

WIRELESS TELEGRAPHY ACT, 1926
WIRELESS TELEGRAPHY (3.6 GHz BAND LICENCES)
REGULATIONS 2016

3.6 GHz Band Spectrum Lease Licence for terrestrial systems capable of providing Electronic Communications Services

Licence under section 5 of the Wireless Telegraphy Act 1926 (No. 45 of 1926) as amended, to keep and have possession of apparatus for wireless telegraphy for terrestrial systems capable of providing Electronic Communications Services.

The Commission for Communications Regulation, in exercise of the powers conferred on it by section 5 of the Wireless Telegraphy Act 1926 (No. 45 of 1926) as amended, hereby grants the following licence to **Imagine Network Services Limited of Unit 5/6 Sandymount Business Centre, Blackthorn Road, Sandymount Industrial Estate, Dublin 18** (“the Licensee”).

The Licensee is hereby authorised to keep and have possession of apparatus for wireless telegraphy for terrestrial systems capable of providing Electronic Communications Services as specified in Part 2 to this Licence, subject to such apparatus being installed, maintained, worked and used in accordance with the terms and conditions and restrictions set out in the Wireless Telegraphy (3.6 GHz Band Licences) Regulations 2016 (S.I. No. 532 of 2016) “**the Regulations**”, including, but not limited to, the following:

- (1) The Licensee shall ensure that it complies with all of the conditions contained within the Regulations, under which this Licence is issued, and within Parts 1 to 4 of this Licence.

This Licence shall come into effect on 05/11/2024 (the “**Licence Commencement Date**”) and, subject to revocation, suspension, or withdrawal, expires on 04/11/2026.

Signed:

For and on behalf of the Commission for Communications Regulation

Date of Issue: 28/05/2026

Part 1

Commencement and Expiry dates per Frequency Range per Region

Lessor 3.6 GHz Band Liberalised Use Licence Number	Region ¹	Frequency Range (MHz)	Commencement Date	Expiry Date
3L1004	Borders Midlands & West; South West; East, South; and East	3560 – 3575	05 November 2024	27 May 2026 ²
3L1004	Borders Midlands & West; South West; East, South; and East	3575 – 3620	05 November 2024	04 November 2026

Part 2

The Apparatus to which this Licence applies

Equipment Index Reference	Terrestrial System	Equipment Description	Manufacturer	Model
1	LTE	Passive Antenna	[Redacted]	[Redacted]
2	LTE	Passive Antenna	[Redacted]	[Redacted]
3	LTE	Passive Antenna	[Redacted]	[Redacted]
4	LTE	Passive Antenna	[Redacted]	[Redacted]
5	LTE	Active Antenna Unit	[Redacted]	[Redacted]
6	LTE	Radio Unit	[Redacted]	[Redacted]
7	LTE	Radio Unit	[Redacted]	[Redacted]
8	LTE	Radio Unit	[Redacted]	[Redacted]
9	LTE	Passive Antenna	[Redacted]	[Redacted]
10	LTE	Passive Antenna	[Redacted]	[Redacted]
11	NR5G	Passive Antenna	[Redacted]	[Redacted]

Part 3

Apparatus Location and Details

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
South West	Clare	IMA_CE001	133796	179515	6,9	58
South West	Clare	IMA_CE011	127171	182791	6,9	58
South West	Clare	IMA_CE023	109925	182337	6,2	58
South West	Clare	IMA_CE032	142440	170625	6,2	58
South West	Cork	IMA_CK024	172675	59890	6,1	58

¹ “Region” means a regional area of the State specified in Schedule 10 of the Regulations.

² 3.6 GHz Band Blocks 18, 19 and 20 for the Borders Midlands & West, South West, East, South East Regions were transferred to the Vodafone Ireland Ltd on 28 May 2026 in accordance with ComReg’s Determination in Document 26/31, published 14 May 2026.

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
South West	Cork	IMA_CK046	108094	35125	6,1	58
South West	Cork	IMA_CK062	153801	122520	6,9	58
South West	Cork	IMA_CK078	145318	44306	6,1	58
South West	Cork	IMA_CK083	121506	81762	6,2	58
South West	Cork	IMA_CK094	61609	45019	6,9	58
South West	Cork	IMA_CK105	138672	80270	6,2	58
South West	Cork	IMA_CK120	100240	46870	7,9	58
South West	Cork	IMA_CK135	135454	40476	6,2	58
South West	Cork	IMA_CK143	106867	47495	6,2	58
South West	Cork	IMA_CK195	164025	63366	6,2	58
Border, Midlands and West	Cavan	IMA_CN013	225848	320053	6,9	58
Border, Midlands and West	Cavan	IMA_CN033	264530	313011	6,1	58
South East	Carlow	IMA_CW011	289047	161459	6,2	58
Border, Midlands and West	Donegal	IMA_DL007	238452	416998	6,2	58
Border, Midlands and West	Donegal	IMA_DL039	222441	426882	6,2	58
Border, Midlands and West	Donegal	IMA_DL053	182788	358290	6,9	58
East	Dublin	IMA_DN184	313101	248328	6,1	58
Border, Midlands and West	Galway	IMA_GY014	150699	241356	6,1	58
Border, Midlands and West	Galway	IMA_GY029	190309	219172	6,9	58
Border, Midlands and West	Galway	IMA_GY044	149361	266818	6,1	58
Border, Midlands and West	Galway	IMA_GY058	163618	235658	6,2	58
Border, Midlands and West	Galway	IMA_GY072	154967	228450	6,2	58
Border, Midlands and West	Galway	IMA_GY094	122161	223689	6,4	58
East	Kildare	IMA_KE008	297567	222716	6,3	58
East	Kildare	IMA_KE021	274641	227035	6,2	58
East	Kildare	IMA_KE041	268580	234422	6,2	58
South East	Kilkenny	IMA_KK007	254276	174104	6,1	58
South East	Kilkenny	IMA_KK025	250054	124903	6,9	58
South West	Kerry	IMA_KY004	83058	108044	6,2	58
South West	Kerry	IMA_KY024	112665	105389	6,9	58
Border, Midlands and West	Longford	IMA_LD008	220101	254897	6,9	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
Border, Midlands and West	Longford	IMA_LD016	223995	293004	6,2	58
Border, Midlands and West	Louth	IMA_LH004	298235	283392	8,1	58
South West	Limerick	IMA_LK013	172555	125215	6,1	58
South West	Limerick	IMA_LK021	113586	141474	6,9	58
South West	Limerick	IMA_LK033	143300	152751	6,2	58
Border, Midlands and West	Leitrim	IMA_LM005	194373	328234	6,9	58
Border, Midlands and West	Laois	IMA_LS020	226834	178489	6,9	58
East	Meath	IMA_MH010	277450	266364	6,1	58
East	Meath	IMA_MH030	270794	245730	6,2	58
East	Meath	IMA_MH049	289529	297838	6,1	58
Border, Midlands and West	Monaghan	IMA_MN025	265463	327494	6,1	58
Border, Midlands and West	Mayo	IMA_MO003	123826	318432	6,2	58
Border, Midlands and West	Mayo	IMA_MO034	109867	298209	6,9	58
Border, Midlands and West	Mayo	IMA_MO049	149432	279474	6,2	58
Border, Midlands and West	Mayo	IMA_MO079	125486	251532	6,1	58
Border, Midlands and West	Offaly	IMA_OY012	202422	216065	6,1	58
Border, Midlands and West	Offaly	IMA_OY029	249647	238064	6,1	58
Border, Midlands and West	Roscommon	IMA_RN009	176599	284895	6,1	58
Border, Midlands and West	Roscommon	IMA_RN017	191682	230007	6,9	58
Border, Midlands and West	Sligo	IMA_SO001	168427	336146	6,2	58
Border, Midlands and West	Sligo	IMA_SO012	146461	328798	6,9	58
South West	Tipperary	IMA_TY002	186959	178935	6,2	58
South East	Tipperary	IMA_TY023	225535	150930	7,1	58
South West	Tipperary	IMA_TY045	189621	205896	6,1	58
South East	Waterford	IMA_WD011	245739	113170	6,2	58
South East	Waterford	IMA_WD032	197934	100803	6,9	58
Border, Midlands and West	Westmeath	IMA_WH011	228150	246777	6,1	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
Border, Midlands and West	Westmeath	IMA_WH022	241654	254442	6,2	58
East	Wicklow	IMA_WW034	303319	177257	6,9	58
East	Wicklow	IMA_WW040	290041	203074	6,1	58
South East	Wexford	IMA_WX017	291253	130235	6,2	58
South East	Wexford	IMA_WX039	299144	139688	7,9	58
South East	Wexford	IMA_WX051	282501	115276	6,2	58
South East	Waterford	IMA_WD048	267501	104199	6,1	58
Border, Midlands and West	Laois	IMA_LS999	249204	189750	5	58
South West	Clare	IMA_CE010	121393	171289	6,1	58
South West	Clare	IMA_CE022	104074	168113	6,1	58
South West	Clare	IMA_CE031	105903	156905	6,1	58
South West	Cork	IMA_CK023	133907	72125	6,2	58
South West	Cork	IMA_CK044	190472	68934	6,2	58
South West	Cork	IMA_CK058	210257	77421	6,9	58
South West	Cork	IMA_CK073	114065	52905	6,2	58
South West	Cork	IMA_CK081	130884	108951	6,2	58
South West	Cork	IMA_CK093	203468	71063	6,9	58
South West	Cork	IMA_CK103	173832	97677	6,9	58
South West	Cork	IMA_CK111	139018	103689	6,1	58
South West	Cork	IMA_CK128	149159	56144	6,2	58
South West	Cork	IMA_CK142	179680	66935	6,2	58
South West	Cork	IMA_CK193	148646	65532	6,1	58
Border, Midlands and West	Cavan	IMA_CN009	250309	283788	6,9	58
Border, Midlands and West	Cavan	IMA_CN029	233178	295549	6,2	58
South East	Carlow	IMA_CW006	272113	161310	6,2	58
Border, Midlands and West	Donegal	IMA_DL003	216997	411524	6,9	58
Border, Midlands and West	Donegal	IMA_DL026	245342	445358	6,1	58
Border, Midlands and West	Donegal	IMA_DL052	188671	361063	6,9	58
East	Dublin	IMA_DN168	322814	255501	6,2	58
Border, Midlands and West	Galway	IMA_GY012	172630	225270	6,1	58
Border, Midlands and West	Galway	IMA_GY027	88396	209341	6,9	58
Border, Midlands and West	Galway	IMA_GY042	163014	216987	6,9	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
Border, Midlands and West	Galway	IMA_GY050	168631	205419	6,1	58
Border, Midlands and West	Galway	IMA_GY069	152243	254425	6,9	58
Border, Midlands and West	Galway	IMA_GY084	101553	228579	6,9	58
East	Kildare	IMA_KE006	267763	193666	6,1	58
East	Kildare	IMA_KE014	294621	235844	6,1	58
East	Kildare	IMA_KE038	275662	201499	6,1	58
South East	Kilkenny	IMA_KK001	257929	163187	6,3	58
South East	Kilkenny	IMA_KK024	233238	167744	6,9	58
South East	Kilkenny	IMA_KK042	241012	153317	6,1	58
South West	Kerry	IMA_KY018	91098	142526	6,1	58
Border, Midlands and West	Longford	IMA_LD001	218796	284207	6,3	58
Border, Midlands and West	Longford	IMA_LD014	213952	273728	6,2	58
Border, Midlands and West	Louth	IMA_LH003	304456	304163	6,1	58
South West	Limerick	IMA_LK012	111775	125239	7,9	58
South West	Limerick	IMA_LK020	170097	149982	6,1	58
South West	Limerick	IMA_LK027	165130	162837	6,1	58
South West	Limerick	IMA_LK071	114597	122151	6,2	58
Border, Midlands and West	Laois	IMA_LS010	236622	206770	6,3	58
East	Meath	IMA_MH001	286292	268918	6,9	58
East	Meath	IMA_MH023	279875	255817	6,2	58
East	Meath	IMA_MH047	264917	278331	6,2	58
Border, Midlands and West	Monaghan	IMA_MN024	273103	319326	6,1	58
Border, Midlands and West	Mayo	IMA_MO001	139673	299070	6,2	58
Border, Midlands and West	Mayo	IMA_MO014	66996	302733	6,2	58
Border, Midlands and West	Mayo	IMA_MO048	135310	274971	6,9	58
Border, Midlands and West	Mayo	IMA_MO062	124604	307711	6,2	58
Border, Midlands and West	Offaly	IMA_OY008	212538	229368	6,1	58
Border, Midlands and West	Offaly	IMA_OY028	231171	217370	6,1	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
Border, Midlands and West	Roscommon	IMA_RN008	195593	275413	6,1	58
Border, Midlands and West	Roscommon	IMA_RN016	198886	236142	6,2	58
Border, Midlands and West	Roscommon	IMA_RN027	175026	275699	6,1	58
Border, Midlands and West	Sligo	IMA_SO011	152413	311139	6,2	58
South West	Tipperary	IMA_TY001	173631	177400	6,1	58
South East	Tipperary	IMA_TY022	197285	121919	7,9	58
South East	Tipperary	IMA_TY032	240111	128900	6,9	58
South East	Waterford	IMA_WD006	223696	95165	6,9	58
South East	Waterford	IMA_WD031	225784	87802	6,9	58
Border, Midlands and West	Westmeath	IMA_WH001	204341	241525	6,1	58
Border, Midlands and West	Westmeath	IMA_WH021	216332	239538	7,9	58
East	Wicklow	IMA_WW027	322680	192989	6,9	58
East	Wicklow	IMA_WW038	303164	218368	6,2	58
South East	Wexford	IMA_WX012	298101	119249	6,1	58
South East	Wexford	IMA_WX036	318161	162468	6,1	58
South East	Wexford	IMA_WX046	309101	149819	7,9	58
Border, Midlands and West	Mayo	IMA_MO085	98960	282166	6,1	58
Border, Midlands and West	Cavan	IMA_CN042	272254	296211	6,1	58
Border, Midlands and West	Donegal	IMA_DL042	187714	379113	6,11	58
South West	Clare	IMA_CE006	141822	163922	6,9	58
South West	Clare	IMA_CE012	136978	179128	6,9	58
South West	Clare	IMA_CE027	111117	162746	6,9	58
South West	Clare	IMA_CE034	148936	167641	6,9	58
South West	Cork	IMA_CK025	155570	66290	6,1	58
South West	Cork	IMA_CK048	178024	78118	6,1	58
South West	Cork	IMA_CK063	182971	71617	6,2	58
South West	Cork	IMA_CK079	155037	46449	6,2	58
South West	Cork	IMA_CK087	143841	50829	6,9	58
South West	Cork	IMA_CK097	190479	103193	6,9	58
South West	Cork	IMA_CK106	165726	95754	6,2	58
South West	Cork	IMA_CK122	131885	92572	6,9	58
South West	Cork	IMA_CK137	125450	114645	6,9	58
South West	Cork	IMA_CK146	180436	106119	6,9	58
South West	Cork	IMA_CK204	176762	84189	6,2	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
Border, Midlands and West	Cavan	IMA_CN023	232882	309104	6,9	58
South East	Carlow	IMA_CW003	271689	177305	6,9	58
South East	Carlow	IMA_CW013	276240	168738	6,1	58
Border, Midlands and West	Donegal	IMA_DL017	221590	442393	6,2	58
Border, Midlands and West	Donegal	IMA_DL041	195998	373508	6,2	58
Border, Midlands and West	Donegal	IMA_DL063	174785	387133	6,2	58
Border, Midlands and West	Galway	IMA_GY006	138529	234979	6,9	58
Border, Midlands and West	Galway	IMA_GY016	125926	227343	8,1	58
Border, Midlands and West	Galway	IMA_GY037	155108	211294	6,3	58
Border, Midlands and West	Galway	IMA_GY046	113648	237190	6,9	58
Border, Midlands and West	Galway	IMA_GY059	71521	252430	6,2	58
Border, Midlands and West	Galway	IMA_GY077	142100	223138	6,2	58
East	Kildare	IMA_KE003	282731	229478	6,2	58
East	Kildare	IMA_KE010	288959	224075	6,9	58
East	Kildare	IMA_KE022	283461	240150	6,3	58
East	Kildare	IMA_KE046	267724	201631	6,9	58
South East	Kilkenny	IMA_KK020	262776	132410	6,2	58
South East	Kilkenny	IMA_KK026	266703	115887	6,9	58
South West	Kerry	IMA_KY008	97160	135132	6,2	58
South West	Kerry	IMA_KY051	91737	124620	6,2	58
Border, Midlands and West	Longford	IMA_LD010	202896	269659	6,2	58
Border, Midlands and West	Longford	IMA_LD019	232181	275219	6,2	58
Border, Midlands and West	Louth	IMA_LH018	314090	283099	6,2	58
South West	Limerick	IMA_LK014	143905	135980	6,3	58
South West	Limerick	IMA_LK023	151288	148778	6,2	58
South West	Limerick	IMA_LK034	163787	147446	6,2	58
Border, Midlands and West	Leitrim	IMA_LM012	210101	304365	6,2	58
Border, Midlands and West	Laois	IMA_LS025	257353	210712	6,2	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
East	Meath	IMA_MH013	311439	262231	6,1	58
East	Meath	IMA_MH038	273895	275981	6,2	58
Border, Midlands and West	Monaghan	IMA_MN004	251221	320403	6,1	58
Border, Midlands and West	Monaghan	IMA_MN030	270792	336483	6,1	58
Border, Midlands and West	Mayo	IMA_MO004	114744	290074	6,1	58
Border, Midlands and West	Mayo	IMA_MO040	134950	318700	6,2	58
Border, Midlands and West	Mayo	IMA_MO058	152471	298933	6,2	58
Border, Midlands and West	Offaly	IMA_OY006	207377	204349	6,9	58
Border, Midlands and West	Offaly	IMA_OY016	241957	225493	6,9	58
Border, Midlands and West	Roscomm on	IMA_RN001	161624	276824	7,9	58
Border, Midlands and West	Roscomm on	IMA_RN012	160587	298214	6,9	58
Border, Midlands and West	Roscomm on	IMA_RN018	193790	291890	6,9	58
Border, Midlands and West	Sligo	IMA_SO004	182133	322187	6,1	58
Border, Midlands and West	Sligo	IMA_SO013	175938	347288	6,3	58
South East	Tipperary	IMA_TY005	193832	152227	6,2	58
South East	Tipperary	IMA_TY028	214549	142686	7,9	58
South West	Tipperary	IMA_TY046	201193	166036	6,1	58
South East	Waterford	IMA_WD013	227307	100787	6,9	58
South East	Waterford	IMA_WD038	252418	109305	6,2	58
Border, Midlands and West	Westmeath	IMA_WH014	264762	260498	6,2	58
East	Wicklow	IMA_WW005	323346	217997	6,9	58
East	Wicklow	IMA_WW035	324992	179614	6,9	58
East	Wicklow	IMA_WW046	327111	212563	6,2	58
South East	Wexford	IMA_WX029	302248	157176	7,9	58
South East	Wexford	IMA_WX043	310057	130306	6,9	58
South East	Wexford	IMA_WX052	306918	138426	6,9	58
South West	Cork	IMA_CK205	146847	90356	6,3	58
Border, Midlands and West	Longford	IMA_LD017	218067	267711	6,3	58
South West	Clare	IMA_CE009	107898	194478	6,9	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
South West	Clare	IMA_CE013	151767	191039	6,1	58
South West	Clare	IMA_CE028	86167	157468	6,9	58
South West	Cork	IMA_CK012	156120	98514	6,9	58
South West	Cork	IMA_CK043	161614	117256	6,2	58
South West	Cork	IMA_CK049	164599	81505	6,1	58
South West	Cork	IMA_CK067	122928	53259	6,2	58
South West	Cork	IMA_CK080	133874	50205	6,2	58
South West	Cork	IMA_CK092	183129	80343	6,9	58
South West	Cork	IMA_CK098	199349	83961	6,9	58
South West	Cork	IMA_CK107	93200	35060	6,9	58
South West	Cork	IMA_CK126	172958	62792	6,9	58
South West	Cork	IMA_CK141	141399	121108	6,9	58
South West	Cork	IMA_CK192	166859	49464	6,1	58
Border, Midlands and West	Cavan	IMA_CN001	260435	289513	6,1	58
Border, Midlands and West	Cavan	IMA_CN024	242186	304429	6,9	58
South East	Carlow	IMA_CW005	286560	173230	6,9	58
Border, Midlands and West	Donegal	IMA_DL002	223475	404901	6,3	58
Border, Midlands and West	Donegal	IMA_DL020	216116	393764	6,9	58
Border, Midlands and West	Donegal	IMA_DL044	167538	415209	6,2	58
East	Dublin	IMA_DN134	315169	259811	6,2	58
Border, Midlands and West	Galway	IMA_GY011	143370	252076	7,9	58
Border, Midlands and West	Galway	IMA_GY017	143141	229126	6,1	58
Border, Midlands and West	Galway	IMA_GY041	174641	257962	6,10	58
Border, Midlands and West	Galway	IMA_GY049	180822	238996	6,2	58
Border, Midlands and West	Galway	IMA_GY062	163444	249692	6,9	58
Border, Midlands and West	Galway	IMA_GY082	136626	258605	6,2	58
East	Kildare	IMA_KE005	280355	214880	6,2	58
East	Kildare	IMA_KE013	271320	216966	6,3	58
East	Kildare	IMA_KE035	282407	206640	6,1	58
East	Kildare	IMA_KE052	280983	197150	6,2	58
South East	Kilkenny	IMA_KK021	246097	132107	6,2	58
South East	Kilkenny	IMA_KK034	266272	145605	6,9	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
South West	Kerry	IMA_KY011	70868	93688	6,2	58
South West	Kerry	IMA_KY054	99543	92469	6,2	58
Border, Midlands and West	Longford	IMA_LD011	206611	285031	6,2	58
Border, Midlands and West	Louth	IMA_LH002	307390	273703	6,1	58
South West	Limerick	IMA_LK011	133627	146193	6,9	58
South West	Limerick	IMA_LK016	123013	129581	6,9	58
South West	Limerick	IMA_LK026	126694	141994	6,9	58
South West	Limerick	IMA_LK036	163005	154352	6,2	58
Border, Midlands and West	Laois	IMA_LS003	247499	176221	6,9	58
Border, Midlands and West	Laois	IMA_LS028	254418	200693	6,1	58
East	Meath	IMA_MH021	295908	261157	6,9	58
East	Meath	IMA_MH040	291165	248768	6,1	58
Border, Midlands and West	Monaghan	IMA_MN018	283933	303875	6,2	58
Border, Midlands and West	Monaghan	IMA_MN039	257672	324647	6,1	58
Border, Midlands and West	Mayo	IMA_MO007	118923	264513	6,10	58
Border, Midlands and West	Mayo	IMA_MO044	106405	329238	6,2	58
Border, Midlands and West	Mayo	IMA_MO060	130144	290118	6,2	58
Border, Midlands and West	Offaly	IMA_OY007	227507	222577	6,1	58
Border, Midlands and West	Offaly	IMA_OY020	252371	213146	6,2	58
Border, Midlands and West	Roscomm on	IMA_RN004	192968	298699	6,2	58
Border, Midlands and West	Roscomm on	IMA_RN015	190357	313498	6,2	58
Border, Midlands and West	Roscomm on	IMA_RN019	189063	258329	6,9	58
Border, Midlands and West	Sligo	IMA_SO007	158235	326635	6,9	58
Border, Midlands and West	Sligo	IMA_SO017	166261	346799	6,9	58
South West	Tipperary	IMA_TY017	206117	175995	6,1	58
South East	Tipperary	IMA_TY029	223352	137017	6,9	58
South West	Tipperary	IMA_TY049	183806	194810	6,2	58

Region	County	Site Identity	Easting	Northing	Equipment Index Reference	Max EIRP (dBm)
South East	Waterford	IMA_WD020	244947	105679	6,9	58
South East	Waterford	IMA_WD046	205750	95100	6,1	58
Border, Midlands and West	Westmeath	IMA_WH018	255708	252726	6,1	58
East	Wicklow	IMA_WW011	331177	192507	6,9	58
East	Wicklow	IMA_WW036	314073	190936	6,9	58
South East	Wexford	IMA_WX007	315185	170777	7,9	58
South East	Wexford	IMA_WX035	273066	124202	6,1	58
South East	Wexford	IMA_WX044	278625	140073	6,9	58
South East	Wexford	IMA_WX055	292912	113094	6,1	58
Border, Midlands and West	Laois	IMA_LS017	220534	192931	6,9	58
Border, Midlands and West	Cavan	IMA_CN038	246312	300653	6,3	58

Part 4

Licence Conditions

Section 1: General

1. Definitions

The following additional definitions shall apply to this Licence:

“Equivalent Isotropically Radiated Power” (EIRP) means the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna;

“Licensed Spectrum Blocks” means the Spectrum Blocks set out in Part 1 of the Licence;

“Terrestrial Systems” means terrestrial systems capable of providing Electronic Communications Services that are in compliance with the technical implementing measures adopted pursuant to EC Decision No 2008/411/EC (as amended) and in conformity with the standards referred to in Parts 4; and

“Licensed Regions” means the Regions specified in Part 1 of the Licence.

2. Provision of Maps and Data

For the purposes of complying with rollout obligations (see Section 4) and quality of service obligations (see Section 5) compliance assessments, the Licensee shall, on request, provide to the Commission the following:

- (1) Maps showing rollout as required under Section 4;
- (2) An up-to-date list of the locations of Base Stations including the Rollout Base Stations covered by the Licence; and
- (3) An adequate number of Terminal Stations, Subscriber Identity Modules (SIM)

cards or equivalents for testing as applicable.

Section 2: Technical Conditions

1. Definitions

The following additional definitions shall apply to this Licence:

“Active antenna systems” (“AAS”) means a base station and an antenna system where the amplitude and/or phase between antenna elements is continually adjusted resulting in an antenna pattern that varies in response to short term changes in the radio environment. This excludes long-term beam shaping such as fixed electrical down tilt. In AAS base stations the antenna system is integrated as part of the base station system or product;

“Base Station” means Apparatus connected to a backhaul network, which provides a Radiocommunication Service to Terminal Stations using the 3.6 GHz Band;

“dBm” means decibels of power referenced to one milliwatt;

“Downlink” means transmissions from a Base Station to a Terminal Station;

“Equivalent Isotropically Radiated Power” (EIRP) means the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna;

“Indoor Small Cell” means a Base Station with an EIRP of less than or equal to 24 dBm per 20 MHz carrier that is located indoors either within a residential or non-residential property;

“Inter-Licensee Co-ordination Agreement” means bi-lateral or multi-lateral agreements between Licensees on field strength co-ordination threshold levels at the boundaries of Regions;

“Inter-Licensee Synchronisation Procedure” means the synchronisation procedure set out in Section 3;

“Permissive Block Edge Mask” means the Base Station technical conditions defined in Table 1 below;

“Restrictive Block Edge Mask” means the Base Station technical conditions defined in Table 2 below;

“Semi-synchronised operation” means operation of two or more different TDD networks, where part of the frame is consistent with synchronised operation, while the remaining portion of the frame is consistent with unsynchronised operation. This requires the adoption of a frame structure for all TDD networks involved, including slots where the UL/DL direction is not specified, as well as synchronising the beginning of the frame across all networks.

“Synchronised operation” means operation of two or more different time division duplex (TDD) networks, where simultaneous uplink (UL) and downlink (DL) transmissions do not occur, that is at any given moment in time either all networks transmit in downlink or all networks transmit in uplink. This requires the alignment of all DL and UL transmissions for all TDD networks involved as well as synchronising the beginning of the frame across all networks;

“TDD” means time-division duplex;

“TD-LTE” means the TDD variant of LTE (Long Term Evolution) technology;

“Terminal Station” means mobile user equipment and fixed customer premise equipment which communicate with a Base Station using the 3.6 GHz Band;

“Total radiated power” (“TRP”) is a measure of how much power a composite antenna radiates. It equals the total conducted power input into the antenna array system less any losses in the antenna array system. TRP means the integral of the power transmitted in different directions over the entire radiation sphere as shown in the formula:

$$TRP \stackrel{\text{def}}{=} \frac{1}{4\pi} \int_0^{2\pi} \int_0^{\pi} P(\theta, \varphi) \sin(\theta) d\theta d\varphi$$

where $P(\theta, \varphi)$ is the power radiated by an antenna array system in direction (θ, φ) given by the formula: $P(\theta, \varphi) = P_{Tx}g(\theta, \varphi)$

where P_{Tx} denotes the conducted power (measured in Watts), which is input to the array system, and $g(\theta, \varphi)$ denotes the array systems directional gain along the (θ, φ) direction.

“Unsynchronised operation” means operation of two or more different TDD networks, where at any given moment in time at least one network transmits in DL while at least one network transmits in UL. This might happen if the TDD networks either do not align all DL and UL transmissions or do not synchronise at the beginning of the frame;

“Uplink” means transmissions from a Terminal Station to a Base Station.

2. Technical Conditions

(1) Only Terrestrial Systems compatible with Decision 2008/411/EC (as amended) can be worked and used in the 3.6 GHz Band.

(2) In the 3400 – 3800 MHz frequency range of the 3.6 GHz Band, the duplex mode of operation is TDD.

Base Stations

(3) Where the Inter-Licensee Synchronisation Procedure specified in Section 3 determines that the Permissive Block Edge Mask applies for synchronised blocks, the technical conditions defined in Table 1 below shall apply to Base Stations.

(4) In Tables 1 and 3, the power level P_{Max} is the maximum carrier power in dBm for the base station in question. P_{Max} is defined and measured as the equivalent isotropically radiated power (e.i.r.p.) per antenna for base stations with non-active antenna systems (non-AAS). For AAS, base stations P_{Max} is defined as the maximum mean carrier power in dBm for the base station and measured as TRP per carrier in a given cell.

(5) In Tables 1 and 3, the power limits are determined relative to a fixed upper limit by means of the formula $\text{Min}(P_{Max} - A, B)$, which sets the lower (or stricter) of two values: (1) $(P_{Max} - A)$ expressing the maximum carrier power P_{Max} minus a relative offset A , and (2) the fixed upper limit B .

Table 1: Permissive Block Edge Mask

BEM Element	Frequency Range	Non-AAS EIRP Power Limit	AAS TRP Power Limit
In-block	Block assigned to the Licensee	68 dBm/5 MHz per antenna	47 dBm/5 MHz per cell
Transitional Region	-5 to 0 MHz offset from lower block edge or 0 to 5 MHz offset from upper block edge	Min(PMax -40, 21) dBm/5 MHz per antenna (*)	Min(PMax -40, 16) dBm/5 MHz per cell (**)(***)
Transitional Region	-10 to -5 MHz offset from lower block edge or 5 to 10 MHz offset from upper block edge	Min(PMax -43, 15) dBm/5 MHz per antenna	Min(PMax -43, 12) dBm/5 MHz per cell (**)(***)
Baseline	Below – 10 MHz offset from lower block edge Above 10 MHz offset from upper block edge Within 3400—3800 MHz (except for in-block and transitional regions)	Min(PMax -43, 13) dBm/5 MHz per antenna (*)	Min(PMax -43, 1) dBm/5 MHz per cell (**)(***)

(*) PMax is the maximum mean carrier power in dBm for the base station measured as EIRP per carrier per antenna

(**) PMax' is the maximum mean carrier power in dBm for the base station measured as TRP per carrier in a given cell

(***) In a multi-sector base station, the radiated power limit applies to each one of the individual sectors.

(6) Where the Inter-Licensee Synchronisation Procedure specified in Section 3 determines that the Restrictive Block Edge Mask applies for semi-synchronised blocks, the technical conditions defined in Table 2 below shall apply. In order to meet the Restrictive Block Edge Mask, a Licensee may be required to adopt guard bands within its Licensed Spectrum Block(s).

Table 2: Restrictive Block Edge Mask

BEM Element	Frequency Range	Non-AAS EIRP Power Limit	AAS TRP Power Limit
In-block	Block assigned to the Licensee	68 dBm/5 MHz per antenna	47 dBm/5 MHz per cell
Baseline	3400–3800 MHz (except for in-block frequencies)	-34 dBm/5 MHz per cell (*)	-43 dBm/5 MHz per cell (*)

(*) In a multi-sector base station, the radiated power limit applies to each one of the individual sectors

(7) The additional baseline power limits in Table 3 below apply at the 3800 MHz band edge for coexistence with fixed satellite services (FSS) and fixed services (FS) above 3800 MHz.

Table 3: Additional baseline power limits above 3 800 MHz for base stations for coexistence with fixed satellite services (FSS) and fixed services (FS)

BEM Element	Frequency Range	Non-AAS EIRP Power Limit	AAS TRP Power Limit
Additional baseline	3 800-3 805 MHz	Min(PMax – 40, 21) dBm/(5 MHz) per antenna (*)	Min(PMax' – 40, 16) dBm/(5 MHz) per cell(**)(***)
	3 805-3 810 MHz	Min(PMax – 43, 15) dBm/(5 MHz) per antenna (*)	Min(PMax' – 43, 12) dBm/(5 MHz) per cell(**)(***)
	3 810-3 840 MHz	Min(PMax – 43, 13) dBm/(5 MHz) per antenna (*)	Min(PMax' – 43, 1) dBm/(5 MHz) per cell(**)(***)
	Above 3 840 MHz	– 2 dBm/(5 MHz) per antenna (*)	– 14 dBm/(5 MHz) per cell(***)

(*) PMax is the maximum mean carrier power in dBm for the base station measured as e.i.r.p. per carrier per antenna

(**) PMax' is the maximum mean carrier power in dBm for the base station measured as TRP per carrier in a given

cell

(***) In a multi-sector base station, the radiated power limit refers to the level corresponding to each one of the individual sectors

(8) The Licensee shall comply with all memoranda of understanding agreed from time to time between the Commission and the national regulatory authority responsible for communications matters in the UK, Ofcom, or its successor, in relation to the 3.6 GHz Band.³

(9) A co-ordination threshold limit of 32 dB μ V/m/5MHz for 90 per cent of the time and 90 per cent of the locations at a height of 10 metres at the borders of each Region shall apply.⁴

(10) The co-ordination threshold limit specified at paragraph 8 may be relaxed when an Inter-Licensee Co-ordination Agreement is in place between all potentially affected Licensees. Inter-Licensee Co-ordination Agreements may be guided by ECC Recommendation (15)01⁵ or subsequent relevant guidance documents.

(11) In the event of Harmful Interference, the affected Licensees shall exchange information with a view to resolving the Harmful Interference by mutual consent. Where resolution cannot be agreed between the affected Licensees, ComReg may mediate in accordance with its statutory functions, objectives and duties.

Terminal Stations

(12) With the exception of fixed outdoor Terminal Stations with a directional antenna the maximum in-block power for a Terminal Station shall not exceed 28 dBm/5 MHz TRP.

(13) The maximum in-block power limit for fixed outdoor Terminal Stations with a directional antenna shall not exceed 37 dBm/5 MHz EIRP.

(14) Fixed outdoor Terminal Stations with a directional antenna shall:

- (a) be installed, controlled by and remain the responsibility of the Licensee; and
- (b) not cause Harmful Interference to any other users, be that Base Stations, other Terminal Stations, or other apparatus for wireless telegraphy in other radio frequency spectrum bands.

Section 3: Inter-Licensee Synchronisation Procedure

1. Definitions

The following additional definitions shall apply to this Licence:

“Default Frame Structure” means the frame structure as detailed in 3(1) below; and

³ See Annex 3 of ComReg Document 06/17R7 for a list of memoranda of understanding in place at the date of making of the Regulations.

⁴The field prediction method used shall be in accordance with Recommendation ITU-R P.452-16, unless otherwise specified by the Commission.

⁵ See ECC Recommendation (15)01 — Cross-border coordination for mobile/fixed communications networks (MFCN) in the frequency bands: 694-790 MHz, 1452-1492 MHz, 3400-3600 MHz and 3600-3800 MHz — <http://www.erodocdb.dk/Docs/doc98/official/pdf/REC1501.PDF>

“Other Frame Structure” means a frame structure other than the Default Frame Structure.

2. Introduction

- (1) Licensees shall co-operate in such a way that one network deployment does not cause Harmful Interference to that of another Licensee within the 3.6 GHz Band.
- (2) Licensees shall be bound by the Inter-Licensee Synchronisation procedure.
- (3) This procedure sets out the circumstances in which Licensees may use the Permissive Block Edge Mask and the Restrictive Block Edge Mask, so as to minimise the risk of Harmful Interference to other Licensees.

3. Conditions for Permissive Block Edge Masks

- (1) Default Frame Structure in case of synchronised operation — The technical conditions for Permissive Block Edge Mask set out in Section 2 shall apply where a Licensee’s Base Station complies with the Default Frame Structure outlined below:
 - (a) Transmissions from a Licensee’s Base Station(s) shall have a frame structure as shown in Figure 1. Indicated timeslots (or subframes) must not be allocated to anything other than Downlink (D) and Uplink (U) transmissions. S denotes a special subframe. TD-LTE frame configuration 2 (Downlink: Uplink, 3:1) with special subframe configuration 6 or equivalent frame structures whose transmit and receive periods are aligned with this configuration are permitted;
 - (b) Timeslots shall have a duration of 1 millisecond; and
 - (c) Licensees shall ensure that frames start at a common reference time($\pm 1.5 \mu\text{s}$) so that all Licensees’ frames are aligned and transmissions synchronised.
- (2)

Figure 1: Default Frame Structure

DL/UL ratio	Timeslot or Subframe number									
	0	1	2	3	4	5	6	7	8	9
3:1	D	S	U	D	D	D	S	U	D	D

4. Conditions for using the Restrictive Block Edge Masks

- (1) Other Frame Structure— the technical conditions for Restrictive Block Edge Mask set out in Section 2 shall apply where a Licensee’s Base Station complies with the Other Frame Structure as outlined below:
 - (a) All frame configurations that are not compatible with the Default Frame Structure are permitted;
 - (b) Licensees shall co-operate to minimise Harmful Interference caused by sub-

frame overlaps if different technologies are used; and

(c) Licensees using the Restrictive Block Edge Mask shall not cause Harmful Interference to those Licensees' networks that use the Default Frame Structure (or equivalent). Achieving this may include applying internal guard bands and/or reduced in block power levels in blocks adjacent to those Licensees' networks that use the Default Frame Structure (or equivalent).

5. Indoor Small Cells

(1) Indoor Small Cells are exempted from synchronisation. The Permissive Block Edge Mask set out in Section 2 applies to such Indoor Small Cells on the condition that they do not cause Harmful Interference to any other Licensees.