An Coimisiún um
Rialáil Cumarsáide
Commission for
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Radio Spectrum Management Operating Plan for 2025 - 2028

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Content

Section Page

Annex

Section Page

Table of Figures

Section Page

1 Introduction

1.1 Background and Purpose

1.1 The Commission for Communications Regulation ("ComReg") is the statutory body responsible for the regulation of the electronic communications (telecommunications, radiocommunication and broadcasting networks), postal and premium rate sectors in Ireland in accordance with European Union ("EU") and Irish law. ComReg also manages Ireland's radio spectrum (or "spectrum") and national numbering resource.

1.2 Radio spectrum is a medium by which information may be transmitted wirelessly over distances ranging from a few metres to thousands of kilometres. It is a valuable national resource underpinning important economic, social and communications activities. These include widely used services, such as mobile/fixed wireless communications and broadband, radio and TV broadcasting, and the safe operation of air and maritime transport. Radio spectrum is also fundamental in the day-to-day operation of the emergency services and defence forces and is a vital input to many other services including important scientific applications, such as weather forecasting and monitoring the Earth's environment. However, it is a finite natural resource with competing uses and users and so it must be managed effectively and used efficiently.

1.3 ComReg's current Radio Spectrum Management Strategy Statement from 2022 to 2024 ("ComReg Document 21/136"[1]) was published in 2021, and set out, among other things, its work plan priorities at that time. ComReg's radio spectrum management operating plan (otherwise known as a work plan) for the period 2022-2024 was included at Chapter 5 of ComReg Document 21/136.[2]

1.4 This document sets out ComReg's Radio Spectrum Management Operating Plan (RSMOP) for the period 2025 to 2028 and includes ComReg's proposals for its core programmatic spectrum management activities together with activities in a number of radio spectrum services categories.

1.2 Structure of this Document

1.5 The remainder of this document is structured as follows:

- **Chapter 2:** outlines the framework for spectrum management in Ireland and

[1] Radio Spectrum Management Strategy Statement 2022 to 2024 | Commission for Communications Regulation (comreg.ie)

[2] Chapter 5 of Document 21/136 is titled "*Radio Spectrum work plan for the period 2022-2024*"

provides information on ComReg's mandate and approach to spectrum management.

- **Chapter 3:** outlines a number of factors that inform ComReg's work plan proposals for the 2025-2028 period.
- **Chapter 4:** sets out ComReg's radio spectrum work plan for the 2025-2028 period. This includes ComReg's proposals for its core programmatic spectrum management activities together with activities in a number of specific radio spectrum service categories.
- **Annex 1:** Summary of ComReg's statutory framework relevant to the management of the radio frequency spectrum in Ireland.
- **Annex 2:** World Radiocommunication Conferences 2023 and 2027.
- **Annex 3:** Analysys Mason disclaimer.

2 The Framework for Spectrum Management in Ireland

2.1 Spectrum Policy and Spectrum Management in Ireland

2.1 This section sets out the relevant Government department roles in relation to spectrum policy and national broadcasting policy in Ireland, and ComReg's role in relation to its spectrum management responsibilities.

2.1.1 Spectrum Policy

2.2 The Department of the Environment, Climate and Communications ("DECC") is responsible for the development of policies relating to the regulation and optimal use of Ireland's radio spectrum. Spectrum policy is part of the national policy governing the telecommunications sector in Ireland. This includes next generation broadband, electronic communications services ("ECS") and international connectivity.

2.3 The Department of Tourism, Culture, Arts, Gaeltacht, Sports, and Media ("DTCAGSM") is responsible for Ireland's national broadcasting policy.[3]

2.4 In developing the RSMOP for 2025 to 2028, ComReg has taken account of DECC's Communications and Digital Policy[4] and the DTCAGSM's[5] Broadcasting and Media Policy[6]. ComReg has also considered, among other things, Ireland's Digital Connectivity Strategy[7] and the National Strategic Roadmap for the EU Digital Decade Policy Programme[8].

2.1.2 Spectrum Management: ComReg's mandate and role

2.5 The Communications Regulation Act 2002 (as amended) (the "2002 Act"), the

[3] See:
S.I. No. 372 of 2020, the Broadcasting (Transfer of Departmental Administration and Ministerial Functions) Order 2020;
S.I. No. 403 of 2020, the Culture, Heritage and the Gaeltacht (Alteration of Name of Department and Title of Minister) Order 2020; and
S.I. No. 373 of 2020, the Communications, Climate Action and Environment (Alteration of Name of Department and Title of Minister) Order 2020.

[4] https://www.gov.ie/en/policy/435802-communications-and-digital/

[5] Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media

[6] https://www.gov.ie/en/policy-information/b151e3-broadcast-media/

[7] https://www.gov.ie/en/publication/f1f85-digital-connectivity-strategy/

[8] gov - Ireland's National Strategic Roadmap for the EU Digital Decade Policy Programme (www.gov.ie)

European Electronic Communications Code ("EECC") Directive[9] which has been transposed into Irish law by S.I. No. 444 of 2022, the European Union (Electronic Communications Code) Regulations 2022 (the "ECC Regulations"), and the Wireless Telegraphy Acts 1926 to 2009[10] (the "1926 Act") set out, amongst other things, powers, functions, duties and objectives of ComReg that are relevant to the management of the radio frequency spectrum in Ireland.

2.6 In exercising its function of the management of Ireland's radio spectrum (and in accordance with relevant ministerial Policy Directions given under section 13 of the 2002 Act), ComReg's spectrum management objective is to ensure the efficient management and use of the radio spectrum. ComReg is obliged to effectively carry out this function, including having regard to relevant government policy statements and international developments.

2.7 In the context of radio spectrum used for Electronic Communications Networks ("ECN") and ECS, one of ComReg's objectives is to promote and create the conditions for effective competition in the provision of ECN and ECS. In this regard, section 12(2)(a) of the 2002 Act requires ComReg to take all reasonable measures which are aimed at the promotion of competition, including:

i. ensuring that there is no distortion or restriction of competition in the electronic communications sector;

ii. encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources; and

iii. ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality.

2.8 Readers are referred to Annex 1 for an overview of the legal framework and statutory objectives relevant to ComReg's management of the radio spectrum.

2.9 ComReg, in preparing the plan of work set out herein, has also had regard to the other provisions of the EECC which have been transposed in the Communications Regulation and Digital Hub Agency (Amendment) Act 2023.[11]

2.10 In fulfilling its spectrum management function, ComReg carries out a range of programmatic activities, including the:

[9] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code

[10] The Wireless Telegraphy Acts 1926 to 1988 and Sections 181 (1) to (7) and (9) and Section 182 of the Broadcasting Act 2009.

[11] By virtue of S.I. No. 299 of 2023, the Communications Regulation and Digital Hub Development Agency (Amendment) Act 2023 (Commencement) (No.2) Order 2023.

- licensing of spectrum rights of use in Ireland for many varied uses;
- monitoring of radio spectrum usage in Ireland, including the enforcement of licence conditions and equipment standards; and
- promotion of Ireland as an ideal location for spectrum development through Test and Trial Ireland.[12]

2.2 Spectrum Management

2.11 The radio spectrum is a limited and valuable national resource that permeates all areas of communications, including radio, television, mobile (voice and data), aeronautical and marine navigation, and satellite communications. Increased demand for the radio spectrum requires that it be used efficiently and that effective spectrum management processes be employed to maximise the benefits to society. The ability to take full advantage of the spectrum resource depends on the spectrum management activities that facilitate the implementation of radio communications systems with minimum radio interference.

2.12 However, as spectrum is a finite resource with many different services and users, spectrum management involves the careful consideration of a broad range of factors (e.g. administrative, regulatory, social, economic, and technical) with a view to ensuring that radio spectrum is efficiently used. This may also involve balancing a range of competing factors, including:

i. appropriately meeting the reasonable requirements of all radio services, including commercial and public uses, such as public safety, national security and health care; and

ii. for spectrum used for ECS and ECN, promoting competition including ensuring that users derive maximum benefit in terms of price, choice and quality, contributing to the development of the internal market, and promoting the interests of users within the European Community.

2.13 A system of spectrum management is required to ensure the efficient assignment and subsequent use of scarce frequencies among competing uses and users. This is essential to promote competition within the relevant downstream markets, particularly given that spectrum is an essential input in the provision of many ECS and an inefficient assignment of spectrum has the potential to distort competition and create inefficient outcomes for society.

[12] See Home (testandtrial.ie)

2.14 ComReg employs a broad but integrated approach to spectrum management that addresses both the scope and nature of action across its radio spectrum activities, as shown in Figure 1.

Figure 1: Spectrum Management - an integrated approach

2.2.1 The importance of the radio spectrum

2.15 Investments in services that utilise the radio spectrum support change and innovation across the entire Irish economy. This is because these services not only provide an efficient and reliable means of communication, but they also support economic activity across the whole economy.

2.16 Analysis carried out by ComReg conservatively estimates that the direct use[13] of radio spectrum in Ireland in terms of Gross Value Added has increased from approximately €4.6 billion in 2019 to €4.9 billion in 2022[14]. When modest multiplier effects are taken into account, **ComReg estimates that the contribution of radio spectrum to Irish Gross National (GNI) Income increased from €7.2 billion in 2019 to approximately €8 billion in 2022, accounting for over 3% of Modified GNI**.[15]

2.17 Radio spectrum is also an important contributor to employment. **A conservative estimate of the number of employees in Ireland whose jobs are directly**

[13] This assessment is based on sectors where radio spectrum is a core input for the provision of goods and services. This includes not only wireless communications services but also aviation, mobile manufacturing and broadcasting.

[14] See section 2.2.1 of Document 24/65 for more information on the methodology.

[15] In 2022, €4.9 billion is the direct contribution, €2 billion is indirect and the remaining €1.1 billion is accruing from taxes and subsidies.

dependent on the use of radio spectrum was approximately 17,000 in 2022.

Social and secondary benefits of spectrum usage

2.18 There are considerable social benefits arising from the use of radio spectrum. For example, the efficient functioning of the Gardaí, fire and ambulance services all depend on reliable mobile communications, while radio spectrum plays a major role in enabling the Defence Forces to carry out its duties both at home and overseas. Radio spectrum is also fundamental to the safe operation of air, sea, and land transport. Business applications are also likely to be enabled using the radio spectrum across a variety of sectors.

2.19 Access to radio spectrum is also necessary for television and radio broadcasting. Effective free-to-air delivery of national and regional broadcasting helps to ensure media plurality, a greater expression of national and community cultural identity and the development of home-grown audio-visual content, including drama and documentaries.

2.20 Radio spectrum also enables the use of a wide variety of consumer applications enriching all our daily lives.

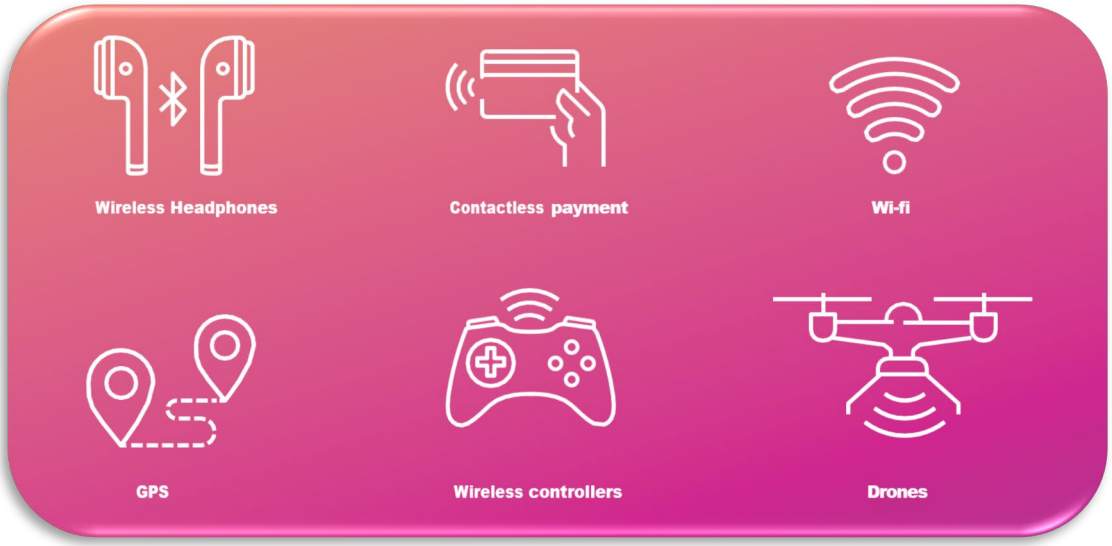

Figure 2: Examples of consumer applications that use radio spectrum

2.2.2 Spectrum Management Processes

International aspects to spectrum management

2.21 Radio spectrum usage propagates naturally beyond national borders. In this regard, spectrum management requires active engagement in European and global spectrum management developments.

2.22 Due to international planning, the national use of specific frequencies or frequency bands may be constrained. This is particularly so in the aeronautical and maritime sectors where, because of the global nature of these services, ships and aircraft must use specific frequencies for navigation and communication purposes.

2.23 The frequency bands used by TV and radio broadcasting services have also been harmonised for many decades to facilitate coordination between neighbouring countries and to assist the development of consumer markets. More recently, an increasing number of radio frequency bands have been internationally harmonised for commercial ECS, such as mobile communications.

2.24 While the "allocation" and/or "assignment" of spectrum is a national function, the global regulation of spectrum is primarily within the remit of the International Telecommunication Union ("ITU"), while European regulatory functions lie with the EU and the European Conference of Postal and Telecommunications Administrations ("CEPT"). These bodies define the broad framework within which all spectrum users must operate, and, in some cases, these bodies develop harmonised decisions, recommendations, and approaches for the use of spectrum.

2.25 Harmonised radio frequency bands provide considerable benefits in facilitating the development of international services, promoting economies of scale with respect to the manufacture of radio equipment (thereby lowering both the cost of deploying wireless networks and the cost of wireless devices for consumers), and minimising the risk of interference between users.

2.26 As the radio spectrum manager for Ireland, ComReg is charged with the implementation of international treaties, agreements and obligations[16] relating to the use of radio spectrum in the State. The implementation of these measures often

[16] The interference-free operation of radiocommunication systems across international borders is achieved through the implementation of the ITU Radio Regulations and Regional Agreements, and the efficient and timely update of these instruments through the processes of the World and Regional Radiocommunication Conferences. The ITU Radio Regulations, which have the status of an international intergovernmental treaty, provide a framework for the use of the radio frequency spectrum and satellite orbits. To keep pace with the fast development of technologies and the consequent convergence of services and technologies, the ITU Radio Regulations are revised every three to four years at a World Radiocommunication Conference. The most recent WRC was held during November and December 2023 in Dubai.

The radio spectrum decisions and recommendations of the CEPT (ECC Decisions and ECC Recommendations are non-binding on national administrations. The list of ECC Decisions/Recommendations and their implementation status for all CEPT countries, including Ireland, is maintained at ECO Documentation (cept.org).

The radio spectrum decisions of the EU (the EU/EC Decisions) are binding decisions on EU Member States. These decisions are normally based on the relevant technical harmonisation measures as outlined in the CEPT reports to the EC and are generally adopted subsequent to the prior adoption of a CEPT ECC Decision. A list of EU Decisions/Recommendations is maintained at https://ec.europa.eu/digital-agenda/en/radio-spectrum-policy-document-archive.

requires action in relation to the allocation and/or assignment of radio spectrum as discussed below.

2.27 Along with the DECC, ComReg plays an active role in international fora to ensure that, as far as possible, decisions relating to the international radio spectrum regulatory framework meet Ireland's specific requirements. ComReg also participates in technical compatibility studies and in the development of technical standards to support more efficient and flexible use of the radio spectrum.

The allocation of radio spectrum in Ireland

2.28 The allocation of radio spectrum means "*the designation of a given frequency band for use by one or more types of radio communications services, where appropriate, under specified conditions*"[17]. An allocation identifies the services that could potentially use a radio frequency band and is an important activity in facilitating the international coordination of radio spectrum between regional areas and neighbouring countries. It thereby reduces the potential for interference while enabling economies of scale.

2.29 Under the 2002 Act, ComReg is obliged to publish, and revise, a Radio Frequency Plan ("Plan")[18]. The Plan is comprised of a set of tables which sets out Ireland's radio spectrum allocations for 8.3 kilohertz (kHz) to 3000 Gigahertz (GHz), indicating the services to which each frequency band is allocated ("Frequency Allocations") in the radio spectrum and is an important tool for users of radio frequencies.

2.30 The Plan is updated regularly in line with the outcomes of the ITU World Radiocommunication Conferences ("WRCs") and other relevant developments, such as the adoption of European harmonisation decisions and recommendations for a particular radio frequency band or service.

2.31 Alongside the publication of an updated plan[19] an online version is available, which provides an interactive search and reference functionality for stakeholders.[20] ComReg is committed to providing, in June of each year, an update of the online version of the Plan. Subsequently in December of each year ComReg provides a further update of the online version as well as publishing a pdf version of the Plan.

2.32 The June 2024 update includes many elements of the changes made at WRC-23 as well as the more normal updates that take into account changes to the European

[17] European Union (Electronic Communications Code) Regulations 2022 (S.I. 444 of 2022).
[18] Section 35 of the 2002 Act.
[19] See ComReg document 20/58R5.
[20] See Radio Frequency Plan For Ireland https://rfpi.comreg.ie/

Common Allocations[21] and also National and European Legislation.

The assignment of radio spectrum in Ireland

2.33 The assignment of radio spectrum refers to the spectrum management activities that issues, and authorises the use of, rights of use of radio frequencies.[22] In Ireland, the possession and use of radio equipment requires authorisation from ComReg and this authorisation may take the form of either a licence or a licence-exemption under the 1926 Act.[23]

2.34 Ideally, spectrum should be assigned efficiently, which means giving access to the combination of uses and users that maximises economic activity, subject to taking account of social, public and other legitimate policy concerns. Granting spectrum rights of use to one user rather than another can greatly impact the extent to which the radio spectrum is efficiently used to deliver overall benefits for society.

2.2.3 Promotion of effective competition in management of spectrum for ECS and spectrum management tools

2.35 Radio spectrum is an essential input in the provision of ECS and an inefficient assignment has the potential to distort competition and create inefficient outcomes for society. The following three principal methods are used to address these potential issues:

1) market access;
2) access to essential inputs; and
3) demand-side factors.

2.36 ComReg's 2023-2025 Electronic Communications Strategy Statement[24] ("Electronic Communications Strategy Statement") identifies specific strategic intents and supporting goals that can be used to support those methods.

2.37 ComReg set out in its Electronic Communications Strategy Statement that the availability of spectrum is necessary for the entry and expansion of many operators in electronic communications markets. The growing demand for radio spectrum is driven by society's ever-increasing use of data-intensive services while on the move

[21] The ECA (European Common Allocations) is the CEPT harmonised frequency allocation plan and can be found online at: ECO Frequency Information System (cept.org)
[22] A spectrum assignment refers to the rights of use for specific radio frequencies within a frequency band issued to an individual or for a station and usually under specified conditions (e.g. in the context of radio frequencies for ECS, one or more of the conditions identified in Part D of Schedule 1 to the Electronic Communications Code Regulations).
[23] Section 3(1) and section 3(6) of the Wireless Telegraphy Act 1926, as amended.
[24] ComReg Document 23/34 – Electronic Communications Strategy Statement 2023 – 2025 – published 13 April 2023.

and away from the office and home. Therefore, the efficient management of the national radio spectrum (and numbering) resources is required to facilitate competition, enhance connectivity and promote efficient investment, taking into account the potential impact that the assignment and allocation of these inputs may have on downstream markets.

Strategic intention: Competition & Investment
Goal 1.6: The management of spectrum and numbers facilitates competition, enhances connectivity, and promotes efficient investment.

2.38 Goal 1.6 of ComReg's Electronic Communications Strategy Statement reflects a primary objective of ComReg's spectrum management functions because effective competition between wireless service providers brings long-term benefits to consumers in terms of enhanced competition, choice, quality of services and innovation. The efficient assignment and use of the radio spectrum is an important consideration in promoting efficient investment.

2.39 ComReg takes a proactive approach in ensuring the efficient assignment and use of the radio spectrum while facilitating competition and producing an optimal outcome for society. ComReg has several spectrum management tools that are designed to serve the interests of all users of the radio frequency spectrum and strike the right balance between those users while ensuring that spectrum is used efficiently, and that competition is not distorted. ComReg uses these tools as required, depending on the circumstances of each assignment, in order to derive the maximum benefit for society and contribute to the development of the internal market, while promoting the interests of users within the European Community. These tools are illustrated in Figure 3 below.

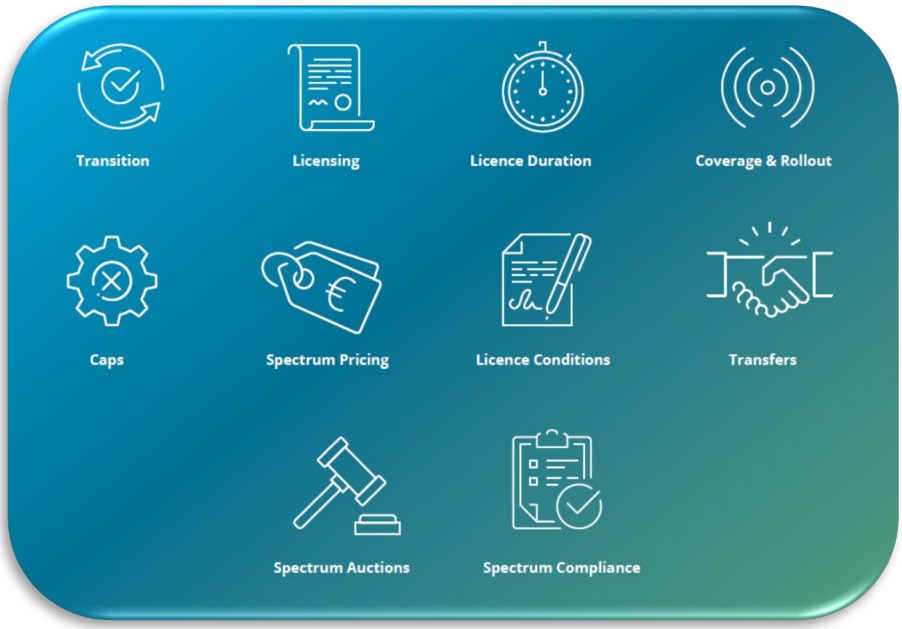

Figure 3: Spectrum Management Tools

2.40 The appropriate deployment of these tools involves the careful consideration of a broad range of factors (including administrative, regulatory, social, economic and technical considerations) with a view to ensuring that radio spectrum is efficiently assigned and used. Any measures must also be objectively justified, transparent, non-discriminatory and proportionate in relation to their intended purpose. The use of such spectrum management tools often requires detailed consideration with relevant stakeholders.

2.41 As part of its spectrum management function, ComReg monitors the market to remain informed of changes to the market since previous radio spectrum plans and spectrum awards. ComReg is conscious that circumstances may have changed or the market has developed such that its spectrum management tools may need to be deployed differently to promote competition and/or protect consumers. This approach is in line with ComReg's strategic intention to enable consumers to choose and use communications services with confidence.

Strategic intention: Consumer Protection
Goal 2.1: ComReg identifies and understands consumer harms.

2.42 ComReg also tracks end-user usage trends (see ComReg Quarterly Key Data Reports)[25] and has completed various market research and forecasting in order to

[25] Quarterly Key Data Report | Commission for Communications Regulation (comreg.ie)

inform future spectrum management activities. For example:

(a) In Q2 2024 the number of 5G subscriptions was 1.71 million, which was a 40% year on year increase.

(b) Combined mobile subscriptions increased by 7.57% year on year and Machine to Machine (M2M) subscriptions increased by 61.48% year on year.

(c) The volume of mobile data traffic is increasing with a 20% year on year increase in Q2 2024.

(d) While voice traffic is reducing, mobile voice services accounts for 91% of the total voice traffic in Ireland in Q2 2024.

2.43 In August 2023, ComReg undertook a Broadband Connectivity consumer survey with the goal to monitor consumer use of broadband and obtain views on broadband services in Ireland. The results of that survey show:

(a) 44% of respondents now work from home online at least one day a week.[26]

(b) over 4 out of 5 respondents stated that Wi-Fi is the method used most often to connect PCs/laptops, smart TVs, and games consoles at home.

(c) 30% of the respondents who indicated that they did not have a fixed broadband connection, stated that they access internet over their smartphone instead.

2.44 ComReg published in October 2022 the Mobile Consumer Experience – 2022 Survey results.[27] Its key findings include:

- 87% of respondents deemed it important or critically important to have mobile phone coverage within their home;
- During a one-month period, 37% of respondents experienced loss of signal when using call / text functions on mobile networks, while 32% experienced loss of signal when using data. Those in very rural areas noted higher incidences of disruptions; and
- Over 50% of respondents experienced daily issues in relation to voice calls/texts in their home or a specific part of their home. Those in rural areas were impacted more, with 62% of rural dwellers experiencing daily

[26] ComReg Document 23/76 – Broadband Connectivity Survey 2023 – published 15 August 2023.
[27] Mobile Consumer Experience Survey 2022 | Commission for Communications Regulation (comreg.ie)

issues in a part of their home. The issues related primarily to dropped calls and being unable to receive a call or a text.

2.45 To (a) inform future spectrum award proposals, (b) provide additional consumer information and (c) improve the connectivity experience for consumers, ComReg has made available an interactive Outdoor Mobile Coverage Map[28] to provide consumers with a visual (geographic-based) means of presenting predicted 2G, 3G, 4G and 5G outdoor mobile coverage[29] for mobile service[30] providers in Ireland.

2.46 This approach is also consistent with ComReg's strategic intention that end-users have widespread access to high-quality and secure communications networks, services and applications. This is consistent with Goal 3.2 of the Electronic Communications Strategy Statement.

Strategic intention: Connectivity and Network Resilience
Goal 3.2: Utilising the regulatory toolkit, ComReg's activities promote connectivity and/or incentivise infrastructure rollout.

Strategic intention: Compliance and Enforcement
Goal 4.1: Regulated entities are pro-active in ensuring their own compliance.
Goal 4.2: ComReg's compliance and enforcement activities are conducted using fair and objective processes and are targeted and prioritised appropriately.
Goal 4.3: ComReg has an effective set of powers to incentivise compliance and effectively monitor and enforce.

2.47 Regulated entities should be fully cognisant of their obligations, comply with them and have an internal culture of compliance. It is ComReg's goal that regulated entities are pro-active in ensuring their own compliance, for example, with the conditions that attach to radio spectrum licences issued by ComReg. ComReg encourages operators to have robust internal controls to prevent and detect non-compliance.

[28] Outdoor Mobile Coverage Map

[29] The map shows signal strength ranging from very good, good, fair, fringe and no coverage and the map data is updated periodically throughout the year.

[30] Currently there are 10 mobile service providers on the Outdoor Mobile Coverage Map. 48, An Post Mobile, Clear Mobile, Eir, GoMo, Lycamobile, Tesco Mobile, Three, Virgin Media, and Vodafone.

2.48 In meeting its strategic intention regarding compliance and enforcement, ComReg actively monitors the radio spectrum[31] to ensure that it is being used in compliance with relevant regulations and authorisations and will intervene where appropriate.

2.49 ComReg publishes information annually to inform interested parties of its radio spectrum compliance and enforcement activities including KPI's.[32.]

Strategic intention: Organisation
Goal 5.3: ComReg is proactive on engagement with a range of stakeholders Goal 5.4: ComReg contributes to and learns from international best practice.

2.50 ComReg recognises the need to engage with different stakeholder groups and interested parties. The engagement takes several forms, including forums, formal consultation[33] and publication of proposals on its website. This is consistent with ComReg's strategic intention to be an effective, agile and relevant regulator as expressed of the Electronic Communications Strategy Statement.[34]

2.51 ComReg continuously engages with a range of international regulatory bodies including other European administrations, the Radio Spectrum Policy Group ("RSPG"),[35] the ITU and the CEPT. This engagement contributes to radio spectrum management regulatory policy discussions and to input on regulatory decision making in an international setting. In some instances, ComReg has taken leadership roles in these bodies, in recognition of its standing as an expert-led and knowledge-driven regulator. International collaboration facilitates the development of an open and competitive environment in which innovation, creativity and competition can thrive.

2.52 This approach is consistent with ComReg's strategic intention to contribute to and learn from the best practices of others and devote resources to understanding the regulatory analysis and decisions made by its international colleagues.

[31] For example, ComReg undertakes market surveillance of products, radio frequency interference investigations, radio spectrum monitoring and compliance and enforcement activities.
[32] https://www.comreg.ie/industry/radio-spectrum/spectrum-compliance/
[33] ComReg Document 24/02 – Consultation Procedures Review: Response to Consultation – published 11 January 2024.
[34] See Strategic Intent 5 of the Electronic Communications Strategy Statement.
[35] The Radio Spectrum Policy Group (RSPG) is a high-level advisory group that assists the European Commission in the development of radio spectrum policy – https://radio-spectrum-policy-group.ec.europa.eu/index_en

3 Factors informing ComReg's work plan for 2025 to 2028

3.1 Many factors can affect the demand for and the supply of radio spectrum including consumer needs, technology changes or advancements, the international harmonisation of radio spectrum, and relevant national or international policies.

3.2 None of these factors are mutually exclusive. For example, increasing end-user demand for a service spurs advancements in technologies used to provide these services along with the development of international harmonisation measures or national/international policies.

3.3 In this chapter, ComReg sets out information on various factors which have informed its radio spectrum work plan for 2025 - 2028, including:

- International harmonisation of radio spectrum as determined by
  - World Radiocommunication Conference 2023 and 2027; and
  - European Commission harmonisation decisions; and
- Technology changes and advancements (service specific).

3.4 Additional information on other factors (e.g. existing and expiring licences in a spectrum band, equipment availability, end-user demand, etc.) has been set out in Chapter 4 and 6 of Consultation 24/65.

3.1 International harmonisation of radio spectrum

3.5 The international harmonisation process plays a key role in determining the demand for and the supply of radio spectrum, given its benefits in terms of facilitating economies of scale in the manufacture of radio equipment (which lowers both the cost of deploying wireless networks and the cost of wireless devices for consumers), and the minimisation of interference between users.

3.6 International harmonisation, and the benefits provided by it are particularly important for smaller countries such as Ireland, with limited ability to affect the technology roadmaps typically adopted by global suppliers of radio equipment.

3.7 Harmonised radio spectrum measures are set by several bodies including the ITU (and/or the constituent regional groups), the CEPT and the EU bodies. These bodies generally set a forward-looking work programme, which usefully provides a pointer for future harmonisation measures. For example, readers are directed to the agenda item of the ITU world radiocommunication conference ("WRC") outlined

below and the work plans of CEPT[36] and Radio Spectrum Policy Group.[37] In some instances, harmonisation decisions are obligatory on Member States thereby directly increasing the supply of spectrum at a national level and usually with a defined timeframe.[38]

3.8 In addition to the harmonisation of radio spectrum bands, the setting of harmonised radio equipment standards play an important facilitating role in spectrum management, particularly in terms of minimising the risk of interference between users. Within Europe, the main stakeholders responsible for setting these standards are the European Committee for Standardisation ("CEN"), the European Committee for Electrotechnical Standardisation ("CENELEC") and the European Telecommunications Standards Institute ("ETSI"). These bodies also work alongside national technical committees and various industry bodies, for example, the 3GPP[39] from which standards for mobile technologies (e.g. LTE, LTE+ and 5G NR) are developed (see Figure 4).

3.9 ComReg actively engages in the work of the EC, the CEPT and the ITU where it has prioritised tasks and activities and where it has resources available to do so.

[36] For example, the ECC Strategic Plan for the period 2020-2025 identifies the following major topics:
To review, in line with Agenda Item 1.5 of WRC-23, the UHF band (470-960 MHz), taking into account the current use by PMSE in this band;
Wireless broadband and connectivity, including mobile broadband, WAS/RLAN, backhaul, PMSE, verticals and use of higher frequency bands;
Issues relating to general authorisations and licence exempt use of spectrum (e.g. SRDs, including for IoT/M2M, and other similar uses of spectrum);
Next generation satellite systems (including mega Non-Geostationary-Satellite Orbit constellations and short duration satellites) and other initiatives which may require technical and/or regulatory conditions; and
New business models and applications which may emerge based on the latest advances in network technologies, e.g. smaller cell sizes for 5G with appropriate backhaul infrastructure and neutral host network infrastructure models.

[37] The RSPG work programme for 2024 and beyond (RSPG203-045 Final) includes the following work items:
Peer review and Member States cooperation on authorisations and awards;
World Radiocommunication Conference (WRC);
Long-term vision for the upper 6 GHz band (2030 and beyond);
6G strategic vision; and
Assessment of future usage of the frequency band 470-694 MHz within the EU.

[38] In Europe, EU/EC decisions are obligatory on Member States, while CEPT decisions are non-binding and voluntarily adopted by its members.

[39] 3GPP, or the 3rd Generation Partnership Project, was initially formed in 1998 and is an engineering organization that develops technical specifications which are then transposed into standards by the seven regional Organizational Partners that form the 3GPP partnership. For Europe, ETSI is the SSO for Europe.

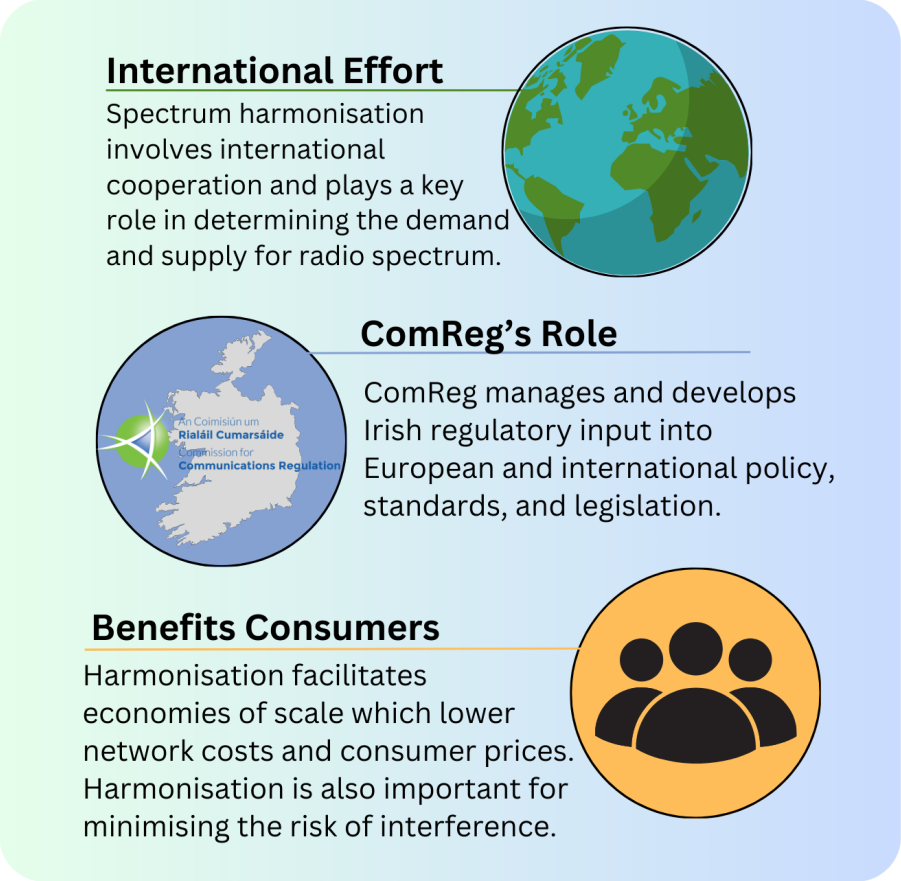

Figure 4: International harmonisation of radio spectrum

3.1.1 EC Harmonisation Decisions

3.10 The adoption of EC harmonisation decisions on radio spectrum impacts ComReg's work plan as these decisions generally place obligations on EU Member States to carry out specific actions as set out in the decision within specific timeframes.

3.11 The following are existing and potential future EC Harmonisation Decisions which ComReg is aware of and will factor into its work plan for 2025-2028:

Existing EC Harmonisation Decisions

(a) Decision (EU) 2020/1426[40] – Commission implementing Decision (EU) 2020/1426 of 7 October 2020 on the harmonised use of radio spectrum in the 5875-5935 MHz frequency band for safety-related applications of intelligent transport systems (ITS) and repealing Decision 2008/671/EC;

[40] Implementing decision - 2020/1426 - EN - EUR-Lex (europa.eu)

(b) Decision (EU) 2021/1730[41] – Commission implementing Decision (EU) 2021/1730 of 28 September 2021 on the harmonised use of the paired frequency bands 874.4-880.0 MHz and 919.4-925.0 MHz and of the unpaired frequency band 1900-1910 MHz for Railway Mobile Radio;

(c) Decision (EU) 2022/2324 [42]– Commission Implementing Decision (EU) 2022/2324 of 23 November 2022 amending Decision 2008/294/EC, to include additional access technologies and measures for the operation of mobile communications services on aircraft (MCA services) in the Union; and

(d) Decision (EU) 2024/1467[43] – Commission Implementing Decision (EU) 2024/1467 of 27 May 2024 amending Implementing Decision (EU) 2019/785 on the harmonisation of radio spectrum for equipment using ultra-wideband technology in the Union

(e) Decision (EU) 2024/1983[44] - Commission Implementing Decision (EU) 2024/1983 of 18 July 2024 on the harmonisation of the 40,5-43,5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union.

Potential future EC Harmonisation Decisions

(a) Harmonised technical and operational conditions for the usage of non-Active Antenna Systems (non-AAS) aerial terminal stations (ATS) in EU-harmonised frequency bands for terrestrial systems capable of providing electronic communications services[45];

(b) The shared use of the 3.8-4.2 GHz frequency band for terrestrial wireless broadband systems providing local-area network connectivity[46];

(c) Permanent mandates on Short Range Devices (SRD)[47] and Ultra Wideband ("UWB") technology[48] .

3.1.2 The 2023 World Radiocommunication Conference (WRC-23)

3.12 The ITU Radio Regulations form an international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-

[41] Implementing decision - 2021/1730 - EN - EUR-Lex (europa.eu)
[42] Implementing decision - 2022/2324 - EN - EUR-Lex (europa.eu)
[43] Implementing decision - 2024/1467 - EN - EUR-Lex (europa.eu)
44 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401983
[45] https://ec.europa.eu/newsroom/dae/redirection/document/101599
[46] https://ec.europa.eu/newsroom/dae/redirection/document/82230
[47] https://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=7494
[48] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=66339

satellite orbits. Under the terms of the ITU Constitution, only a WRC can:

- revise the ITU Radio Regulations and any associated frequency assignment and allotment plans;
- address any radiocommunication matter of worldwide character;
- instruct the ITU Radio Regulations Board and the Radiocommunication Bureau, and review their activities; and
- determine questions for study by the Radiocommunication Assembly and its study groups in preparation for future WRCs.

3.13 The ITU Radio Regulations are reviewed and revised at world radiocommunication conferences which are held every three to four years for this purpose. Revisions are made on the basis of an agenda item determined by the ITU Council, which takes into account recommendations made by previous world radiocommunication conferences. The general scope of the agenda of a WRC is established four to six years in advance, with the concurrence of a majority of Member States.

3.14 The 39th World Radiocommunication Conference was hosted in Dubai, UAE from 20 November to 15 December 2023. Over the month 3 900 delegates from 163 ITU Member States attending the conference, in addition the ITU-R representing international organizations, equipment manufacturers, network operators and industry forums, who attended as observers.

3.15 The Irish delegation[49] to WRC-23 underpinned matters of national importance by supporting the CEPT common positions on each issue as well as positions that had to be supported as determined by the European Council.[50]

3.16 The outcome of WRC-23 has influenced the work plans of the relevant bodies of the EC and CEPT and consequently ComReg in the implementation of new harmonised measures where relevant.

3.17 The following were the main topics discussed at WRC-23:

- identification of spectrum for IMT;
- Maritime and Aeronautical Communications;
- Satellite Communications; and
- Scientific Use of Spectrum.

[49] In line with its priorities ComReg was able to contribute two staff members to the Irish delegation, which as one of the smallest delegations, was comprised of four persons (not all in full time attendance).

[50] This document is not released to the public – see https://data.consilium.europa.eu/doc/document/ST-12534-2023-INIT/en/pdf

3.18 Further detailed information on the discussions of these topics at WRC-23 can be found in Annex 2.

3.1.3 The 2027 World Radiocommunication Conference (WRC-27)

3.19 Delegates at the WRC-23 agreed the agenda for the next Conference scheduled to be held in 2027, as well as the preliminary agenda for 2031.

3.20 The agenda for WRC-27 sets the roadmap for important future technological developments, which will be addressed by both the ITU-R study groups and at regional level in the upcoming four years. The agreed WRC-23 agenda contains nineteen specific and several standing agenda items, all of which will be studied in the years between WRC-23 and WRC-27. Reflecting the current growth area in telecommunications the agenda is heavily focused on satellite communications.

3.21 Led by the DECC, Irish preparations for WRC-27 are underway. ComReg is involved in these provisions and will assist the DECC to meet the objectives and goals that will be established in the national preparatory process.

3.22 ComReg has provisionally identified[51] the following WRC-27 agenda items as important for Ireland:

- Studies on IMT, including new allocations to the mobile-satellite service for direct connectivity between space stations and IMT;
- Maritime and Aeronautical Communications;
- Satellite Communications; and
- Scientific Use of Spectrum.

3.23 Further detailed information on the agenda items for WRC-27 and the preliminary agenda items for WRC-31 can be found in Annex 2.

3.24 ComReg is engaged in the work group preparing CEPT's input to WRC-27 as well as in the Radio Spectrum Policy Group which advises the European Commission on aspects of importance to the Union that will be dealt with at WRC-27.

3.2 Technology changes and advancements

3.25 Technology changes[52] and advancements can affect both the demand for and

[51] ComReg's view will evolve as CEPT studies commence, the technical details are finalised and the implications for Ireland (if any) become clearer. Ireland will also need to take into account the requirements of the European Space Agency and the European Council.

[52] Technology changes happen on a less frequent basis than technology advancements. For example, the free-to-air analogue terrestrial television technology operated for over 50 years in

supply of radio spectrum. Under normal circumstances such changes lead to a more efficient use of the radio spectrum and can often result in faster or higher quality services. In other instances, this can result in spectrum being released from one service to another.[53]

3.26 Technology advancements can take many forms including the use of improved modulation or sharing techniques, and the ability for one service to use multiple spectrum bands at the same time using carrier aggregation.

Satellite direct-to-device services (Satellite D2D)

3.27 Being able to make a voice call or send data via a satellite from a consumer handset is nothing new. Iridium had its first call in 1999 and is providing service today to nearly 400,000 commercial voice and data subscribers as of the end of 2022.[54] Many other companies offer similar voice and/or data services to subscribers, e.g. Inmarsat,[55] Globalstar,[56] Thuraya,[57] etc. For all these services the customer requires a bespoke handset to access the service.

3.28 A potential *game changer* however is the ability of consumers to use their existing mobile phone to access satellite services for:

- Emergency communications (usually announcing emergency and the provision of location data);
- Short text messaging (SMS);
- Voice services; and
- Data services.

3.29 This service enjoys several different nomenclatures including:

- Satellite direct-to-device service ("satellite D2D") (as used in the title of this section);
- Satellite direct-to-mobile;

Ireland before this technology was replaced by the free-to-air digital terrestrial television technology.

[53] For example, the switch-off of analogue TV broadcasting in 2012 allowed both more TV programme services to be delivered to Irish viewers and released the 800 MHz band for terrestrial networks capable of providing ECS and, in particular, mobile WBB services.

[54] Rachel Jewett, "Iridium posts double-digit revenue increase in 2022, surpasses 2M subscribers," ViaSatellite, February 16, 2023.

[55] See - IsatPhone 2 (inmarsat.com)

[56] See - SPOT X™ | Globalstar AP

[57] See - Thuraya XT-LITE | Satellite Phone - Thuraya Mobile Satellite Communications Company

- Satellite direct-to-cell ("satellite D2C"); and
- NTN or Non-Terrestrial Networks

3.30 For industry this development presents the opportunity to develop a new revenue source and Figure 5 shows a predicted service revenue from providing satellite D2D.

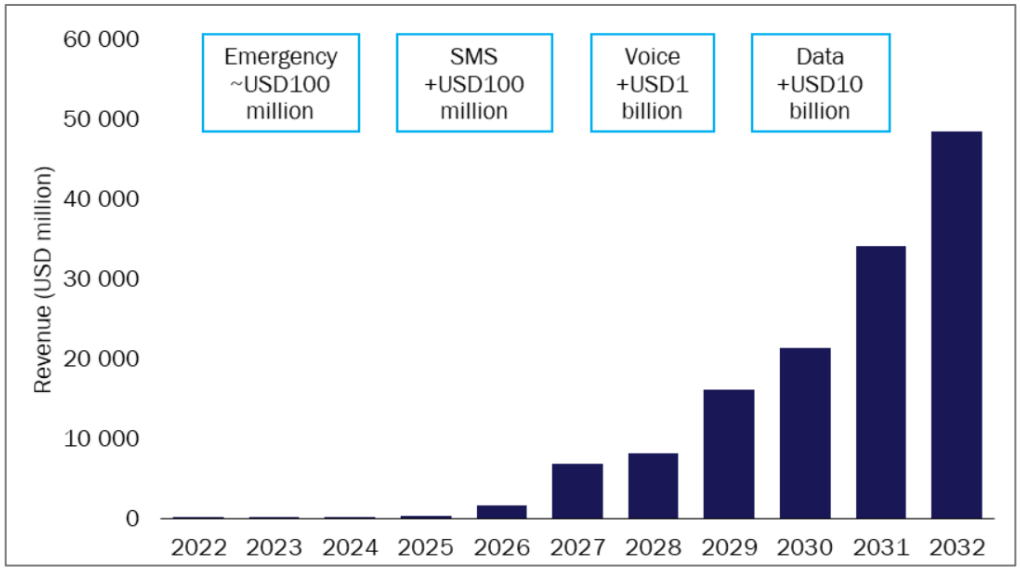

Figure 5: Predicted satellite D2D service revenue, worldwide, 2022–2032 (Source: Analysys Mason – see Annex 3)

3.31 ComReg has been approached by several companies looking to develop satellite D2D services, and extends to the provision of a Test & Trial Ireland licence to help develop the technology.[58] There have also been several announcements demonstrating strategic connections between satellite companies, mobile operators and handset/chip manufacturers. These include Apple and Globalstar[59], Iridium and Qualcomm[60], SpaceX and T-Mobile[61] , AST SpaceMobile with AT&T[62] and AST SpaceMobile and Vodafone.[63]

3.32 There are currently two models for spectrum usage by satellite D2D services:

1. The use of spectrum allocated to mobile satellite services (MSS). In this model, the handset has the capability to receive and transmit on spectrum bands that have been allocated to satellites for use to mobile consumers. In the case of the Apple and Globalstar partnership, the downlink from the satellite to the

[58] See https://www.testandtrial.ie/en-ie/
[59] Why Apple is spending $450 million on satellites for its new iPhone (emergingtechbrew.com)
[60] Iridium Announces New D2D Direction - Nov 9, 2023
[61] T-Mobile Takes Coverage Above and Beyond With SpaceX - T-Mobile Newsroom
[62] AT&T CEO says company is ahead in satellite-to-cellular connectivity | Fierce Wireless
[63] Vodafone and AST SpaceMobile complete world's first space-based 5G call using a conventional smartphone

consumer handset is in the 2 GHz S-Band and the uplink from the handset to the satellite is in the 1.6 GHz L-band. Both of these spectrum bands are independent of mobile network operators and the use of the L-band for such services has been exempted from the requirement for a licence in Ireland.

2. The use of spectrum already allocated to mobile services and assigned to mobile network operators. In this model, the handset has no additional requirements but instead of communicating to a terrestrial base station, it instead maintains connectivity with a satellite which appears as a base station.

3.33 At the ITU this topic is being considered under an agenda item at WRC-27 which is examining possible new allocations to the mobile-satellite service for direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage.

3.34 Within the CEPT, project team FM44 will explore the regulatory and technical elements of satellite based Direct-to-Cell (D2C) communications via existing available smartphones.[64] ComReg is actively engaged with FM44 and will participate in its work. An ECC Report is expected in February 2025. This will provide insights into the regulatory and technical elements of this type of service for further consideration.

3.35 In addition, regulatory discussions are expected to take place within other groups, including:

- the opinion of the RSPG has been requested on the EU-level policy approach to satellite Direct-to-Device (D2D) connectivity and related Single Market issues[65]; and
- BEREC held a workshop in May 2024 to explore the emerging trends in satellite communication and direct-to-device non-terrestrial networks.[66]

[64] https://eccwp.cept.org/default.aspx?groupid=19
[65] RSPG24-023 FINAL, published 18 June 2024
[66] See https://www.berec.europa.eu/en/news-publications/news-and-newsletters/berec-workshop-satellite-technologies-in-mobile-communications

4 Spectrum work plan 2025 to 2028

4.1 Appropriate prioritisation of spectrum management workplan activities

4.1 In determining the appropriate prioritisation of its spectrum management workplan activities, ComReg aims to manage its workload in a manner that seeks to address the needs of a diverse range of stakeholders appropriately and pragmatically. Relevant considerations in this regard include:

- the capacity within the existing radio spectrum bands to meet spectrum needs. Where capacity exists, it may be possible to meet this demand via the existing spectrum assignments or to award new assignments using existing authorisation processes;
- the timing of the expiry of existing spectrum rights of use and the requirement for an appropriate re-assignment process in light of factors such as end user demand, harmonisation status, equipment availability and availability of related spectrum bands;
- the international harmonisation status of a spectrum band including any future harmonisation plans;
- the harmonisation status and appropriate timing for release of spectrum bands that are currently unassigned;
- the potential to liberalise the current restrictions placed on licensees which could increase the efficient use of spectrum, facilitate innovation and potentially free up capacity which could be made available for other uses;
- the potential for including multiple spectrum bands in a single award process where appropriate to meet ComReg's statutory objectives;
- the adoption of legislation (national or European) which requires ComReg to take defined actions within a set timeframe; and
- the potential for market mechanisms to address spectrum management issues.

4.2 Spectrum Work Plan 2025 to 2028

4.2 The following outlines the spectrum work plan that ComReg currently proposes to

carry out within the period 2025 to 2028.[67]

4.2.1 Programmatic Spectrum Management Activities

4.3 ComReg's programmatic work plan items for the spectrum management function for the period 2025 to 2028 are to:

i. issue licences for wireless telegraphy in accordance with the 1926 Act and the regulations associated with each licence type;

ii. conduct market surveillance on products being imported into the State;

iii. monitor licence compliance and take enforcement action where appropriate;

iv. investigate reports of harmful interference to the radio spectrum, giving appropriate priority to cases that have the greatest impact on a service providers ability to provide services;

v. conduct a programme of measurement of NIR and publication of surveys on Siteviewer[68] as appropriate;

vi. promote Test and Trial Ireland and the benefits of using Ireland as a location to test or trial wireless products and services in a real world environment;

vii. coordinate Ireland's use of radio spectrum internationally with other jurisdictions, updating MoUs/Coordination Agreements as appropriate; and

viii. advise and assist the DECC in its preparations for WRC-27 agenda items of relevance to Ireland, including participation in appropriate EC, CEPT and regional groups.

4.2.2 MFCN/WBB

4.4 ComReg's work plan items for MFCN for the period 2025 – 2028 are to:

(i) Engage with AirNav Ireland to resolve compatibility issues between MFCN use in the 2.6 GHz Band and AirNav Ireland's aeronautical primary radars which operate in the adjacent 2.7 – 2.9 GHz band;

(ii) Engage with Eir to facilitate its transition activities to decommission Eir's RurTel network in the 2.3 GHz and 2.4 GHz bands;

[67] This work plan remains subject to emerging matters and the availability of appropriate resources to execute same.

[68] https://siteviewer.comreg.ie/#explore

(iii) Monitor and engage as appropriate into CEPT, EC and ITU groups discussing harmonisation measures for MFCN, noting in particular that discussions on the potential shared use of the 6 425 – 7 125 MHz band (i.e. “Upper 6 GHz band”) would be expected to take place during this period;

(iv) Implement relevant EC harmonisation decisions in the bands for MFCN use, noting that the implementation of the EC Decision on the 42 GHz band would fall within this 2025-2028 time period;

(v) Engage with the relevant stakeholders with a view to obtaining greater clarity on national policy on the use in Ireland of the 700 MHz Guard Bands and the 700 MHz Duplex Gap and, in particular, for BB-PPDR;

(vi) Investigate the potential for the existing fixed links licensees using the 1 427-1 437 MHz and 1 512-1 517 MHz frequency ranges of the 1.4 GHz band to migrate out of the band over time, and take actions as appropriate (e.g. maintain status quo, set a date to close the band for fixed links usage, etc.) having consideration to whether there would be market demand for MFCN services to use the full of the 1.4 GHz band in the future;

(vii) Consult in 2025 on the potential assignment of available spectrum rights in the 3.6 GHz band;

(viii) Consult in 2025 and put in place, as appropriate in the first half of the 2025-2028 time period, a licensing regime for local-area WBB systems, which could be used for, among other things, private mobile (4G, 5G etc.) networks. This would be subject to demand and progress continuing at European (CEPT/EU) level to harmonise the 3.8-4.2 GHz band for local area WBB systems (low to mid-power) and would potentially spectrum in the lower part of the 26 GHz Band (24.250 – 24.745 GHz (495 MHz) – Block C).

(ix) Consult, towards the middle of the 2025-2028 period, on spectrum for MFCN/WBB use. Such a consultation would, among other things, consider the expiry of MBSA1 licences in 2030 and the multiple harmonised spectrum bands for MFCN/WBB use. Spectrum in the 1.4 GHz and 42 GHz bands would be considered and perhaps spectrum in the 26 GHz band should clear evidence of demand emerge.

(x) Monitor and assess MFCN licensees’ compliance with their coverage, rollout and quality of service licence obligations;

(xi) Liaise with MNOs to gather network architecture data for the generation of outdoor coverage maps, make these available on the consumer section of ComReg’s website and update the maps;

(xii) Consider administrative matters concerning the EC's spectrum divestment commitments in relation to the 2014 acquisition of Telefonica by Hutchison as required;

(xiii) Work with relevant parties to progress the remaining 3.6 GHz Band transition activities and commence all 3.6 GHz band spectrum lots in accordance with the transition rules of the award;

(xiv) Update ComReg's Spectrum Transfer and Lease Framework in accordance with the EECC Regulations;

(xv) Monitor developments and input into discussions, as appropriate on satellite D2D services which would use spectrum assigned for MFCN use, and facilitate, as appropriate, the test or trialling of such services in Ireland, as appropriate.

4.2.3 Broadcasting Services

4.5 ComReg's work plan items for Broadcasting Services for the period 2025 – 2028 are to:

i. Engage in the international coordination of broadcasting transmitter stations;

ii. Issue and amend, as appropriate, DTT, DSB and ASB licences as requested in line with the broadcasting licensing framework;

iii. Provide advice as required to DTCAGSM and DECC, in relation to spectrum for broadcasting services;

iv. monitor and engage with relevant international working groups, and input into discussions as appropriate in relation to the future use of the 470-694 MHz band; and

v. Engage with RTÉ, and consult as necessary, on any potential need for a further RTÉ ASB licence sufficiently in advance of licence expiry on 13 May 2029.

4.2.4 Market surveillance of products

4.6 ComReg's work plan items for the market surveillance of products for the period 2025 – 2028 are to:

(a) conduct compliance checks on products:

(i) at their point of entry into the Union market in the State, through cooperation with Customs;

(ii) during authorised officer visits at the premises of economic operators;[69]

(iii) made available on the market via online offerings to End-Users in Ireland on e-commerce platforms; and

(iv) that come to ComReg's attention from reactive workstreams, where required.

(b) conduct communication campaigns to help economic operators best understand their obligations and how proactive engagement with ComReg can help, and to educate and inform End-Users. The expected outcome is improved compliance with Article 3.2 of the RE Directive (radio equipment effectively uses and supports the spectrum's efficient use to avoid harmful interference).

(c) publish a Product Safety report detailing activities with respect to ComReg's role as the market surveillance authority for the Radio Equipment ('RE') and the Electromagnetic Compatibility ('EMC') Directives.

(d) engage with both national and international fora to improve harmonisation on the application of the RE Directive across the EU.

4.2.5 Railway Mobile Radio ("RMR")

4.7 ComReg will advance its project to consult on a new licensing regime for RMR to implement the framework in advance of the expiry of Irish Rail's current GSM-R licence in November 2025. The consultation will consider, among other things, frequency bands, fees and licence duration.

4.8 ComReg intends to publish its public consultation during Q4 2024 and complete the consultation by Q2 2025.[70]

4.2.6 Private Mobile Radio Services

4.9 ComReg's work plan items for PMR includes completing a review of the current PMR licensing regimes:

(a) Completing a benchmarking exercise of the existing PMR Licensing Regimes in Ireland against licensing regimes and frequency bands in other European countries;

[69] Manufacturers (or their authorised representative), importers and distributors
[70] GSM – R | Commission for Communications Regulation (comreg.ie)

(b) Reviewing the frequency bands allocated for PMR and consider whether any changes are necessary to promote the efficient use of existing and/or new frequency bands;[71]

(c) Reviewing current demand and investigate the trends in demand for those bands, including future demand of existing and potential alternative use cases;

(d) Examining the current PMR Licensing fee methodologies and identifying options for more appropriate fee methodologies, if required;

(e) Considering the implementation of a single unified licensing regime that is future proofed; and

(f) Identifying any transition activities which may need to happen to implement any future licensing regime.

4.10 Upon completion of its review ComReg, proposes to consult on any changes to the current regimes including new regulations.

Third-Party Business Radio Licensing regime

4.11 ComReg intends on consulting on reopening the TPBR licensing regime in parallel with reviewing the PMR licensing regimes.

4.2.7 Terrestrial Fixed Services

4.12 ComReg's work plan items for the terrestrial fixed service are:

(a) to continue to issue fixed radio link licences and update the fixed links guidelines document as required to ensure that fixed links efficiently use the assigned radio spectrum;

(b) to consult on a new award and licensing framework for 26 GHz national block licences prior to the expiry of current licences in August 2028; and

(c) to monitor congestion and adjust as necessary in light of changes in demand. Any indications of congestion will be reflected by ComReg in the publication of the Fixed Links annual report.

4.2.8 Availability of Radio Spectrum Information

4.13 ComReg will continue to update ComReg's Siteviewer website on an ongoing

[71] Current frequency bands used for PMR are limited to sub-1 GHz, however, the review would consider demand from private network use cases for spectrum above 1 GHz.

basis[72].

4.2.9 Satellite services

WRC-23

4.14 ComReg work plan item for Satellite services are:

(a) to engage with the EC and other Member States as appropriate in considering any future authorisation regime for the frequency bands 1980-2010 MHz and 2170-2200 MHz. In the meantime, ComReg will monitor compliance of licence conditions by the existing MSS with CGC licensee;

(b) to continue issuing SES licences, updating Document 20/47; and

(c) to contribute to work within ECC on the outcomes of WRC-23 and in preparing a common position for the relevant satellite service agenda items scheduled for WRC-27.

4.2.10 Amateur Services

4.15 ComReg will:

(a) commence a review of the Amateur Service licensing regime (including a novice licensing framework, coordination of automatic stations, the HAREC examination format, callsign allocations, etc.) during the 2025-2028 period; and

(b) further consider the matter of a general increase in permissible power for all licensees and/or individual authorisations for licensees wishing to operate at higher powers. Included in these considerations will be matters related to compliance with NIR, spurious emission and measurement of power.

4.2.11 Unmanned Aircraft Systems

4.16 ComReg intends to continue to monitor developments in ECC working groups and project teams and consider the appropriate implementation of any future harmonised ECC Decisions, and any future EC Decisions.

[72] ComReg Document 'Publication of Radio Spectrum Licence Information Decision and response to Consultation' at https://www.comreg.ie/publication/publication-of-radio-spectrum-licence-information-decision-and-reponse-to-consultation

4.2.12 Aeronautical and Scientific Services

4.17 ComReg work plan items for Aeronautical and Scientific Services are:

(a) promote Ireland's interest in relevant international fora to ensure adequate spectrum is available for aeronautical services;

(b) work with the IAA and AirNav Ireland to promote the use of spectrum efficient technologies in the aeronautical bands, thereby maximising the spectrum available for growth and new applications;

(c) assist the IAA with the introduction of portable Electronic Conspicuity devices[73] into General Aviation light aircraft in Ireland;

(d) subject to resourcing, consider the implementation of a licence regime for Meteorological Aids (MetAids); and

(e) consider the matter of how to protect services of strategic importance[74] to Ireland, and to monitor and input into discussions on these types of services within Europe.

4.2.13 Defence Forces Use of Spectrum

4.18 ComReg intends to engage with the Irish Defence Forces on radio spectrum compatibility issues to ensure that:

(a) any new primary radar system[75] can operate without harmful interference from commercial and other users operating in the same or adjacent bands; and

(b) commercial and other users in both the same and adjacent bands are protected from any harmful interference that may be generated by any new radar system.

[73] Electronic Conspicuity (EC) is an umbrella term for the technology that can help pilots, unmanned aircraft users and air traffic services be more aware of what is operating in surrounding airspace. EC includes the devices fitted to aircraft and unmanned systems that send out the information, and the supporting infrastructure to help them work together.

[74] Examples include Global Navigation Satellite System, monitoring climate change, earth exploration, and radio Astronomy.

[75] In the February 2022 report from the Commission on the Defence Forces it is proposed to procure a primary radar system to "enhance situational awareness with recognised maritime and air pictures through the acquisition and development of primary radar, coastal radar and associated systems to allow the development of a Recognised Air Picture to support national security". The Detailed Implementation Plan has a planned delivery timeline that falls within the period of this plan.

4.2.14 Global Navigation Satellite System (GNSS) Repeaters

4.19 Subject to the availability of resources, ComReg will commence a work plan item for GNSS repeaters for the period 2025 – 2028 to consult on an authorisation regime to allow the operation of GNSS repeaters at fixed locations to users of professional applications as outlined in ECC Recommendation (10)02.

4.2.15 Radio Frequency Monitoring Network

4.20 ComReg's intends to increase the geographical coverage of its RFMN by identifying two further sites outside of the greater Dublin area and completing the installation of its monitoring equipment.

4.2.16 Licence-Exempt Short-Range Devices

4.21 ComReg work plan items for SRDs for the period 2025 – 2028 are:

(a) to facilitate the use of SRDs in Ireland in accordance with international harmonisations measures and where necessary, revise ComReg document 02/71[76] on foot of EC and ECC harmonisation updates;

(b) monitor, contribute to and promote Ireland's spectrum management position in relation to IoT; and

(c) to participate in CEPT working groups on SRDs.

[76] See ComReg-0271-R17.pdf

Annex 1: Summary of legal framework and statutory objectives relevant to the management of the radio spectrum

A 1.1 The Communications Regulation Act 2002 (as amended) (the "2002 Act"), the European Electronic Communications Code (which has repealed the EU Common Regulatory Framework, namely the Framework and Authorisation Directives)[77] , as transposed by S.I. No. 444 of 2022, the European Union (Electronic Communications Code) Regulations 2022 (the "ECC Regulations") and the Communications Regulation and Digital Hub Development Agency (Amendment) Act 2023 (the "2023 Act"), and the Wireless Telegraphy Acts 1926 to 2009[78] set out, amongst other things, ComReg's functions and objectives that are relevant to the management of the radio frequency spectrum in Ireland.

A 1.1 Apart from licensing and making regulations in relation to licences, ComReg's functions include the management of Ireland's radio frequency spectrum in accordance with ministerial Policy Directions under Section 13 of the 2002 Act, having regard to its objectives under Section 12 of the 2002 Act, and Regulation 4 of S.I. No. 444 of 2022.

A 1.2 This annex is intended as a general guide as to ComReg's role in this area, and not as a definitive or exhaustive legal exposition of that role. Further, this annex restricts itself to consideration of those functions, objectives powers, and duties of ComReg that appear most relevant to the matters at hand and generally excludes those not considered relevant (for example, in relation to postal services, premium rate services or market analysis). For the avoidance of doubt, however, the inclusion of particular material in this annex does not necessarily mean that ComReg considers same to be of specific relevance to the matters at hand. All references in this annex to enactments are to the enactment as amended at the date hereof, unless the context otherwise requires.

The European Electronic Communications Code

A 1.4 On 20 December 2018, Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code ("EECC") entered into force.

[77] Directive 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code.

[78] The Wireless Telegraphy Acts 1926 to 1988 and Sections 181 (1) to (7) and (9) and Section 182 of the Broadcasting Act 2009.

A 1.5 It is important to note that further to Article 125 ("Repeal") of the EECC, with effect from 21 December 2020, the EECC replaced the EU Common Regulatory Framework adopted in 2002 (and amended in 2009) under which ComReg has regulated electronic communications since 2003.[79]

A 1.6 With some limited exceptions (see Article 124 of the EECC), Member States had until 21 December 2020 to transpose the EECC into national law.[80] The statutory instrument transposing key provisions of the EECC has been published as S.I. No. 444 of 2022[81] and has been commenced by the Minister.[82] Other provisions of the EECC have been transposed in the Communications Regulation and Digital Hub Agency (Amendment) Act 2023, which has also been commenced.[83]

A 1.7 All references in this annex to enactments are to the enactment as amended at the date hereof unless the context otherwise requires.

Primary Functions and Objectives and Regulatory Principles under the 2002 Act and EEC as transposed.

A 1.8 ComReg's relevant functions pursuant to Section 10 of the Communications Regulation Act 2002, as amended, include the management of the radio frequency spectrum and the national numbering resource. ComReg's primary objectives in carrying out its statutory functions in the context of electronic communications are to:

- ensure the efficient management and use of the radio frequency spectrum in Ireland in accordance with a direction under section 13 of the 2002 Act;
- Promote competition[84];
- Contribute to the development of the internal market[85;] and
- Promote the interests of users within the Community.[86]

A 1.9 ComReg, in carrying out its regulatory tasks specified in S.I. No. 444 of 2022, shall take all reasonable measures which are necessary and proportionate for

[79] For the correlation table between relevant articles of the repealed Directives and the EECC, please see Annex XIII of the EECC available here- EUR-Lex - 02018L1972-20181217 - EN - EUR-Lex (europa.eu)
[80] With the exception of Articles 53(2), (3) and (4), and Article 54 (See Article 124).
[81] S.I. No. 444 of 2022, The European Union (Electronic Communications Code) Regulations 2022.
[82] By virtue of S.I. No. 300 of 2023, the European Union (Electronic Communications Code) (Amendment) Regulations 2023.
[83] By virtue of S.I. No. 299 of 2023, the Communications Regulation and Digital Hub Development Agency (Amendment) Act 2023 (Commencement) (No.2) Order 2023.
[84] Section 12 (1)(a)(i) of the 2002 Act.
[85] Section 12 (1)(a)(ii) of the 2002 Act.
[86] Section 12(1)(a)(iii) of the 2002 Act.

achieving the objectives set out in Regulation 4(3), including the objective to promote connectivity and access to, and take-up of, very high-capacity networks, including fixed, mobile and wireless networks, by all consumers and businesses in the State[87].

Management of radio spectrum

A 1.10 Regulation 27 of S.I. No. 444 of 2022 governs the management of radio spectrum. Regulation 27(1) requires that ComReg, subject to any directions issued by the Minister pursuant to Section 13 of the 2002 Act and having regard to its objectives under Section 12 of the 2002 Act, Regulation 4 of S.I. No. 444 of 2022, and Article 4 of the Directive, ensure:

a) the effective management of radio frequencies for ECN and ECS;

b) that the allocation of, the issuing of general authorisations in respect of, and the granting of individual rights of use for radio spectrum for ECN and ECS are based on objective, transparent, pro-competitive, non-discriminatory and proportionate criteria; and

c) ensure that harmonisation of the use of radio frequency spectrum by ECN and ECS across the EU is promoted, consistent with the need to ensure its effective and efficient use and in pursuit of benefits for the consumer such as competition, economies of scale and interoperability of networks and services, having regard to all decisions and measures adopted by the European Commission in accordance with Decision No.676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in EU (namely the Radio Spectrum Decision).

A 1.11 Regulation 27(3) provides that, without prejudice to Regulation 27(4), ComReg must ensure that all types of technology used for the provisions of ECN or ECS may be used in the radio spectrum declared available for ECSs in the Radio Frequency Plan published under Section 35 of the 2002 Act in accordance with EU law.

A 1.12 Regulation 27(4) provides that, notwithstanding Regulation 17(3), ComReg may, through licence conditions or otherwise, provide for proportionate and non-discriminatory restrictions to the types of radio network or wireless access technology used for ECS where this is necessary to:

a) avoid harmful interference;

[87] Regulation 4(3)(a) of S.I. No. 444 of 2022.

b) protect public health against electromagnetic fields;

c) ensure technical quality of service;

d) safeguard the efficient use of spectrum; or

e) ensure the fulfilment of a general interest objective as defined by or on behalf of the Government or a Minister of the Government in accordance with Regulation 27(7).

A 1.13 Regulation 27(5) provides that without prejudice to Regulation 27(7), ComReg must ensure that all types of ECS may be provided in the radio spectrum, declared available for ECS in the Radio Frequency Plan published under Section 35 of the Act of 2002 in accordance with EU law.

A 1.14 Regulation 27(6) provides that, notwithstanding Regulation 17(4), ComReg may provide for proportionate and non-discriminatory restrictions to the types of ECS to be provided, including where necessary, to fulfil a requirement under the International Telecommunication Union Radio Regulations ("ITU-RR").

A 1.15 Regulation 27(7) requires that measures that require an ECS to be provided in a specific band available for ECS shall be justified in order to ensure the fulfilment of a general interest objective as laid down by or on behalf of the Government or a Minister of the Government in accordance with EU law including, but not limited to:

a) safety of life;

b) the promotion of social, regional or territorial cohesion;

c) the avoidance of inefficient use of radio frequencies; or

d) the promotion of cultural and linguistic diversity and media pluralism, for example, by the provision of radio and television broadcasting services.

A 1.16 Regulation 27(8) provides that ComReg may only prohibit the provision of any other ECS in a specific radio spectrum frequency band where such a prohibition is justified by the need to protect safety of life services. ComReg may, on an exceptional basis, extend such a measure in order to fulfil other general interest objectives as laid down by or on behalf of the Government or a Minister of the Government in accordance with European law.

A 1.17 Regulation 27(9) provides that ComReg shall regularly review the necessity of any restrictions imposed under Regulation 27 and shall make the results of such reviews publicly available.

A 1.18 Regulation 27(10) requires ComReg to, in the fulfilment of its obligations under

Regulation 27, respect relevant international agreements, including the ITU-RR and other agreements adopted in the framework of the ITU applicable to radio spectrum, any public policy considerations brought to its attention by the Minister.

Authorisation of use of radio spectrum

A 1.19 Regulation 28(1) of S.I. No. 444 of 2022 provides that ComReg shall facilitate the use of radio spectrum, including shared use, under a general authorisation under Regulation S.I. No. 444 of 2022 and limit the granting of individual rights of use for radio spectrum where such rights are necessary to maximise efficient use in light of demand and taking into account the criteria set out in Regulation 28(2).

A 1.20 Regulation 28(2) of S.I. No. 444 of 2022 provides that ComReg may decide to grant individual rights of use for radio frequencies by way of a licence taking account of:

a) the specific characteristics of the radio spectrum concerned;

b) the need to protect against harmful interference;

c) the development of reliable conditions for radio spectrum sharing, where appropriate;

d) the need to ensure technical quality of communications or service;

e) objectives of general interest as laid down by or on behalf of the Government or a Minister of the Government in conformity with EU law; and

f) the need to safeguard the efficient use of spectrum.

A 1.21 Regulation 28(3) provides that when considering whether to issue general authorisations or to grant individual rights of use for the harmonised radio spectrum, taking into account technical implementing measures adopted in accordance with Article 4 of the Radio Spectrum Decision, ComReg shall seek to minimise problems of harmful interference, including in cases of shared use of radio spectrum on the basis of a combination of general authorisation and individual rights of use.

A 1.22 Regulation 29(1) of S.I. No. 444 of 2022 provides that ComReg shall attach conditions to individual rights of use for radio spectrum in accordance with Regulation 9(1) in such a way as to ensure optimal and the most effective and efficient use of radio spectrum. Regulation 29(7) provides that Regulation 29 is without prejudice to the Act of 1926.

Publication of procedures

A 1.23 Regulation 30(2)(a) of S.I. No. 444 of 2022 requires that ComReg shall, having regard to the provisions of Regulation 27 of the S.I. No. 444 of 2022, establish open, objective, transparent, non-discriminatory and proportionate procedures for the granting of individual rights of use for radio spectrum and cause any such procedures to be made publicly available.

Duration of rights

A 1.24 Regulation 31(1) of S.I. No. 444 of 2022 provides that rights of use for radio spectrum shall be in force for such period as ComReg considers appropriate in light of the objectives pursued in accordance with Regulation 36(2) and (3), taking due account of the need to ensure competition, as well, as in particular, effective and efficient use of radio spectrum, and to promote innovation and efficient investments, including by allowing for an appropriate period for investment amortisation.

A 1.25 Regulation 31(2) provides that where ComReg decides to grant individual rights of use for radio spectrum for which harmonised conditions have been set by technical implementing measures in accordance with the Radio Spectrum Decision in order to enable its use for wireless broadband electronic communications services for a limited period, it shall ensure regulatory predictability for the holders of the rights over a period of at least 20 years regarding conditions for investment in infrastructure which relies on the use of such radio spectrum, taking account of the requirements referred to in Regulation 31(1).

Conditions attached to rights of use for radio spectrum

A 1.26 Regulation 9(1) of S.I. No. 444 of 2022 provides that, notwithstanding Section 5 of the Wireless Telegraphy Act,1926, but subject to any regulations under Section 6 of that Act, where ComReg specifies conditions to be attached to rights of use for radio spectrum, it may only attach such conditions as are listed in Part D of the Schedule 1. Part D lists the following conditions which may be attached to rights of use:

- Obligation to provide a service or to use a type of technology within the limits of Regulation 27, including, where appropriate, coverage and quality of service requirements.
- Effective and efficient use of radio spectrum in conformity with the Regulations.

- Technical and operational conditions necessary for the avoidance of harmful interference and for the protection of public health against electromagnetic fields, taking utmost account of Recommendation 1999/519/EC where such conditions are different from those included in the general authorisation.
- Maximum duration in conformity with Regulation 31, subject to any changes in the National Frequency Allocation Plan.
- Transfer or leasing of rights at the initiative of the holder of the rights and conditions of such transfer in conformity with these Regulations.
- Fees for rights of use in accordance with Regulation 24.
- Any commitments which the undertaking obtaining the rights of use has made in the framework of an authorisation or authorisation renewal process prior to the authorisation being granted or, where applicable, to the invitation for application of rights of use.
- Obligations to pool or share radio spectrum or allow access to radio spectrum for other uses in specific regions or at national level.
- Obligations under relevant international agreements relating to the use of radio spectrum bands.
- Obligations specific to an experimental use of radio frequencies.

A 1.27 Regulation 9(2) provides that (a) any attachment of conditions under Regulation 1) or (b) non-application under paragraph (1) of conditions to undertakings of a class or type as may be determined by ComReg, to rights of use for radio spectrum shall be non-discriminatory, proportionate and transparent and in accordance with Regulation 27.

A 1.28 Pursuant to Regulation 9(3) of S.I. No. 444 of 2022, an undertaking shall comply with the conditions attaching to rights of use for radio spectrum applicable to it.

Procedures for limiting the number of rights of use to be granted for radio spectrum

A 1.29 Regulation 36(1) of S.I. No. 444 of 2022 provides that, without prejudice to Regulation 35, where ComReg concludes that a right to use radio spectrum cannot be subject to a general authorisation and where it considers whether to limit the number of rights of use to be granted for radio spectrum, it shall, inter alia, without prejudice to Sections 13 and 37 of the 2002 Act:

- clearly state the reasons for limiting the rights of use, in particular by giving due weight to the need to maximise benefits for users and to facilitate the development of competition and review the limitation at intervals which it considers reasonable or at the reasonable request of any undertaking affected as appropriate; and
- give all interested parties, including users and consumers, the opportunity to express their views in accordance with Regulation 101.

A 1.30 Regulation 36(2)(a) of S.I. No. 444 of 2022 provides that ComReg may decide , having taken into account the matters referred to in paragraph (1)(a) and (b), that the number of rights of use for radio spectrum referred to in that paragraph ought to be limited and, where the Regulator so decides, it shall clearly establish, and give reasons for, the objectives pursued by means of a competitive or comparative selection procedure under this Regulation, and where possible quantify them, giving due weight to the need to fulfil national and internal market objectives.

A 1.31 Regulation 36(7) provides that where the granting of rights of use for radio spectrum needs to be limited, ComReg shall grant such rights on the basis of selection criteria and a selection procedure which are objective, transparent, non-discriminatory and proportionate. Any such selection criteria shall give due weight to the achievement of the objectives and requirements of section 12 of the Act of 2002 and Regulations 4, 16 and 27.

Fees for spectrum rights of use

A 1.32 Regulation 24(1) of S.I. No. 444 of 2022 permits ComReg, subject to sections 13 and 37 of the Act of 2002, to impose fees for rights of use for radio spectrum, which reflect the need to ensure the optimal use of the radio spectrum.

A 1.33 Pursuant to Regulation 24(2) of S.I. No. 444 of 2022, ComReg is required to ensure that any such fees are objectively justified, transparent, non-discriminatory and proportionate in relation to their intended purpose and take into account the objectives of ComReg as set out in Section 12 of the 2002 Act and the general objectives of the Directive and Regulation S.I. No. 444 of 2022. Regulation 23(3) provides that with respect to rights of use for radio spectrum, ComReg shall seek to ensure that applicable fees are set at a level which ensures efficient assignment and use of radio spectrum by: (a) setting reserve prices as minimum fees for rights of use for radio spectrum by having regard to the value of those rights in their possible alternative uses; (b) taking into account costs entailed by conditions attached to those rights; and (c) applying, to the extent possible, payment arrangements linked to the actual availability for use of the radio spectrum.

Amendment of rights and obligations

A 1.34 Regulation 14(1) of S.I. No. 444 of 2022 permits ComReg to amend rights, conditions and procedures concerning rights of use for radio spectrum, provided that any such amendment may only be made in objectively justified cases and in a proportionate manner, taking into consideration, where appropriate, the specific conditions applicable to transferable rights of use for radio spectrum or for numbering resources.

Other Relevant Legislation and Policy Instruments

Wireless Telegraphy Act, 1926 (the "1926 Act")

A 1.35 Under Section 5(1) of the 1926 Act, ComReg may, subject to that Act, and on payment of the prescribed fees (if any), grant to any person a licence to keep and have possession of apparatus for wireless telegraphy in any specified place in the State.

A 1.36 Section 5(2) provides that, such a licence shall be in such form, continue in force for such period and be subject to such conditions and restrictions (including conditions as to suspension and withdrawal) as may be prescribed in regard to it by regulations made by ComReg under Section 6.

A 1.37 Section 5(3) also provides that, where it appears appropriate to ComReg, it may, in the interests of the efficient and orderly use of wireless telegraphy, limit the number of licences for any particular class or classes of apparatus for wireless telegraphy granted under Section 5.

A 1.38 Section 6 provides that ComReg may make regulations prescribing in relation to all licences granted by it under Section 5, or any particular class or classes of such licences, all or any of the following matters:

- the form of such licences;
- the period during which such licences continue in force;
- the manner in which, the terms on which, and the period or periods for which such licences may be renewed;
- the circumstances in which or the terms under which such licences are granted;
- the circumstances and manner in which such licences may be suspended or revoked by ComReg;

- the terms and conditions to be observed by the holders of such licences and subject to which such licences are deemed to be granted;
- the fees to be paid on the application, grant or renewal of such licences or classes of such licences, subject to such exceptions as ComReg may prescribe, and the time and manner at and in which such fees are to be paid; and
- matters which such licences do not entitle or authorise the holder to do.

A 1.39 Section 6(2) provides that Regulations made by ComReg under Regulation 6 may authorise and provide for the granting of a licence under Section 5 subject to special terms, conditions, and restrictions to persons who satisfy it that they require the licences solely for the purpose of conducting experiments in wireless telegraphy.

A 1.40 Regulation 9(1) of S.I. No. 444 of 2022 provides that, notwithstanding section 5 of the Act of 1926 but subject to any regulations made under section 6 of that Act, where ComReg specifies conditions to be attached to rights of use for radio spectrum, it may only attach such conditions as are listed in Part D of Schedule 1 to S.I. No. 444 of 2022.

A 1.41 Regulation 30(7) of S.I. No. 444 of 2022 provides that for the purpose of Regulation 30, a general authorisation for the use of radio spectrum shall be facilitated by way of an order made by ComReg under section 3(6) of the 1926 Act, declaring that a particular class or description of apparatus for wireless telegraphy is one to which the licence requirements of section 3 of the 1926 Act do not apply.

Broadcasting Act 2009 (the "2009 Act")

A 1.42 Section 132 of the 2009 Act relates to the duties of ComReg in respect of the licensing of spectrum for use in establishing digital terrestrial television multiplexes and places an obligation on ComReg to issue:

- two DTT multiplex licences to RTÉ by request (see Sections 132(1) and (2) of the 2009 Act; and
- a minimum of four DTT multiplex licences to the BAI by request (see Sections 132(3) and (4) of the 2009 Act) for the provision of commercial TV content.

Article 4 of Directive 2002/77EC (Competition Directive)

A 1.43 Article 4 of the Competition Directive[88] provides that:

> *"Without prejudice to specific criteria and procedures adopted by Member States to grant rights of use of radio frequencies to providers of radio or television broadcast content services with a view to pursuing general interest objectives in conformity with Community law:*
>
> *Member States shall not grant exclusive or special rights of use of radio frequencies for the provision of electronic communications services.*
>
> The assignment of radio frequencies for electronic communication services shall be based on objective, transparent, non-discriminatory and proportionate criteria."

Radio Spectrum Policy Programme

A 1.44 On 15 February 2012, the European Parliament adopted, via a Decision[89], the five- year Radio Spectrum Policy Programme ("RSPP") which establishes a multi-annual radio spectrum policy programme for the strategic planning and harmonisation of the use of spectrum. The objective is to ensure the functioning of the internal market in the Union policy areas involving the use of spectrum, such as electronic communications, research, technological development and space, transport, energy and audiovisual policies.

A 1.45 Among other things, Article 5 of the RSPP, entitled "Competition", provides:

> "*1. Member States shall promote effective competition and shall avoid distortions of competition in the internal market for electronic communications services in accordance with Directives 2002/20/EC and 2002/21/EC*
>
> *They shall also take into account competition issues when granting rights of use of spectrum to users of private electronic communication networks."*

Policy Directions[90]

A 1.46 Section 12(4) of the 2002 Act provides that, in carrying out its functions, ComReg must have appropriate regard to policy statements, published by or on behalf of the Government or a Minister of the Government and notified to the Commission,

[88] Commission Directive 2002/77/EC of 16 September 2002 on competition in the markets for electronic communications networks and services.
[89] Decision No 243/2012/EU of the European Parliament and of the Council of 14 March 2012 establishing a multiannual radio spectrum policy programme
[90] ComReg also notes, and takes due account of, the Spectrum Policy Statement issued by the Department of Communications Energy and Natural Resources in September 2010

in relation to the economic and social development of the State. Section 13(1) of the 2002 Act requires ComReg to comply with any policy direction given to ComReg by the Minister for Communications, Energy and Natural Resources ("the Minister") as he or she considers appropriate, in the interests of the proper and effective regulation of the electronic communications market, the management of the radio frequency spectrum in the State and the formulation of policy applicable to such proper and effective regulation and management, to be followed by ComReg in the exercise of its functions. Section 10(1)(b) of the 2002 Act also requires ComReg, in managing the radio frequency spectrum, to do so in accordance with a direction of the Minister under section 13 of the 2002 Act, while Section 12(1)(b) requires ComReg to ensure the efficient management and use of the radio frequency spectrum in accordance with a direction under Section 13.

A 1.47 The Policy Directions which are most relevant in this regard include the following:

Policy Direction No.3 on Broadband Electronic Communication Networks

A 1.48 ComReg shall in the exercise of its functions, take into account the national objective regarding broadband rollout, viz, the Government wishes to ensure the widespread availability of open-access, affordable, always-on broadband infrastructure and services for businesses and citizens on a balanced regional basis within three years, on the basis of utilisation of a range of existing and emerging technologies and broadband speeds appropriate to specific categories of service and customers.

Policy Direction No.4 on Industry Sustainability

A 1.49 ComReg shall ensure that in making regulatory decisions in relation to the electronic communications market, it takes account of the state of the industry and in particular the industry's position in the business cycle and the impact of such decisions on the sustainability of the business of undertakings affected.

Policy Direction No.5 on Regulation only where necessary

A 1.50 Where ComReg has discretion as to whether to impose regulatory obligations, it shall, before deciding to impose such regulatory obligations on undertakings, examine whether the objectives of such regulatory obligations would be better achieved by forbearance from imposition of such obligations and reliance instead on market forces.

Policy Direction No.6 on Regulatory Impact Assessment

A 1.51 ComReg, before deciding to impose regulatory obligations on undertakings in the market for electronic communications or for the purposes of the management

and use of the radio frequency spectrum or for the purposes of the regulation of the postal sector, shall conduct a Regulatory Impact Assessment in accordance with European and International best practice and otherwise in accordance with measures that may be adopted under the Government's Better Regulation programme.

Policy Direction No.7 on Consistency with other Member States

A 1.52 ComReg shall ensure that, where market circumstances are equivalent, the regulatory obligations imposed on undertakings in the electronic communications market in Ireland should be equivalent to those imposed on undertakings in equivalent positions in other Member States of the European Community.

Policy Direction No.11 on the Management of the Radio Frequency Spectrum

A 1.53 ComReg shall ensure that, in its management of the radio frequency spectrum, it takes account of the interests of all users of the radio frequency spectrum.

General Policy Direction No.1 on Competition (2004)

A 1.54 ComReg shall focus on the promotion of competition as a key objective. Where necessary, ComReg shall implement remedies which counteract or remove barriers to market entry and shall support entry by new players to the market and entry into new sectors by existing players. ComReg shall have a particular focus on:

- market share of new entrants;
- ensuring that the applicable margin attributable to a product at the wholesale level is sufficient to promote and sustain competition;
- price level to the end user;
- competition in the fixed and mobile markets; and
- the potential of alternative technology delivery platforms to support competition.

Promotion of Competition

A 1.55 Section 12(2)(a) of the 2002 Act requires ComReg to take all reasonable measures which are aimed at the promotion of competition, including:

- encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources;

- ensuring that there is no distortion or restriction of competition in the electronic communications sector; and
- ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality.

A 1.56 Regulation 34(1) of S.I. No. 444 of 2022 provides that ComReg shall promote effective competition and avoid distortions of competition in the internal market when deciding to grant, amend or renew rights of use for radio spectrum for electronic communications networks and services in accordance with these Regulations.

Contributing to the Development of the Internal Market

A 1.57 Section 12(2)(b) of the 2002 Act requires ComReg to take all reasonable measures which are aimed at contributing to the development of the internal market, including:

I. removing remaining obstacles to the provision of ECN, ECS and associated facilities at Community level;

II. encouraging the establishment and development of trans-European networks and the interoperability of transnational services and end-to-end connectivity; and

III. co-operating with electronic communications national regulatory authorities in other Member States of the Community and with the Commission of the Community in a transparent manner to ensure the development of consistent regulatory practice and the consistent application of Community law in this field.

A 1.58 In so far as consolidating the development of the internal market is concerned, Regulation 17(2) of S.I. No. 444 of 2022 provides that in carrying out its tasks under these Regulations, ComReg shall, taking the utmost account of its objectives under section 12 of the Act of 2002 and Regulation 4, contribute to the development of the internal market by working with national regulatory authorities in other Member States, BEREC and the European Commission in a transparent manner to ensure the consistent application of the Directive.

Promotion of Interests of Users

A 1.59 Section 12(2)(c) of the 2002 Act requires ComReg, when exercising its functions in relation to the provision of electronic communications networks and services, to take all reasonable measures which are aimed at the promotion of the interests of users within the Community, including:

- ensuring that all users have access to a universal service;
- ensuring a high level of protection for consumers in their dealings with suppliers, in particular by ensuring the availability of simple and inexpensive dispute resolution procedures carried out by a body that is independent of the parties involved;
- contributing to ensuring a high level of protection of personal data and privacy;
- promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available ECS;
- encouraging access to the internet at reasonable cost to users;
- addressing the needs of specific social groups, in particular disabled users; and
- ensuring that the integrity and security of public communications networks are maintained.

Technological Neutrality

A 1.60 Further to Regulation 4(5) of S.I. No. 444 of 2022, ComReg, in pursuit of the policy objectives referred to in paragraph (3), shall apply impartial, objective, transparent, non-discriminatory and proportionate regulatory principles by, inter alia —(c) applying European Union law in a technologically neutral fashion, to the extent that this is consistent with the achievement of the objectives set out in paragraph (3).

Regulatory Principles

A 1.61 Further to Regulation 4(5) of S.I. No. 444 of 2022, ComReg, in pursuit of the policy objectives referred to in paragraph (3), shall apply impartial, objective, transparent, non-discriminatory and proportionate regulatory principles by, inter alia: promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods and through cooperation with each other, with BEREC, with the RSPG and with the European Commission:

- ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing ECN and ECS;
- promoting efficient investment and innovation in new and enhanced infrastructures, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings and by permitting various cooperative arrangements between investors and

parties seeking access to diversify the risk of investment, while ensuring that competition in the market and the principle of non- discrimination are preserved,

- taking due account of the variety of conditions relating to infrastructure, competition, the circumstances of end-users and, in particular, consumers that exist in the various geographic areas within the State, including local infrastructure managed by individuals on a not-for-profit basis, and
- imposing ex-ante regulatory obligations only to the extent necessary to secure effective and sustainable competition in the interest of end-users where there is no effective and sustainable competition and relaxing or lifting such obligations as soon as that condition is fulfilled. BEREC

A 1.62 Under Regulation 4(4) of S.I. No. 444 of 2022, ComReg must:

- having regard to its objectives under section 12 of the 2002 Act and its tasks under these Regulations, actively support the goals of BEREC of promoting greater regulatory coordination and consistency; and
- take the utmost account of guidelines, opinions, recommendations, common positions, best practices and methodologies adopted by BEREC when adopting decisions for the markets in the State.

Other Obligations under the 2002 Act

A 1.63 In carrying out its functions, ComReg is required, amongst other things, to:

- seek to ensure that any measures taken by it are proportionate having regard to the objectives set out in section 12 of the 2002 Act;[91]
- have regard to international developments with regard to the radio frequency spectrum;[92] and
- take the utmost account of the desirability that the exercise of its functions aimed at achieving its radio frequency management objectives does not result in discrimination in favour of or against particular types of technology for the provision of ECS.[93]

[91] Section 12(3) of the 2002 Act.
[92] Section 12(5) of the 2002 Act.
[93] Section 12(6) of the 2002 Act.

Annex 2: World Radiocommunication Conferences 2023 and 2027

The 2023 World Radiocommunication Conference (WRC-23)

A 2.1 The following are the main topics and outcomes from WRC-23:

- The identification of spectrum for International Mobile Telecommunications (IMT), for expanding broadband connectivity and developing IMT mobile services, also known as 4G, 5G and, in the future, 6G. New spectrum identified includes the 3 300 – 3 400 megahertz (MHz), 3 600 - 3 800 MHz, 4 800 - 4 990 MHz and 6 425-7 125 MHz frequency bands in various countries and regions;
- For non-geostationary fixed-satellite service Earth Stations in Motion (ESIMs), the conference identified new frequencies to deliver high-speed broadband onboard aircraft, vessels, trains, and vehicles;
- Support for the modernisation of the Global Maritime Distress and Safety System (GMDSS), WRC-23 took regulatory actions including the implementation of e-navigation systems to enhance distress and safety communications at sea;
- The allocation of additional frequencies for passive Earth exploration satellite services to enable advanced ice cloud measurements for better weather forecasting and climate monitoring;
- Allocation of new frequencies to the aviation industry for aeronautical mobile satellite services (117.975-137 MHz). This new service will enhance bi-directional communication via non-GSO satellite systems for pilots and air traffic controllers in every situation, especially over oceanic and remote areas;
- Allocation of the bands 15.41-15.7 GHz and 22-22.2 GHz in Radio Regulations Region 1 and some Region 3 countries to the aeronautical mobile service for non-safety aeronautical applications. This will enable aircraft, helicopters, and drones to carry sophisticated aeronautical digital equipment for purposes such as surveillance, monitoring, mapping, and filming, and have the capacity to transfer large data from these applications using wideband radio links;
- Endorsement of the decision by the International Bureau of Weights and Measures (BIPM) to adopt Coordinated Universal Time (UTC) as the de

facto time standard by 2035, with the possibility to extend the deadline to 2040 in cases where existing equipment cannot be replaced earlier; and

- Recognition of the importance of space weather observation in a new Resolution and a new Article in the Radio Regulations to recognize the operation of space weather sensors as part of the meteorological aid service to observe space weather phenomena including solar flares, solar radiation and geomagnetic storms which can interfere with radiocommunication services including satellites, mobile phone services and navigation systems.
- A new secondary allocation, to the mobile, except aeronautical mobile, service has been agreed for implementation through a country footnote, which applies to the entire frequency band 470-694 MHz. The footnote's country list will encompass most CEPT countries.
- Resolution 235 has been modified to, amongst other items, enable:

  a) a review, after WRC-27, of the spectrum use of the frequency band 470-694 MHz or parts thereof for some countries in Region 1; and,

  b) based upon this review, consideration of:

  i) possible regulatory actions in the frequency band 614-694 MHz at WRC-31; and

  ii) possible regulatory action to protect radio astronomy services in the frequency band 608-614 MHz.

A 2.2 For detailed information on each agenda item, the CEPT position and the outcome of the conference, ComReg points the reader to the CEPT ECC report – https://cept.org/files/130712/WRC-23%20report%20from%20week%204.pdf [94]

The 2027 World Radiocommunication Conference (WRC-27)

A 2.3 ComReg has preliminarily identified[95] the following WRC-27 agenda items as important for Ireland:

- Possible revisions of sharing conditions in the frequency band 13.75-14 GHz to allow the use of uplink fixed-satellite service earth stations with smaller antenna sizes;

[94] WRC-23 report from week 4 (cept.org)

[95] ComReg's view will evolve as CEPT studies commence, the technical details are finalised and the implications for Ireland (if any) become clearer. Ireland will also need to take into account the requirements of the European Space Agency and the European Council.

- studies on IMT in 4 400-4 800 MHz, 7 125-8 400 MHz (or parts thereof), and 14.8-15.35 GHz;
- regulatory actions to update Appendix 26 of the Radio Regulations in support of aeronautical mobile (OR) HF modernisation;
- To develop power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.) limits for inclusion in Article 21 of the Radio Regulations for fixed-satellite, mobile-satellite and broadcasting satellite services to protect the fixed and mobile services in 71-76 GHz and 81-86 GHz;
- Possible allocations and regulatory actions on mobile-satellite service (MSS) in 1427-1432 MHz (space-to-Earth), 1645.5-1646.5 MHz (space-to-Earth) and (Earth-to-space), 1880-1920 MHz (space-to-Earth) and (Earth-to-space) and 2010-2025 MHz (space-to-Earth) and (Earth-to-space) required for the future development of low-data-rate non-geostationary mobile-satellite systems;
- possible new allocations to the mobile-satellite service for direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage;
- studies of technical and regulatory provisions necessary to protect radio astronomy (RAS) operating in specific Radio Quiet Zones and, in RAS primary allocated frequency bands globally, from aggregate radiofrequency interference caused by non-GSO systems; and
- regulatory provisions for receive-only space weather sensors and their protection in the Radio Regulations.

Preliminary agenda for WRC-31[96]

A 2.4 Potential new allocations to fixed, mobile, radiolocation, amateur, amateur-satellite, radio astronomy, Earth exploration-satellite (passive and active) and space research (passive) services in 275-325 GHz;

A 2.5 Possible frequency bands for Non-beam and Beam Wireless Power Transmission (WPT) to avoid harmful interference to the radiocommunication services caused by WPT;

A 2.6 Aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in 12.75-13.25 GHz;

A 2.7 Inter-satellite service allocations in 3700-4200 MHz and 5925-6425 MHz, and

[96] Square brackets [ ] indicate that some frequency ranges may need further refinements at WRC-27.

associated regulatory provisions, to enable links between non-geostationary orbit satellites and geostationary orbit satellites;

A 2.8 Possible primary allocation in [694-960 MHz in Region 1], 890-942 MHz in Region 2, [3400-3700 MHz in Region 3] to the aeronautical mobile service (AMS) for the use of International Mobile;

A 2.9 Telecommunications (IMT) user equipment in terrestrial IMT networks by non-safety applications;

A 2.10 Identification of the frequency bands [102-109.5 GHz, 151.5-164 GHz, 167-174.8 GHz, 209-226 GHz and 252-275 GHz] for IMT;

A 2.11 Improving the utilisation of VHF maritime radiocommunication;

A 2.12 Improving the utilisation and channelisation of maritime radiocommunication in the MF and HF bands, including potential revisions of Article 52 and Appendix 17;

A 2.13 Possible allocations to the radionavigation-satellite service (RNSS) (space-to-Earth) in [5 030-5 150 MHz and 5 150-5 250 MHz];

A 2.14 Possible new primary allocation to the Earth exploration-satellite service (Earth-to-space) in 22.55-23.15 GHz;

A 2.15 Upgrade of the secondary allocation to the Earth exploration-satellite service (EESS) (space-to-Earth) in the [37.5-40.5 GHz] band or possible new worldwide primary frequency allocations to the EESS (space-to-Earth) within [40.5-52.4 GHz;

A 2.16 Possible new allocations to the Earth exploration-satellite service (active) in the frequency bands [3 000-3 100 MHz] and [3 300-3 400 MHz] on a secondary basis;

A 2.17 Coexistence between spaceborne synthetic aperture radars (SAR) operating in the Earth exploration-satellite service (active) and radiodetermination service in the frequency band 9 200-10 400 MHz, with possible actions as appropriate;

A 2.18 Possible regulatory actions, including a review of the allocation of the frequency band 614-694 MHz to the mobile service for countries listed in No. 5.15A.

Annex 3: Analysys Mason Disclaimer

Analysys Mason Disclaimer

Date: 22/03/2024

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