to change some technical conditions for licence exempt devices

STATEMENT:

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Annex

1. Overview

Ofcom is responsible for authorising use of the radio spectrum in the UK. We permit the use of the radio spectrum by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 (the "WT Act") or by making statutory regulations exempting users of particular equipment from the requirement to hold such a licence.

On 9 May 2022, we published a consultation (the "May Consultation"), that set out a number of proposals to change the technical conditions which apply to licence exempt Short-Range Devices (SRDs). These are widely used and include things such as consumer Wi-Fi and multimedia equipment, as well as transport and industrial applications. Our consultation closed on 4 July 2022.

This document sets out our decision following consideration of the nine responses received which were broadly in support of the proposals in our May Consultation. In light of this, we have decided to extend and modify the technical conditions and existing arrangement for certain SRDs as proposed, with some minor amendments.

What we have decided – in brief

We have decided to:

Provide an additional 20 MHz of spectrum for safety related Intelligent Transport System (ITS): we are extending the current spectrum assignment from 5875 to 5905 MHz by 20 MHz, to cover 5875 to 5925 MHz;

Liberalise the use of 5150 to 5250 MHz for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) to enable licence-exempt use of this band using technologies such as Wi-Fi: we will liberalise the use of 5150 to 5250 MHz to allow outdoor mobile/nomadic use. Due to responses received, we have modified our proposal to also include in-vehicle and inside train use in these provisions and clarified the power limits. We will also permit airborne use of the 5170 to 5250 MHz part of the band; and clarify that there is no requirement for Dynamic Frequency Selection (DFS) and transmit power control (TPC) in the 5150 to 5250 MHz band;

Liberalise some of the technical conditions for some Ultra-Wideband (UWB) devices: we will allow new categories of licence-exempt use of UWB material-sensing devices and secure low-power vehicle keyless access systems;

Close the 24 GHz Automotive Short-Range Radar (SRR) band to new applications: we will close the current authorisation for new deployments in 24.25 to 26.65 GHz in line with other European countries; and

Make some technical and minor editorial changes to SRD applications in the bands 870 to 874.4 MHz, 917.3 to 918.9 MHz and 917.4 to 919.4 MHz (the "870/915 MHz bands"): we will liberalise the use of fixed SRD network devices in the 870/915 MHz bands, as well as some minor editorial amendments.

To implement these changes, we will consult on draft regulations, as required by section 122(4) of the WT Act. We will begin consulting on the necessary amendments to legislation shortly.

The overview section in this document is a simplified high-level summary only. The decisions we have taken and our reasoning are set out in the full document.

2. Introduction

2.1 SRDs are typically low powered, mass-market and/or portable devices. Most of us use one or more SRDs such as keyless entry fobs/cards, baby monitors, garage door openers and Wi-Fi systems on a daily basis. Due to their low power, the radio signals do not travel far meaning that risk of interference between users is very low.

2.2 This negates the need for us to coordinate use between users by issuing a WT Act licence. In these circumstances, the WT Act gives Ofcom powers to make regulations that exempt the need for the user of a device to hold a WT Act licence. The regulations must specify the type of equipment and the technical parameters it must meet in order for the exemption to apply. In Annex 1, we set out in more detail the relevant legal framework, which we have taken into account in making the proposals set out in this document. This annex should be treated as part of this document.

2.3 On 9 May 2022, we published the May Consultation on proposals to amend the licence exemption conditions to reflect changes and developments in technology use.[1] In the consultation, we made proposals that would allow the use of certain SRD technologies without the need to hold a licence. The proposals would increase the amount of spectrum available for various SRD uses including for road safety, low power Wi-Fi, more spectrum for drones, keyless entry systems to name a few. We also proposed to close access for new 24 GHz automotive radars and remove restrictions that are no longer required for existing licence exempt SRDs. We requested comments on the proposed policy changes by 4 July 2022.

What we said in the May Consultation

2.4 In our May Consultation, we set out 5 key policy proposals that would require changes to be made to the licence exemption regulations, if introduced. These were to:

a) Extend the spectrum available for safety related Intelligent Transport System (ITS) by 20 MHz, from 5905 to 5925 MHz;

b) Liberalise the use of 5150 to 5250 MHz for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) to allow mobile/nomadic use[2] outdoor, and airborne use of the 5170 to 5250 MHz part of the band; and clarify that there is no requirement for Dynamic Frequency Selection (DFS) and transmit power control (TPC) in the 5150 to 5250 MHz band;

c) Liberalise some of the technical conditions for some Ultra-Wide Band (UWB) devices;

d) Close the 24 GHz Automotive Short-Range Radar (SRR) band to new applications; and

[1] https://www.ofcom.org.uk/__data/assets/pdf_file/0019/237214/srd-policy-condoc.pdf

[2] Nomadic use means the device can be move around but is stationary when used, for example, moving a laptop from one location and having to reconnect to the Wi-Fi hotspot in the new location.

e) Make some technical and minor editorial changes to SRD applications in the bands 870 to 874.4 MHz, 917.3 to 918.9 MHz and 917.4 to 919.4 MHz (the "870/915 MHz bands").

2.5 We said that if following consultation, we decided to proceed with these policy proposals, we would consult on with draft regulations to implement these decisions. As required by section 122(4) of the WT Act, we would need to give statutory notice of our intention to make exemption regulations.

We proposed to extend the spectrum available for safety related ITS by 20 MHz from 5905 MHz to 5925 MHz

2.6 The UK designates the band between 5875 MHz and 5905 MHz for safety related Intelligent Transport System (ITS)[3]. In our May Consultation, we proposed to extend the spectrum available in the UK for safety related ITS by 20 MHz, from the current 5875 to 5905 MHz to a new allocation of 5875 to 5925 MHz.

2.7 Our proposals were designed to harmonise safety related ITS for road use with other European countries in line with the European Commission (EC) Decision 2020/1426 on the harmonised use of radio spectrum in the 5875 to 5935 MHz frequency band for safety related applications of ITS (the "ITS Decision"). [4]

2.8 In the UK, the 5905 to 5925 MHz band is already being used by a number of SRDs alongside uses in programme-making and special events, satellite services and military uses. The same users currently share spectrum in the existing safety related ITS allocation in 5875 to 5905 MHz. In light of this, and the technical studies undertaken by the European Conference of Postal and Telecommunications Administrations (CEPT), we believe that extending this use to 5925 MHz would not have a negative impact on other existing users in this band.

2.9 In the May Consultation, we also explained that throughout the work carried out by CEPT, the UK did not support the proposal to provide an additional 10 MHz of spectrum for urban rail in 5925 to 5935 MHz. At CEPT, Ofcom indicated support for road ITS use up to 5925 MHz but had raised concerns over lack of evidence to justify the demand for the additional spectrum for urban rail ITS services as these services are already operating in the 2.4 GHz band in the UK.

We proposed to liberalise the use of 5150 to 5250 MHz for WAS/RLAN and clarify that there is no requirement for DFS and TPC in the band

2.10 In July 2021, the ECC Decision (04)08 on the harmonised use of the 5 GHz frequency bands for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN)[5] (the "5 GHz

[3] Safety related ITS is the term used to describe a number of transport related applications, such as driver aids intended to mitigate against accidents, by providing drivers with additional information and giving an early warning of potential dangers.

[4] https://docdb.cept.org/download/166

[5] WAS or (alternatively) RLAN is a collective term for wireless networking technologies including Wi-Fi systems. WAS/RLAN systems allow the extension of a local area computer network without needing cables (e.g. wireless internet access in airports or other hotspots, or wireless networks within an individual home).

Decision") was published.[6] This followed on from the approval of CEPT Report 79[7] which reviewed and revised the technical conditions for the 5 GHz band.

2.11 In our May Consultation, we said that the 5 GHz Decision made some changes to the 5150 to 5350 MHz band which is already designated and harmonised for WAS/RLAN.[8] The 5 GHz Decision relaxed some of the restrictions in the 5150 to 5250 MHz portion of the band and set out some changes. The changes would:

a) allow mobile/nomadic outdoor use but not fixed outdoor use in the 5150 to 5250 MHz part of the band; and

b) allow airborne use in the 5170 to 5250 MHz part of the band.

2.12 In line with the 5 GHz Decision, we proposed, in the May Consultation, to make changes in relation to the 5150 to 5250 MHz part of the band. We proposed to relax the outdoor restrictions by allowing mobile/nomadic use in the 5150 to 5250 MHz part of the band. We said the changes would liberalise the conditions on WAS/RLAN use in the 5150 to 5250 MHz band and enable the development of new, innovative applications. Given this, and based on technical studies carried out at CEPT, we considered that the relaxation of the outdoor use for non-fixed operations as proposed would not negatively impact incumbent services.

2.13 Airborne use is not currently permitted in the 5150 to 5350 MHz band in the UK. In line with the 5 GHz Decision, we proposed to allow airborne use in the 5170 to 5250 MHz part of the band. We did not propose to permit airborne use in 5150 to 5170 MHz due to the protection requirements of the aeronautical radionavigation service. We said that permitting airborne use in 5170 to 5250 MHz band could increase the amount of spectrum that devices such as drones would be able to use.

2.14 In addition to the liberalised use of 5150 to 5250 MHz, we also proposed to clarify that there is no requirement for Dynamic Frequency Selection (DFS)[9] and transmit power control (TPC)[10] for WAS/RLAN use in the 5150 to 5250 MHz band. In the current version of IR 2030, the channel access and occupation rules (which includes the mention of DFS and TPC) are presented in the same row, making it appear that DFS and TPC apply to the whole of the 5150 to 5350 MHz frequency range. We noted that this did not make it clear that the requirement for DFS and TPC only applies to the 5250 to 5350 MHz range. To remove this potential for confusion, we proposed to present the requirements for the 5150 to 5250 MHz and 5250 to 5350 MHz bands in separate rows in IR 2030.

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[6] https://docdb.cept.org/download/3450
[7] https://docdb.cept.org/download/3453
[8] With a maximum mean e.i.r.p of 200 mW and maximum mean e.i.r.p density of 10 mW/MHz in any 1 MHz band.
[9] DFS requires a Wi-Fi router to scan for radar signals and to switch channel if transmissions are detected. DFS can therefore represent a constraint for equipment manufacturers and cause connection delays at start up and/or lower throughput for Wi-Fi users in areas of spectrum congestion.
[10] TPC is a mechanism used to automatically switch to reduce transmit power when other devices are within range. It is used to prevent too much unwanted interference between different wireless networks.

We proposed to liberalise some of the technical conditions in some UWB devices

2.15 On 14 May 2019, the European Commission harmonised the technical conditions across the EU for Ultra-Wideband (UWB) equipment (the "UWB Decision").[11] The UWB Decision liberalised some of the technical conditions for UWB material-sensing devices. It set a power limit for all material-sensing devices, including building material analysis (BMA) in the 8.5 to 10.6 GHz band to – 65 dBm/MHz. It also introduced a trigger-before-transmit mitigation for operating vehicle keyless entry systems in the 3.8 to 4.2 GHz and 6 to 8.5 GHz frequency bands.

2.16 In the May Consultation, we proposed to amend technical conditions for material sensing including BMA as set out in the UWB Decision by describing these devices in a more neutral way in order to allow for innovative uses. This would also clarify the possibility for generic UWB to be used for material sensing applications without conflicting with the technical requirements for generic UWB applications. As for the power limit of – 65 dBm/MHz, this would ensure consistency of limits by aligning material sensing devices including BMA with more generic material sensing devices.

2.17 We also proposed to introduce new technical conditions based on UWB technology for vehicle keyless entry systems. We said it will enable the use of a new approach to key fob access which involves an in-car transceiver and key fob using UWB technology rather than traditional passive narrowband systems. The trigger-before-transmit mitigation technology for operating vehicle keyless entry systems enables more secure low-power keyless access to cars compared to the narrowband keyless entry systems. It also ensures that UWB transmissions only occur when necessary, particularly where UWB devices are nearby.

We proposed to close the 24 GHz Automotive SRR band to new SRR applications

2.18 In March 2021, the ECC Decision (04)10 relating to the 24 GHz automotive Short-Range Radar (SRR) (the "ECC Decision)[12] was published. The ECC Decision on automotive SRR looked to phase out the deployment of wideband automotive SRR equipment in the 24 GHz (24.25 to 26.65 GHz) band, and set out a date of 1 January 2022 for this to occur. ECC Decisions are non-binding but are widely supported and adopted by individual CEPT countries.

2.19 In line with other European countries, we proposed to close the 24 GHz band for any new SRR applications or deployments. This would mean that no new SRR application would be permitted to be installed in the 24 GHz band after the regulations come into force.

2.20 Although we noted that our consultation was taking place after 1 January 2022, we indicated that should we proceed with our proposal, we did not believe this would have a significant impact on the use of this band or on stakeholders. As this is a harmonisation

[11] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D0785&from=EN
[12] https://docdb.cept.org/download/1678

decision, we noted that most vehicle manufacturers would have already taken steps to switch over to the 79 GHz band (77 to 81 GHz, which is the designated permanent band for development and deployment of automotive SRR equipment on a licence-exempt basis) or used an alternative technology.

We proposed to make some technical and minor editorial changes to SRD applications in the 870/915 MHz bands

2.21 SRD applications in the bands 870 to 874.4 MHz, 917.3 to 918.9 MHz and 917.4 to 919.4 MHz bands (the "870/915 MHz bands") are typically used for tracking, tracing and data acquisition. As part of the ongoing process to continue to review technical parameters of SRDs, on 5 March 2021 CEPT published Report 77 (CEPT Report 77)[13], which set out the conditions relating to SRDs that operate in the 874 to 876 MHz and 915 to 921 MHz frequency bands. The report proposed to amend the definition of certain SRDs, in order to avoid ambiguity and ensure consistency with EC Decision 2006/771/EC. It also proposed to re-assess some technical parameters for categories of SRDs covered by EU Decision 1538.[14]

2.22 The proposals in CEPT Report 77 relaxed some of the requirements applicable to fixed devices in three bands (870 to 874.4 MHz, 917.3 to 918.9 MHz and 917.4 to 919.4 MHz). Specifically, the proposals relaxed the requirement that all such devices be controlled by network access points; and proposed instead that only mobile and nomadic devices should be controlled by a "master" network access point. In addition, it made technical changes to introduce a minimum channel bandwidth in 917.4 to 919.4 MHz to provide clarity and ensure that it aligns with the parameters already set for non-specific SRD[15] bands.

2.23 Based on the proposals set out in CEPT Report 77, we proposed in the May Consultation to implement the changes set out above. We noted that the proposed changes would clarify the text in a couple of existing licence exemptions and relax some rules for fixed SRD network devices in the 870/915 MHz bands. We also noted that these changes could help reduce barriers to access to these bands and enable the deployment of a wider range of equipment; and since we were not proposing amendment of technical parameters, we did not expect a negative impact on existing users of the bands.

Consultation responses

2.24 We received nine non-confidential responses to the May Consultation. All of the responses are published on our website here. Details of the responses - and our assessment of the points raised by respondents - are included in the following sections of this statement, where relevant.

[13] https://docdb.cept.org/download/139
[14] CEPT Report 77 constitutes the technical basis for the EU Decision 2022/172 published on 7 February 2022 - https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022D0172&from=EN
[15] Non-specific SRDs are generic SRDs that can be used for any application.

3. Consultation responses

Introduction

3.1 In this section, we summarise the comments that we received on the May Consultation and our consideration of these.

Consultation questions

3.2 We set out the following consultation questions

> Question 1: Do you agree with our proposal to extend safety related ITS by 20 MHz from 5905 MHz to 5925 MHz?
>
> Question 2: Do you agree with our proposal to permit outdoor mobile/nomadic use of 5150 to 5250 MHz and airborne use in 5170 to 5250 MHz band for WAS/RLAN applications, as well as our proposal to clarify the DFS and TPC requirement in the 5250 to 5350 MHz band?
>
> Question 3: Do you agree with our proposal to liberalise some of the technical conditions in some UWB devices?
>
> Question 4: Do you agree with our proposal to close the 24 GHz SRR band to new applications?
>
> Question 5: Do you agree with our proposal to make some technical and minor editorial changes to SRD applications in the 870/915 MHz bands?
>
> If you disagree with any of the questions, please provide the evidence that would support any disagreement with the proposals.

3.3 We received nine non-confidential responses to the May Consultation; all broadly in support of our proposals. The full responses are available on the Ofcom website.[16] We set out stakeholders' responses to our proposals and our response below.

Stakeholders' responses to the May Consultation and Ofcom's response

Safety related ITS

Stakeholders' responses

3.4 With regards to our proposal to extend the spectrum available for safety related ITS by 20 MHz from 5905 MHz to 5925 MHz, we received five specific responses. Four of these - Bosch, the European Automobile Manufacturers' Association (ACEA), the European Association of Automotive Suppliers (CLEPA) and the Society of Motor Manufacturers and

[16] https://www.ofcom.org.uk/consultations-and-statements/category-1/authorisation-conditions-for-short-range-devices

Traders Limited (SMMT) - were very supportive of our proposal and welcomed the proposal leading to harmonisation with other CEPT countries. However, the UK Wireless Internet Services Providers Association (UKWISPA) was not supportive.

3.5 UKWISPA stated that it did not believe there is extensive use of the 5 GHz band for ITS in the UK and therefore felt the case to extend the allocated spectrum seemed weak compared to assigning this spectrum to other uses. It provided a number of suggestions for alternative uses by Fixed Wireless Access (FWA) applications.

3.6 It suggested possibly moving the existing ITS allocation of 5875 to 5905 MHz up to the 20 MHz proposed so that it resides at 5905 to 5925 MHz, allowing more access to FWA applications in 5 GHz Band C (UNII3-Upper) from 5850 to 5870 MHz. It also provided an alternative suggestion of extending 5 GHz Band C to 5890 MHz to enable better spectral efficiency and channel availability for FWA use. It proposed that given the limited use of this band for ITS, geographic constraints could be applied to the use of band C up to 5890 MHz for FWA in order to protect the use of ITS services.

Ofcom's response

3.7 The majority of responses relating to this specific element of the May Consultation supported our proposal to extend the existing band for safety related ITS by 20 MHz from 5905 MHz to 5925 MHz. We have considered the arguments put forward by UKWISPA, including on the potential for existing FWA equipment to make use of an extended band. However, the use of FWA in the band up to 5870 MHz or 5890 MHz would require appropriate technical sharing and compatibility studies to be carried out to assess the potential impact on other existing services aside from ITS, such as satellite services.

3.8 Further, we note that safety related ITS can play a part in improving road safety, and also has a role to play in emerging areas such as connected and autonomous vehicles. In light of this, the technical studies carried out to date which support our proposal, and the largely positive responses to our consultation we will proceed as proposed to allocate more spectrum for road use, in line with the rest of Europe. However, we will continue to assess possible options on the use of the band to achieve optimal spectrum efficiency while minimising the impact on incumbent services.

WAS/RLAN in 5150 to 5250 MHz

Stakeholders' responses

3.9 The seven responses received in relation to our proposals for (i) liberalising the use of 5150 to 5250 MHz for WAS/RLAN and (ii) clarifying that there is no requirement for DFS and TPC in the band, were positive overall, but some respondents raised questions over specific aspects of the proposals.

3.10 BT considered that there was contradictory wording in the proposed restrictions for WAS/RLAN in the draft Interface Requirement (IR) 2030 which we published as part of the consultation. Specifically, it noted inconsistencies across IR2030/7/6 and IR2030/8/1a and suggested a means to resolve this. BT also requested that references to "the notice of

publication" in IR2030 be clarified so that it can be clear what this document is and where it can be found.

3.11 Whilst it agreed with our proposal, Kiwa recommended that Ofcom perform further sharing and compatibility studies between WAS/RLAN applications and Aeronautical Radionavigation in 5150 to 5350 MHz band, to enable access to the whole 5150 to 5350 MHz band for outdoor and airborne use.

3.12 Bosch, ACEA and CLEPA all submitted the same response to our proposal in relation to 5150 to 5250 MHz band. All three respondents, along with SMMT, requested further clarification to IR2030/8/1a on whether an enclosed space includes in-vehicle application.

3.13 Similarly, they all expressed concerns over the proposed requirement that a vehicle would need to have at least the same attenuation characteristics as either a building or an aircraft. Bosch, ACEA and CLEPA stated that it might not be feasible to increase attenuation of a vehicle to a sufficient level to meet this requirement for allowing WAS/RLAN for example, Wi-Fi operation within that vehicle. Further, in-vehicle Wi-Fi equipment manufacturers might not have knowledge about the attenuation characteristics of all vehicles/types of vehicles in which the equipment may be used. They considered that further clarification on how much attenuation would be required or how much transmit power is permitted might be needed to provide legal certainty and proposed that this might be achieved by allowing a reduced transmit power for in-vehicle use, similar to the 25mW limit for in-vehicle use in ECC Decision 04(08)[17].

3.14 Although UKWISPA agreed with our proposal to permit outdoor use, it considered that fixed use should also be permitted in this band and that such applications should be further modified to match the maximum transmit power of the 5 GHz Band C, (maximum EIRP limited to 4 Watts). It added that the vast majority of existing FWA equipment deployed and available in the UK could be firmware updated to use this band, which it considered would have a very positive impact on the ability to provide connectivity services to rural properties at high speeds.

Ofcom's response

3.15 In view of the broad support from respondents for this element of our proposal, we will proceed as proposed, and also make some further changes to take into account some of the comments on clarifying aspects of IR2030.[18] We consider that this decision will enable the development of new, innovative applications.

3.16 Our proposals took account of the results of the extensive CEPT and ITU studies on coexistence between RLAN and the incumbent services in the 5150 to 5350 MHz band. These studies concluded that the maximum power should be set at 200 mW for limited outdoor use. Whilst we have taken note of UKWISPA's suggestions to make further changes to enable FWA equipment in the band, we have no current plans to authorise higher power outdoor fixed use under these exemption regulations in the 5150 to 5250

[17] https://docdb.cept.org/download/4053
[18] See Table 1 for the revised version of IR2030/8/1a.

MHz band or to modify the technical conditions for use in the band so as to match the maximum transmit power of the current 5 GHz Band C requirements. However, we may review the possible use of the band for BFWA in the future.

3.17 We have noted Kiwa's points on outdoor and airborne use and may be able to consider the possibility of allowing outdoor and airborne use across the whole 5150 to 5350 MHz band in future. Work is currently underway in CEPT, as they have received an EC mandate, to review the existing harmonisation Decision for WAS/RLAN use in Europe in this part of the 5 GHz band. We expect that this would be considered as part of the review. If the studies show that the whole band can be used for outdoor and airborne use, then will consider implementing the changes.

3.18 We acknowledge BT's request for clarity in respect of (i) inconsistencies in the wording of the proposed restrictions in IR2030/7/6 and IR2030/8/1a; and (ii) the reference to the 'notice of publication' in IR 2030. We will amend the draft IR 2030 to address these issues.

3.19 We will also amend the wording of IR2030/8/1a in response to the comments raised by a number of stakeholders regarding whether the use of the equipment in road vehicles and trains was included in our proposals. Our proposals were intended to include these uses and therefore we have amended the text in the draft IR2030/8/1a to make clear that the provisions apply to equipment operating inside buildings, aircraft, trains or road vehicles.

3.20 We have noted the responses from SMMT, Bosch, ACEA and CLEPA on the proposed requirements to meet certain attenuation characteristics in IR2030/8/1a. We recognise that manufacturers may not have knowledge about the attenuation characteristics of all vehicles/types of vehicles in which their equipment may be used. Therefore, have amended IR2030/8/1a to include an attenuation limit of 12 dBm to provide further clarity for stakeholders. If an installation within a road vehicle cannot meet the attenuation limits set in out in IR2030/8/1a, then a maximum mean EIRP limit of 40mW would apply. These limits are in line with the technical provisions as set out in ECC Decision (04) 08.

3.21 When reviewing the draft IR2030/8/1a text as set out in the Table in the annex 1 of the May Consultation, we noticed that the provision to allow limited outdoor use as set out in paragraph 3.14 to 3.15 of the May Consultation was omitted in error. We have added this text to the revised IR2030/8/1a to address this omission.

3.22 The amendments that we have made to IR2030/8/1a relating to the 5150 to 5250 MHz band based on stakeholder responses, are set out in Table 1 below.

Table 1: Revised IR2030/8/1a[19]

Interface / Notification number / Date	Application	Comments to application	Frequency band	Maximum transmit power / Power spectral density / Field strength	Channel access and occupation rules
IR2030/8/1a	Wireless Access Systems (W AS)	Airborne use outside of an aircraft is only permitted in 5170 – 5250 MHz. *Outdoor use is permitted provided that the equipment must not form part of a fixed outdoor installation.* The apparatus may ~~only~~ be used within a building or aircraft or any other enclosed space *(including road vehicles and trains)* with attenuation characteristics at least as strong as those of either a building ~~or~~, an aircraft *or an attenuation loss on average of less than 12 dB. Devices can only be used* to establish a connection with a station or apparatus within the same building or aircraft or other enclosed space.	5150 – 5250 MHz	Maximum mean e.i.r.p of 200 mW and maximum mean e.i.r.p density of 10 mW/MHz in any 1 MHz band. *If an installation within a road vehicle cannot meet the attenuation limits set then a 40 mW maximum mean e.i.r.p. applies.*	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in designated standards specified in the Notice of publication must be used. *(See section 6)* *NB section 6 includes a link[20] to the Notices of publication of designated radio standards*

Liberalising some of the technical conditions in some UWB devices

Stakeholders' responses

3.23 We received six positive responses relating to the proposed changes to technical conditions for some UWB devices.

[19] In Table 1, the underlined words are those that we have inserted in IR2030/8/1a and the words struck through are those that we have deleted.
[20] Notices of designated radio equipment standards published by BIES on its website https://www.gov.uk/government/publications/designated-standards-radio-equipment.

3.24 UWB alliance, ACEA and CLEPA supported the proposed harmonisation of the UK UWB regulations with those applicable within CEPT. In particular, UWB alliance considered that these changes would benefit manufacturers, UK industry and consumers.

3.25 Both UWB alliance and Bosch also supported the introduction of an Interface Requirement for UWB; with UWB alliance indicating that this would provide clarity about the applicable regulations and technical conditions. Both respondents highlighted that Location Tracking Type 2 (LT2) systems[21] following ECC/REC/(11)09[22] are not listed in IR2030 and suggested that these systems be added to the document.

Ofcom's response

3.26 Following consideration of the responses received, we plan to proceed with liberalising some of the UWB technical conditions as we proposed in the May consultation.

3.27 With respect to the suggestion to include LT2 systems as part of this proposal, we do not plan to make any specific proposals in respect of LT2 systems at this time. According to ECC/REC/(11)09, authorising LT2 systems would require a national authorisation/registration regime to be put in place for LT2 to avoid interference with incumbent services. This would be extremely difficult to undertake via a licence exemption regime.

3.28 Further, LT2 systems operate in the region of 3.1 to 4.8 GHz. These bands are already heavily used by a number of incumbent services such as military radars, public and private 4G and 5G networks, satellite and other users. The 3.4 to 3.8 GHz[23][24] spectrum band has already been awarded by auction to meet growing consumer demand for mobile broadband. We have also introduced the Shared Access Licence[25] framework to enable shared use of spectrum in 3.8 to 4.2 GHz, among other frequency bands. Given that 3.4 to 3.8 GHz is a core 5G band for mobile services and the 3.8 to 4.2 GHz is increasingly being used for private networks, amongst other existing uses, we do not believe that introducing an additional service, that requires coordination, would be appropriate at this point.

3.29 However, we note that our Shared Access licences are technology neutral, therefore if the technical criteria for LT2 fit under this licence then stakeholders may be able to apply for one of these licences in order to operate their services.

Closing the 24 GHz band to new SRR applications

Stakeholders' responses

3.30 We received responses from Bosch, Kiwa, UKWISPA, SMMT, ACEA and CLEPA, all in support of our proposal to close the 24 GHz band to new SRR applications. Most respondents

[21] These systems are intended for tracking people and objects and industrial applications at well-defined locations.
[22] https://docdb.cept.org/download/1800
[23] https://www.ofcom.org.uk/spectrum/spectrum-management/spectrum-awards/awards-archive/2-3-and-3-4-ghz-auction
[24] https://www.ofcom.org.uk/spectrum/spectrum-management/spectrum-awards/awards-archive/700-mhz-and-3.6-3.8-ghz-auction
[25] https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/shared-access

agreed that these changes are in line with harmonisation across Europe. Kiwa added that one of the key benefits of moving automotive SRR equipment from 24 GHz to 79 GHz is the wide bandwidth available, noting that, there is significantly higher bandwidth available (up to 4 GHz of sweep bandwidth, compared with 200 MHz at 24 GHz).

Ofcom's response

3.31 In view of the comments outlined above, we will proceed with our proposal to close the 24 GHz band for any new SRR applications or deployments as planned.

SRD applications in the 870/915 MHz bands

Stakeholders' responses

3.32 LoRa alliance, UKWISPA and Bosch support the proposal to make some technical and minor editorial changes to SRD applications in the 870/915 MHz bands.

3.33 LoRa alliance also requested that Ofcom consider an amendment to the definition of Network Access Point (NAP) in ECC/REC70-03, for Low Power Wide Area Network (LPWAN), as part of the next update to the decision. They proposed that the definition should be slightly modified to include the ability to connect to a satellite gateway as well as an SRD. This is in order to enable the adoption of satellite to provide IoT LPWAN without changing the conditions or criteria to keep the mobile and nomadic SRD devices under the control of the NAP or satellite gateway. They considered that this change would enable UK and Europe to open up innovative use cases for IoT including applications in the agriculture and logistics area.

Ofcom's response

3.34 We note that the comments broadly support our proposal to make changes to SRD applications in the 870/915 MHz bands. Based on our assessment of the responses, we intend to proceed as we proposed.

3.35 In respect of the proposal by LoRa alliance for ECC/REC70-03 to be amended to include satellite operations at 915 MHz, we note the potential benefits but also that this would require technical studies on the potential impact on other systems, which have not yet been carried out. We also note that satellite transmissions space to Earth in these frequencies are currently not recognised under the ITU's Radio Regulations.

Other amendments

3.36 As part of the consultation process, we became aware of a couple of errors in IR2030. The details and the proposed changes we are making are set out below.

Changes relating to IR2030/7/6

3.37 In BT's response they noted an error in IR2030/7/6 relating to Wireless Access Systems (WAS) in the 5925 to 6425 MHz band. The provision stated that the equipment must not form part of a fixed outdoors installation however later in the 1R2030/7/6, we state that

airborne and outdoor use was not permitted. We will amend the text to remove the outdoor restriction as low power outdoor mobile devices are permitted in the band.

Changes relating to IR2030/7/2

3.38 Whilst reviewing IR 2030 we identified an error in IR2030/7/2 in relation to Wideband Data Transmission Systems in the 57 to 71 GHz band. At present, the power limit is incorrectly set at 13 dBm/MHz e.i.r.p. density in the IR; the correct power density limit should be 23 dBm[26] in line with the EU Decision 2019/1345[27]. We plan to implement the correct revised density limit of 23 dBm in our exemption regulations along with all the other changes we set out above.

Conclusion

3.39 We have carefully reviewed and considered the comments from all respondents. For the reasons set out above, we have decided to proceed with our proposals with some minor amendments and additions, as summarised in paragraph 4.3.

3.40 To implement the decisions set out in this document we will need to consult on amending the existing licence exemption regulations, as detailed in paragraphs 4.4 to 4.6.

[26] See Table 1- https://www.ofcom.org.uk/__data/assets/pdf_file/0023/218129/2021-LE-exemption-statement-final.pdf
[27] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D1345&rid=1

4. Ofcom's Decision

4.1 This section confirms the policy decisions that we have made in relation to the proposals we set out in our May Consultation and outlines the legal framework Ofcom operates under.

4.2 We have considered the responses received and in light of our relevant legal and statutory duties, have concluded that it is appropriate to proceed with updating the technical conditions and existing arrangement for certain SRDs on a licence exempt basis, as proposed.

4.3 Based on our technical analysis as set out in the May Consultation, and following consideration of stakeholders' responses, we have decided to proceed in making the following changes:

a) Extending the spectrum available for safety related ITS by 20 MHz, from 5905 to 5925 MHz;

b) Liberalising the use of 5150 to 5250 MHz for WAS/RLAN to allow outdoor mobile/nomadic use, including in-vehicle and inside train use. We will also allow airborne use in the 5170 to 5250 MHz part of the band; and clarify that there is no requirement for DFS and TPC in the 5150 to 5250 MHz band;

c) Liberalising some of the technical conditions for some UWB devices;

d) Closing the 24 GHz Automotive SRR band to new applications;

e) Making some technical and minor editorial changes to SRD applications in the 870/915 MHz bands; and

f) Correcting two errors which we have identified in IR2030.

4.4 Overall, we believe that consumers are likely to benefit from our decision to update technical rules on spectrum for licence exempt devices, including increasing spectrum available for road safety, low power Wi-Fi, and drones as well as enabling use of spectrum for more secure keyless car-entry systems to reduce the risk of opportunistic thefts.

4.5 In our view, these changes are:

- **objectively justified** in that they will enable optimal use of spectrum and encourage harmonisation, investment and innovation in the services that can be deployed in various bands;
- **not unduly discriminatory** against particular persons or against a particular description of persons, as there are no restrictions on who can use licence exempt devices;
- **proportionate** to what they are intended to achieve, in that we are updating and extending technical conditions to make them less restrictive to take account of changes in new or improved technological changes; and
- **transparent in relation to what they are intended to achieve**, in that the policy decision, and our underlying objectives and reasoning, are described and explained in our consultation and this statement.

4.6 We consider that our decision will further the performance of our general duties in section 3 of the Communications Act 2003 (the "2003 Act"). This is because, as set out above, citizens and consumers will likely benefit from increased amount of spectrum available for SRD uses, including for road safety, low power Wi-Fi, and drones amongst other uses.

Impact Assessment

4.7 This document represents an impact assessment as defined in section 7 of the Communications Act 2003. Impact assessments provide a valuable way of assessing different options for regulation. They form part of best practice policy making.

4.8 In preparing this document, we have considered the citizen and consumer interests relating to SRDs. We have also considered the impact on existing users, and on service providers, manufacturers and users of devices and applications.

4.9 Ofcom is an evidence-based organisation and welcomes responses to this consultation. Any comments about our assessment of the impact of our proposals should be sent to us by the closing date for this consultation. We will consider all comments before deciding whether to implement our proposals. For further information about our approach to impact assessments, see the guidelines 'Better policy making: Ofcom's approach to impact assessments' on our website.

4.10 The analysis presented in the May Consultation document as a whole constitutes our impact assessment.

Equality Impact Assessment

4.11 Ofcom is separately required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, and sexual orientation. Equality impact assessments also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity. We consider that our proposals would not be detrimental to any of these equality groups.

4.12 The decision sets out in this document would apply equally to all users of SRDs. We have not identified any differential impact of our decision in relation to the identified equality groups and, in our assessment, they would not disproportionately affect any group of consumers.

4.13 In the May Consultation (paragraphs 2.15 to 2.17), we said that we did not consider our proposals had any equality implications under the Equality Act 2010 or the Northern Ireland Act 1998. We did not receive any comments in response to this and we remain of this view.

Next steps

4.14 This statement has set out the decision we have taken to extend and modify the technical conditions and existing arrangement for SRDs. This means that we will now begin the process of making necessary changes to our Exemption Regulations in order to implement our decision.

4.15 To implement the decisions set out in this document we will need to consult on amending the existing licence exemption regulations. To update the necessary legislation, and in accordance section 122(4) of the WT Act, we will need to consult on for a statutory minimum one month period on the draft regulations.

4.16 Given the number of different regulations that will need to be amended, we are going to implement these changes in two main phases.[28] We expect to begin consultation on the first phase of the regulations by Winter 2022 with the second phase beginning shortly after.

[28] We currently envisage that phase one would cover proposals to make draft exemption regulations in relation to closing the 24 GHz SRR band and amending the current 2021 exemption regulations to include the changes to IR2030 as well as the safety related ITS decision. Phase two would cover changes to the UWB regulations.

A1. Legal Framework

A1.1 As explained below, Ofcom is responsible for authorising the use of the radio spectrum. In doing so, it must act in accordance with section 8 of the WT Act, which sets out its specific powers and duties in relation to the licensing (and licence exemption) of wireless telegraphy apparatus. When exercising its spectrum management functions, Ofcom also has a number of more general statutory duties under the 2003 Act and WT Act.

Ofcom's role in authorising the use of radio spectrum

A1.2 In the UK, Ofcom is responsible for authorising use of the radio spectrum. We permit the use of the radio spectrum either by granting wireless telegraphy licences under the WT Act or by making statutory regulations exempting users of particular equipment from the requirement to hold such a licence. It is unlawful and an offence to install or use wireless telegraphy apparatus without holding a licence granted by Ofcom, unless the use of such equipment is exempted.

A1.3 Under section 8(1) of the WT Act, it is unlawful (i.e., a criminal offence) to establish or use a wireless telegraphy station or install or use wireless telegraphy apparatus except under and in accordance with a wireless telegraphy licence granted under the WT Act.

A1.4 Under section 8(3) of the WT Act, Ofcom may make regulations exempting from the licensing requirements under section 8(1) the establishment, installation or use of wireless telegraphy stations or wireless telegraphy apparatus of such classes or description as may be specified in the regulations, either absolutely or subject to such terms, provisions and limitations as may be specified.

A1.5 Ofcom may only approve regulations under section 8(3) within the limits set out in section 8(3B). In particular, the latter requires that section 8(3) exemptions must be:

a) **objectively justifiable** in relation to the wireless telegraphy stations or wireless telegraphy apparatus to which they relate;

b) **not such as to discriminate unduly** against particular persons or against a particular description of persons;

c) **proportionate** to what they are intended to achieve; and

d) **transparent** in relation to what they are intended to achieve.

A1.6 Further, under section 8(4) of the WT Act, we must make regulations to exempt equipment from the requirement for a licence if its installation or use is not likely to:

a) involve undue interference with wireless telegraphy;

b) have an adverse effect on technical quality of service;

c) lead to inefficient use of the part of the electromagnetic spectrum available for wireless telegraphy;

d) inhibit the development of effective arrangements for the sharing of frequencies;

e) endanger safety of life;

f) prejudice the promotion of social, regional or territorial cohesion; or

g) prejudice the promotion of cultural and linguistic diversity and media pluralism.

A1.7 We make exemption regulations by means of a statutory instrument. Before making any such regulations, we are required by section 122(4) of the WT Act to give notice of our proposal to do so. Under section 122(5), the notice must state that we propose to make the regulations in question, set out their general effects, specify an address from which a copy of the proposed regulations may be obtained, and specify a time period of at least one month during which any representations with respect to the proposal must be made to us.

Ofcom's wider statutory duties

A1.8 Ofcom's principal duties under section 3(1) of the 2003 Act are to further the interests of citizens in relation to communications matters, and to further the interests of consumers in relevant markets, where appropriate by promoting competition. These duties apply when Ofcom is carrying out its spectrum management functions.

A1.9 In doing so, we are also required (among other things) to secure the optimal use of spectrum and the availability throughout the United Kingdom of a wide range of electronic communications services.

A1.10 We must also have regard to, amongst other things:

a) the desirability of promoting competition in relevant markets;

b) the desirability of encouraging investment and innovation in relevant markets;

c) the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom;

d) the different needs and interests, so far as the use of the electro-magnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it; and

e) the different interests of persons in the different parts of the United Kingdom; of the different ethnic communities within the United Kingdom; and of persons living in rural and in urban areas.

A1.11 In carrying out our spectrum functions, we also have a duty under section 3 of the WT Act to have regard in particular to: (i) the extent to which the spectrum is available for use, or further use, for wireless telegraphy; (ii) the demand for use of that spectrum for wireless telegraphy; and (iii) the demand that is likely to arise in future for such use.

A1.12 We also have a duty to have regard to the desirability of promoting: (i) the efficient management and use of the spectrum for wireless telegraphy; (ii) the economic and other benefits that may arise from the use of wireless telegraphy; (iii) the development of innovative services; and (iv) competition in the provision of electronic communications services.

A2. List of respondents

UWB Alliance

LoRa Alliance

Kiwa

BT

European Automobile Manufacturers' Association (ACEA)

European Association of Automotive Suppliers (CLEPA)

Robert Bosch GmbH

The UK Wireless Internet Services Providers Association (UKWISPA)

The Society of Motor Manufacturers and Traders Limited (SMMT)