

3.6 GHz Band Transition Progress Report 2021

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1 Introduction and Background

- The Commission for Communications Regulation ("ComReg") is the statutory body 1.1 responsible for the regulation of the electronic communications telecommunications, radio communications and broadcasting networks), postal and premium rate sectors in Ireland and in accordance with European ("EU") and Irish law. ComReg also manages Ireland's radio frequency spectrum ("radio spectrum" or "spectrum") and the national numbering resource. Under the Communications Regulation Act 2002, as amended, ComReg has a range of functions and objectives in relation to the provision of electronic communications networks ("ECN"), electronic communications services ("ECS") and post which includes ensuring the efficient and effective use of the national radio spectrum resource.
- 1.2 As noted in ComReg's Electronic Communications Strategy Statement 2021 to 2023¹, radio spectrum, as a medium over which data can be transmitted, is an essential input in the supply of wireless/radio-based ECN / ECS for a diverse range of uses and end-users. It is a finite and valuable national resource as it underpins nearly all communications services in the State. These communication services include mobile telephony, wireless broadband, radio and television broadcasting and radio communications used by commercial business and by air and maritime transport.
- 1.3 Many services rely on wireless connectivity as part of the backbone linking mobile base stations, providing feeds to broadcast transmitters and telemetry links that allow the monitoring of disperse infrastructure, for example water reservoir levels and remote power transformers. The availability of spectrum is therefore necessary for the entry and expansion of many operators in electronic communications markets.
- 1.4 The growing demand for radio spectrum is driven by society's ever-increasing demands for access to data-intensive services while on the move. In this context it is ComReg's goal² that the management of spectrum facilitates competition, enhances connectivity and promotes efficient investment.
- 1.5 In May 2017, ComReg announced the results of its 3.6 GHz Band Spectrum Award ("Award")³. The Award, which was conducted by auction, resulted in the successful

¹ ComReg document 21/70 – Electronic Communications Strategy Statement 2021 to 2023 – published 30 June 2021.

² ComReg's Competition & Investment strategic intention – Goal 1.6: The management of spectrum and numbers facilitates competition, enhances connectivity and promotes efficient investment.

³ <u>https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/3-6ghz-band-spectrum-award/</u>

assignment of all 350 MHz of spectrum rights available. The spectrum was offered in 594 lots spread over nine regions and assigned on a contiguous basis to five Winning Bidders.⁴

- 1.6 On the 16 December 2019, ComReg published its 3.6 GHz Band Transition Progress Report for 2019 as Document 19/115.⁵ In that document, ComReg provided the background to the 2017 3.6 GHz Band Spectrum Award, a summary of ComReg's 3.6 GHz Band Transition Principles and Framework, and an update on the progress of the 3.6 GHz Band Transition for 2019. That information has not been repeated in this report and readers are referred to Document 19/115 if they wish to access that information.
- 1.7 The purpose of this report is to provide interested parties with an update on the progress of 3.6 GHz Band Transition. This report also provides an update on the Transition Activities in 2021 by Existing Licensees and Winning Bidders since the 3.6 GHz Band Transition Progress Report published on the 8 December 2020.⁶
- 1.8 While transition in some areas remains, due in the main to the slower rollout of services by Winning Bidders than ComReg might have reasonably anticipated, a substantial amount of the spectrum in the award, in some cases all of it, is available for use by the Winning Bidder and is already being deployed in the provision of services such as higher speed FWA and 5G services.
- 1.9 Annex 1 of this report shows the Lots⁷ which have commenced as of 19 November 2021 under the Winning Bidders' 3.6 GHz Band Liberalised Use Licences.

⁴ The Winning Bidders are: Denseair Ltd. (formerly known as Airspan Spectrum Holdings Ltd); Imagine Communications Ireland Ltd ("Imagine"); Meteor Mobile Communications Ltd ("Meteor"); Three Ireland (Hutchison) Ltd ("3IRL"); and Vodafone Ireland Ltd ("Vodafone"). See ComReg Document 17/46 – Information Notice: Results of the 3.6 GHz Band Spectrum Award – published 1 June 2017.

⁵ ComReg Document 19/115 – 3. 6 GHz Band Transition Progress Report 2019 – published 16 December 2019. <u>https://www.comreg.ie/publication-download/3-6-ghz-band-transition-progress-report-2019</u>

⁶ ComReg Document 20/117 - 3.6 GHz Band Transition Progress Report 2020 – published 8 December 2020: <u>https://www.comreg.ie/publication/3-6-ghz-band-transition-progress-report-2020</u>

⁷ The 3.6 GHz Band spectrum award consisted of 594 lots spread over nine geographic regions (four rural and five urban), see ComReg Document 17/38 – Information Notice: Results of the 3.6 GHz Band Spectrum Award – published 22 May 2017

2 Progress Update on the 3.6 GHz Band Transition

- 2.1 ComReg has actively engaged with Winning Bidders and Existing Licensees since the completion of the Award to develop and implement appropriate Transition Plans. ComReg has placed particular importance on areas where Winning Bidders have sufficiently developed plans to roll-out new services.
- 2.2 ComReg has also encouraged Winning Bidders and Existing Licensees to engage and develop mutually agreeable Transition Plan Proposals, which ComReg would then consider with a view to finalising a Transition Plan.
- 2.3 In December 2017, ComReg requested that Winning Bidders submit detailed Transition Plan Proposals by which to develop Localised Transition Plans ("LTPs"). The current position is summarised below:
 - Meteor Mobile Communications Limited (trading as "eir") ("Meteor") and Vodafone Ireland Limited (trading as "Vodafone") ("Vodafone") provided their respective Transition Plan Proposals to ComReg in 2019;
 - Dense Air Ireland Limited ("Dense Air") has yet to submit a Transition Plan Proposal; and
 - ComReg has commenced 100% of the Lots won Imagine Communications Ireland Limited ("Imagine") and Three Ireland (Hutchison) Limited ("3IRL");
- 2.4 Please refer to the ComReg website for up-to-date information regarding <u>3.6 GHz</u> <u>transition activities</u>.⁸

2.2 Localised Transition Plans ("LTP")

2.5 In April 2019, Vodafone submitted its final Transition Plan Proposal to develop LTPs for the rollout of new services across ten sites using 3.6 GHz Band spectrum previously held by Imagine under the FWALA licensing scheme. ComReg consulted on the proposal, and on 25 June 2019, ComReg implemented LTPs for Vodafone's rollout of these ten sites. Those LTPs required Imagine to complete all relevant Transition Activities by 5 November 2019.

⁸ 3.6 GHz Band Transition: <u>https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/3-6-ghz-band-transition/</u>

- 2.6 Upon receipt of a joint request from Imagine and Vodafone, ComReg extended the relevant Commencement and Transition Dates, and all Transition Activities were expected to be completed by 2 February 2020. Due to the Covid-19 pandemic, those Transition Activities were suspended by the agreement of both parties.
- 2.7 In September 2021, ComReg met with Vodafone where Vodafone confirmed that it was in discussion with Imagine regarding the recommencement of its Transition Activities. ComReg awaits the outcome of these discussions and remains available to assist the parties, if necessary, to complete transition.

2.3 Transition Activities – Existing Licensees

Existing Licensees

- 2.8 Progress has also been made in the orderly transition of the Existing Licensees from the 3.6 GHz Band, including:
 - e-Nasc Éireann Teoranta ('Enet'), Lighthouse Networks Ltd (trading as Lightnet), PermaNET, Ripplecom Communications Ltd ("Ripplecom") and Western Broadband Networks Ltd (trading as WestNet) have all completed their transition from the 3.6 GHz Band; and
 - While the LTPs, which were developed and implemented to transition Imagine from 3.6 GHz Band Lots awarded to Vodafone are currently suspended, Imagine has continued with its Transition Activities more generally. Imagine has migrated from 54% of the Transition Service Areas ("TSA")⁹ originally licensed under its 3.6 GHz Band Transition Protected Licence ("TPL")¹⁰, and has reduced its spectrum usage by 41% in the TSAs licensed under its current TPL.¹¹

2.4 **3.6 GHz Band spectrum availability**

Winning Bidders

2.9 Significant progress has been made in the orderly transition of the 3.6 GHz Band and

⁹ Under Transition Licences existing licensees are permitted to operate in local service areas, referred to as Transition Service Areas (TSAs"), where they previously operated under the 3.6 GHz Band FWALA licensing scheme which ceased following the Award on 31 July 2017. At the start of Transition, all TSAs had a 20 km radius boundary around a defined centre point. As Transition has progressed, the area of some TSAs has been reduced to reflect completion of Transition activities which affect only part of a TSA and to facilitate ongoing Transition Activities in the remainder of the TSA.

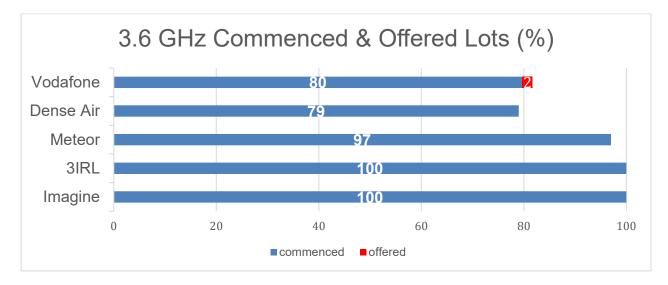
¹⁰ A Licence in the form as set out in Schedule 4 of the Wireless Telegraphy (3.6 GHz Band Licences) Regulations 2016, which entitles the holder to keep and have possession of Apparatus for the provision of FWA services in one or more than one FWALA Service Area, subject to the terms and conditions set out therein.

¹¹ In 2020, Imagine had migrated from 40% of the TSAs and had reduced its spectrum usage by 39% in the TSAs.

this progress has facilitated the commencement of spectrum rights for all new 3.6 GHz Band licensees to varying degrees:

- On 1 September 2018, ComReg commenced 100% of the Lots won by Imagine;
- On 1 September 2020, ComReg commenced 100% of the Lots won by 3IRL;
- As of 19 November 2021, ComReg has commenced 97% of the Lots won by Meteor;
- As of 19 November 2021, ComReg has commenced 79% of the Lots won by Dense Air; and
- As of 19 November 2021, ComReg has commenced 80% of the Lots won by Vodafone. ComReg offered to commence a further 2% of Vodafone's Lots in July 2018 but this offer was declined by Vodafone.

Figure 1 below shows the percentage of commenced lots by each Winning Bidder as of 19 November 2021. Annex 1 shows the status of specific Lots in each region for each Winning Bidder.





2.5 Commercial services

2.10 While the rollout of services by Winning Bidders has been more protracted than ComReg had anticipated, a substantial amount of the 3.6 GHz Band spectrum has nonetheless been made available for use by Winning Bidders. This has enabled Winning Bidders to launch higher speed FWA¹² and, more recently, 5G services.¹³

2.11 Figure 2 below shows the current rollout of sites by each of the Winning Bidders in each region. ComReg notes that Section 4 of S.I. No. 532/2016¹⁴ sets out obligations for the rollout of base stations by region and it intends to engage with the Winning Bidders in the new year with regard to compliance with their licence obligations.

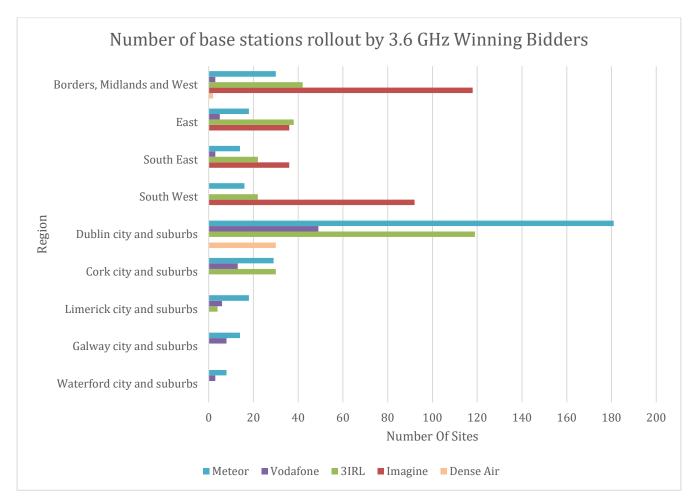


Figure 2: Number of base stations rollout by 3.6 GHz Winning Bidders

¹³ For example:

- In November 2021, Eir stated that it's 5G network provides more than 70% population coverage in 322 towns and cities in all 26 counties of the Republic of Ireland: <u>https://www.eir.ie/5G/</u>
- In November 2021, 3IRL stated that 281 areas in Ireland have 5G network coverage: <u>5G For All</u> <u>With Ireland's Largest 5G Network | Three</u>; and
- In July 2020, Vodafone deployed in 57 sites across 11 counties: <u>https://www.siliconrepublic.com/comms/vodafone-5g-ireland-ericsson-dss</u>.
- ¹⁴ S.I. No. 532/2016 Wireless Telegraphy (3.6 GHz Band Licences) Regulations 2016 <u>S.I. No. 532/2016</u>
 <u>- Wireless Telegraphy (3.6 GHz Band Licences) Regulations 2016. (irishstatutebook.ie)</u>

¹²<u>https://www.rte.ie/news/business/2021/0514/1221670-imagine-to-accelerate-rollout-of-5g-fixed-broadband/</u>

3 3.6 GHz Band Spectrum Lease Licences

- 3.1 During 2020 and again in 2021, ComReg has issued Lease Licences to Imagine which allowed it to lease 3.6 GHz Band spectrum from Dense Air, Meteor, 3IRL and Vodafone at various locations. The Lease licenses have also assisted Imagine with its 3.6 GHz Band Transition Activities and have improved the delivery of services for consumers during the Covid-19 pandemic.
 - In 2020, ComReg issued 3.6 GHz Band Spectrum Lease Licences to Imagine following the publication of four Spectrum Lease Determinations¹⁵; and
 - In 2021, ComReg issued 3.6 GHz Band Spectrum Lease Licences to Imagine following the publication of a Spectrum Lease Determination¹⁶. Those lease licences expired on the 11 November 2021.

¹⁵ See:

ComReg Document 20/51 – Spectrum Lease Determination: Lease of spectrum rights in the 3.6 GHz band from each of Meteor Mobile Communications Limited, Three Ireland (Hutchison) Limited, and Vodafone Ireland Limited to Imagine Communications Ireland Limited. – published 19 June 2020;

ComReg Document 20/77 – Spectrum Lease Determination: Lease of spectrum rights in the 3.6 GHz band from each of Meteor Mobile Communications Limited, Three Ireland (Hutchinson) Limited, and Vodafone Ireland Limited to Imagine Communications Ireland Limited – published 25 August 2020;

ComReg Document 20/87 – Spectrum Lease Determination: Proposed lease of spectrum rights in the 3.6 GHz band from Dense Air Limited to Imagine Communications Ireland Limited – published 22 September 2020; and

ComReg Document 20/97 – Spectrum Lease Determination: Proposed leases of spectrum rights in the 3.6 GHz band from each of Meteor Mobile Communications Limited, Three Ireland (Hutchinson) Limited, and Vodafone Ireland Limited to Imagine Communications Ireland Limited – published 13 October 2020.

¹⁶ See ComReg 21/46 – Spectrum Lease Determination: Lease of spectrum rights in the 3.6 GHz band from each of Dense Air Ireland Limited, Meteor Mobile Communications Limited and Vodafone Ireland Limited to Imagine Communications Ireland Limited – Published 10 May 2021:

4 Next Steps

- 4.1 ComReg will actively engage with Winning Bidders and Existing Licensees in order to develop and implement appropriate Localised Transition Plans in line with the principles of the Transition licensing framework. Additionally, ComReg will commence Lots for Winning Bidders as they become available following the completion of necessary Transition Activities.
- 4.2 ComReg intends to publish non-confidential, substantive material relating to 3.6 GHz Band Transition following the completion of transition.

Annex 1: Commencement of Lots Under 3.6 GHz Band Liberalised Use Licences

- A 1.1 Following completion of Transition Activities by Winning Bidders and Existing Licensees in the areas and frequency ranges affected, ComReg has commenced Lots in Regions under 3.6 GHz Band Liberalised Use Licences as follows. The tables below show the frequency assignments and associated regions for each 3.6 GHz Band Liberalised Use Licence granted to date, and the status of the associated Lots as of 19 November 2021. Please refer to the ComReg website for up-to-date information regarding <u>3.6 GHz transition activities</u>.¹⁷
- A 1.2 The colours in the tables indicate the following:

Green - Lots that have commenced;

Pink – Lots that have not yet commenced;

Amber – Lots that ComReg offered to commence but were declined by the relevant licensee;

Blue – Lots no longer refunded in line with para 2.75 of the Information Memorandum ("IM") ¹⁸: Delayed availability of Lots caused by Winning Bidder; and

Black – Lots that are not applicable to the Licensee.

¹⁷ 3.6 GHz Band Transition: <u>https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/3-6-ghz-band-transition/</u>

¹⁸ ComReg Document 16/71 - 3.6 GHz Band Spectrum Award - Information Memorandum – Published 29 August 2016

De	nse Air								
	FREQUENCY RANGE	3410 - 3435 MHz	3580 - 3585 MHz	3585 - 3590 MHz	3590 - 3595 MHz	3595 - 3600 MHz	3600 - 3605 MHz	3605 - 3610 MHz	3610 - 3615 MHz
	LOT	A1	B22	B23	B24	B25	B26	B27	B28
	Borders, Midlands and West								
	South West								
	East								
Z	South East								
REGION	Dublin City and Suburbs								
2	Cork City and Suburbs								
	Limerick City and Suburbs								
	Galway City and Suburbs								
	Waterford City and Suburbs								

Im	agine												
	FREQUENCY RANGE	3560 - 3565 MHz	3565 - 3570 MHz	3570 - 3575 MHz	3575 - 3580 MHz	3580 - 3585 MHz	3585 - 3590 MHz	3590 - 3595 MHz	2110 009 E - 262E	3600 - 3605 MHz	3605 - 3610 MHz	3610 - 3615 MHz	3615 - 3620 MHz
	LOT	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29
-	Borders, Midlands and West												
ō	South West												
REGION	East												
	South East												

Me	eteor																	
	FREQUENCY RANGE	3615 - 3620 MHz	3620 - 3625 MHz	3625 - 3630 MHz	3630 - 3635 MHz	3635 - 3640 MHz	3640 - 3645 MHz	3645 - 3650 MHz	3650 - 3655 MHz	3655 - 3660 MHz	3660 - 3665 MHz	3665 - 3670 MHz	3670 - 3675 MHz	3675 - 3680 MHz	3680 - 3685 MHz	3685 - 3690 MHz	3690 - 3695 MHz	3695 - 3700 MHz
	LOT	B29	B30	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	Borders, Midlands and West																	
	South West																	
	East																	
Z	South East																	
REGION	Dublin City and Suburbs																	
2	Cork City and Suburbs																	
	Limerick City and Suburbs																	
	Galway City and Suburbs																	
	Waterford City and Suburbs																	

Th	ree																				
	FREQUENCY RANGE	3700 - 3705 MHz	3705 - 3710 MHz	3710 - 3715 MHz	3715 - 3720 MHz	3720 - 3725 MHz	3725 - 3730 MHz	3730 - 3735 MHz	3735 - 3740 MHz	3740 - 3745 MHz	3745 - 3750 MHz	3750 - 3755 MHz	3755 - 3760 MHz	3760 - 3765 MHz	3765 - 3770 MHz	3770 - 3775 MHz	3775 - 3780 MHz	3780 - 3785 MHz	3785 - 3790 MHz	3790 - 3795 MHz	3795 - 3800 MHz
	LOT	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60	B61	B62	B63	B64	B65
	Borders, Midlands and West																				
	South West																				
	East																				
Z	South East																				
REGION	Dublin City and Suburbs																				
2	Cork City and Suburbs																				
	Limerick City and Suburbs																				
	Galway City and Suburbs																				
	Waterford City and Suburbs																				

Vo	dafone																					
	FREQUENCY RANGE	3475 - 3480 MHz	3480 - 3485 MHz	3485 - 3490 MHz	3490 - 3495 MHz	3495 - 3500 MHz	3500 - 3505 MHz	3505 - 3510 MHz	3510 - 3515 MHz	3515 - 3520 MHz	3520 - 3525 MHz	3525 - 3530 MHz	3530 - 3535 MHz	3535 - 3540 MHz	3540 - 3545 MHz	3545 - 3550 MHz	3550 - 3555 MHz	3555 - 3560 MHz	3560 - 3565 MHz	3565 - 3570 MHz	3570 - 3575 MHz	3575 - 3580 MHz
	LOT	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21
	Borders, Midlands and West																					
	South West																					
	East																					
Z	South East																					
REGION	Dublin City and Suburbs																					
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	Waterford City and Suburbs																					