Commission for
Communications Regulation

Licensing of Telemetry Systems in the VHF and UHF Spectrum Bands
Guidelines for Applicants

Guidelines

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1 Introduction

1. In Consultation Document 11/94[1], the Commission for Communications Regulation ("ComReg") proposed to introduce a new licensing scheme for scanning telemetry and telecontrol systems in the VHF and UHF frequency bands. In Consultation Document 13/13[2], ComReg amended some of the proposed frequency arrangements set out in Consultation Document 11/94, in order to protect existing users in the particular bands and consulted further on same. Finally, ComReg Document 13/77[3] set out ComReg's final position on the proposed new telemetry licensing scheme.

2. Following the completion of its consultation process, ComReg has introduced a new licensing scheme for telemetry systems under the Wireless Telegraphy (Licensing of Telemetry Systems) Regulations 2014, S.I. 240 of 2014.

3. A telemetry system is a wireless telegraphy system by which automated measurements are made and other data collected at remote or inaccessible locations, and transmitted to receiving stations for monitoring, recording or remote control purposes. These systems are primarily used by organisations such as utility and industrial companies, where continuous monitoring of operations and control of equipment at multiple locations is necessary to ensure the proper function of processes and equipment. However, the new licensing scheme does not cover smart metering applications.

4. These guidelines provide information to interested parties on ComReg's telemetry licensing scheme. Among other things, these guidelines provide information on:

    - licence types available;
    - technical licensing requirements;
    - licence application procedures; and
    - the applicable fees for each licence type.

[1] Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals.
[2] Response to Consultation and Further Consultation: Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals.
[3] The Introduction of a Licensing Framework for VHF and UHF Telemetry Systems, Changes to Current Frequency Assignments and Spectrum Release Proposals.

5. ComReg advises potential applicants to read these guidelines carefully if they intend to submit a telemetry licence application to ComReg. Queries regarding these guidelines or on the licensing scheme generally can be directed to ComReg's Licensing Operations Team: via telephone to 01 8049600, or via e-mail to licensing@comreg.ie.

6. ComReg may revise these guidelines from time to time, as required. Any such revision will be published on its website.

2 Technical Licensing Requirements

7. The following four types of telemetry licences are available under the telemetry licensing scheme:

    - On-site Licence;
    - Local Area Licence;
    - Wide Area Licence; and
    - National Telemetry Licence.

8. An on-site telemetry system, for which an On-site Licence is required, is defined as a low power system with a maximum permitted ERP level of 1 W. Only systems for which the transmitter and receiver are on the same site (e.g. a premises, compound or complex) are considered to be on-site systems.

9. A local area telemetry system, for which a Local Area Licence is required, is defined as a system which has a coverage area greater than 1 km radius but less than 12.5 km radius from the base station.

10. A wide area telemetry system, for which a Wide Area Licence is required, is defined as a system that has a coverage area requirement greater than 12.5 km and less than 25 km radius from the base station.

11. A national telemetry system, for which a National Telemetry Licence is required, is defined as a system that has national coverage to enable operators, predominantly utility companies (i.e. gas, electricity and water), with sites distributed across the State, to control and monitor their network infrastructure. Such national networks require higher power levels and often include repeater stations which are required to overcome terrain, buildings and other obstacles that may obstruct links to remote sites.

12. The main attributes of each licence category is listed in Table 1 below :

Licence Type:	On-Site licence	Local Area Licences	Wide Area Licences	National licence
Coverage area:	Coverage area up to 1 kilometre radius from the central nominated location.	Coverage area up to 12.5 kilometre radius from the central nominated location.	Coverage area up to 25 kilometre radius from the central nominated location.	Nationwide
Maximum power level:	Determined on a case-by-case basis.	Determined on a case-by-case basis.	Determined on a case-by-case basis.	Maximum transmit power level of 50 Watts ERP.
Channel bandwidth:	2 × 12.5 kHz.	2 × 12.5 kHz.	2 × 12.5 kHz.	2 × 12.5 kHz.
Maximum antenna height applicable to all stations:	Determined on a case-by-case basis.	Determined on a case-by-case basis.	Determined on a case-by-case basis.	Determined on a case-by-case basis.
Repeater stations within maximum coverage area:	Permitted.	Permitted.	Permitted.	Permitted.

Table 1: Technical features of each licence category

2.1 Frequency Allocations

13. The frequency allocations for all licence types can be found in Annex: 1. The cellular frequency plan for national licences can be found in Annex 2. The National Irish Grid Reference coordinates for the centre of each cell are shown in Annex 3.

14. The channel plan for National Telemetry Licences set out in Annex 1 is designed to be adaptable and flexible. There are 72 duplex channels available for national telemetry licences. This spectrum is broken down into six national spectrum blocks, each with twelve exclusive cell frequencies (i.e. Cell Frequencies A-M) assigned to it using the twelve cell re-use pattern of the adaptive cellular plan. Licensees may use their assigned frequencies outside of the assigned cells but only where it can be shown that interference will not be caused to other users.

15. Each successful applicant for a National Telemetry Licence will be assigned a block of twelve channels that must be used in line with the cellular reuse pattern detailed in Annex 2.

16. Spectrum blocks 5 and 6 are currently not available but may be made available for telemetry systems at a later date, pending demand and the migration of existing licensed users. See section 2.2 for further details.

17. To ensure the efficient use of spectrum subject to National Telemetry Licences, no licensee will be granted rights of use to more than two blocks of spectrum. Furthermore, applicants for more than one national licence will be required to satisfactorily demonstrate to ComReg the need for the additional spectrum requested.

2.2 Migration of Existing Telemetry Systems

18. Over the next three years, ComReg will migrate all existing telemetry systems that are licensed under current Business Radio and Point-to-Point licensing regimes to the telemetry spectrum allocation range covered by the new telemetry licensing scheme.

19. This will, in due course, involve the revocation of existing licences and the grant of new licences under the scheme. Alternative frequency assignments within the new telemetry spectrum allocation range will be assigned during this migration process in such a manner as to minimise system disruption. For example, if a current system has a VHF spectrum assignment then ComReg will, through a new telemetry licence, assign a VHF channel in the appropriate spectrum range reserved for the particular telemetry licence type.

2.3 Technical Licence Conditions

20. The main technical telemetry licence conditions are set out below. However, licensees must also ensure that they comply with all licence conditions set out in the Regulations, as may be further elucidated in this document and in the licence itself.

21. Equipment covered under all classes of licence must adhere to the limits set down in the guidelines published by International Commission for Non-Ionising Radiation Protection.

22. The licensee will implement technical conditions as outlined in this document, the ETSI standards EN 300 113-2[4] and EN 300 086-2[5]

23. The licensee shall ensure that all licensed apparatus complies with the required harmonised standard under the R&TTE Directive.

2.4 Licence exempt spectrum

24. Some frequencies in the VHF and UHF spectrum bands are licence exempted for non specific short range devices including for telemetry operation. Please see ComReg's National Table of Frequency Allocations[6] as well as the ComReg Short Range Devices (SRD) document[7] for further information and maximum permitted ERP.

[4] EN 300 113-2 : "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 2:Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive".

[5] EN 300 086-2 : Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive-V1.3.1

[6] ComReg's National Table of Frequency Allocations set out in ComReg 13/118 (as amended).
[7] ComReg's Permitted Short Range Device Document set out in ComReg 02/71 (as amended).

3 Licence Information

25. Unless ComReg indicates otherwise, all valid applications for a telemetry licence will be evaluated on a “first come, first served” basis.

26. ComReg will endeavour to accommodate the needs of all applicants. However, ComReg cannot guarantee that licences will be granted or that licences will be granted in the requested frequency band or channel.

27. All channel assignments, other than channels reserved for National Telemetry Licences, will be exclusive for a given geographical area. This is the same method that ComReg currently uses when assigning business radio spectrum to operators. In the event that demand exceeds supply for a particular geographic area, the drawing of lots to assign available frequencies will be implemented.

28. Applicants are required to submit the location coordinates of all proposed base stations as part of their application.

29. For On-site, Local and Wide Area systems base stations, details must be submitted at the application stage. If additional stations (excluding receive-only stations) are to be added to the system at a later date a licence amendment must be requested (See Section 3.3 below).

30. For National Telemetry Licences, information regarding base stations should be submitted at the application stage. A complete listing of all stations and coordinates must be submitted by a licensee on each anniversary of the commencement of its license, or at such greater frequency as may be specified by ComReg.

31. Subject to confidentiality, any information relating to licensed telemetry systems may be published on the ComReg website from time to time.

3.1 Licence Duration

32. All licences will be issued for a maximum period of 10 years on a first come, first served basis. All licences, upon reaching their expiry date, will expire immediately and in full and will not be renewed or extended while all associated spectrum rights of use shall likewise expire.

3.2 Annual Licence Fees

33. The application fee and the annual fees associated with telemetry licences are set down in, and are payable in accordance with, the Regulations. The fee structure for the four categories of telemetry licences for the first 12 months of the licence is listed in the Table 2 below.

Telemetry Licence Type	Number of 2 × 12.5 kHz Channels[8] Assigned in a Licence	Annual Licence Fee (to be adjusted for CPI)
On-site	1	€109
Local-area	1	€436
Wide-area	1	€872
National	12	€39,240 (per 12 channel block)

Table 2: Fees for Telemetry Licences

3.3 Amendments to a Licence

34. In accordance with the Regulations, it is the responsibility of the licensee to inform ComReg of any changes to the information provided by the licensee in respect of its licence, either at the time of application or during the term of the licence, as soon as they occur.

35. ComReg will assess any application for a licence amendment in accordance with its statutory functions, objectives and duties including, in particular, the objective of promoting competition and encouraging the efficient use and ensuring the effective management of radio frequencies.

36. A licence amendment is required when the details on the licence are no longer correct and therefore need to be updated or where the licensee wishes to amend the details of the network/service covered by the licence, for example, when:

    - the address of the licensee has changed; or

[8] The fees are based on a duplex 12.5 kHz channel (2 × 12.5 kHz). If a 2 × 25 kHz channel is required then two adjacent 12.5 kHz channels may be aggregated. In such cases the fee charged will be as if two separate 12.5 kHz channels were assigned.

- the technical characteristics of the licence need to be amended in order to facilitate the addition of stations.

3.4 Cancellation of a Licence

37. A licence may be cancelled at the written request of the licensee. However, there shall be no entitlement to any refund of licence fees in the event of any such cancellation and licence fees which had fallen due at the time of such request remain payable by the licensee.

Annex: 1

A 1.1 List of Channels for National Telemetry Licences

Cell	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6	
	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz
	Base	*Outstation*	*Base*	*Outstation*	*Base*	*Outstation*	*Base*	*Outstation*	*Base*	*Outstation*	*Base*	*Outstation*
A	457.64375	463.14375	458.20625	463.70625	458.23125	463.73125	456.99375	462.49375	457.24375	462.74375	458.40625	463.90625
B	457.75625	463.25625	457.00625	462.50625	457.25625	462.75625	457.46875	462.96875	458.31250	462.81250	458.35625	463.85625
C	457.85625	463.35625	457.99375	463.49375	458.11875	463.61875	457.01875	462.51875	457.26875	462.76875	458.44375	463.94375
D	457.65625	463.15625	457.69375	463.19375	458.10625	463.60625	458.13125	463.63125	457.03125	462.53125	457.39375	462.89375
E	457.83125	463.33125	457.86875	463.36875	457.95625	463.45625	457.04375	462.54375	458.29375	463.79375	458.31875	463.81875
F	458.00625	463.50625	458.24375	463.74375	457.05625	462.55625	457.40625	462.90625	457.48125	462.98125	458.26875	463.76875
G	457.61875	463.11875	457.63125	463.13125	457.73125	463.23125	458.39375	463.89375	457.09375	462.59375	458.36875	463.86875
H	457.60625	463.10625	457.91875	463.41875	457.96875	463.46875	458.25625	463.75625	457.10625	462.60625	458.28125	463.78125
J	457.84375	463.34375	458.14375	463.64375	458.16875	463.66875	457.11875	462.61875	457.41875	462.91875	458.45625	463.95625
K	457.98125	463.48125	458.21875	463.71875	457.18125	462.68125	457.43125	462.93125	457.90625	463.40625	458.33750	463.83750
L	457.59375	463.09375	457.19375	462.69375	457.44375	462.94375	457.74375	463.24375	458.34375	463.84375	458.38125	463.88125
M	458.15625	463.65625	457.23125	462.73125	457.28125	462.78125	457.45625	462.95625	457.49375	462.99375	458.46875	463.96875

Reserve[9]	
MHz	MHz
Base	*Outstation*
458.493750	463.993750
458.48125	463.98125

Irish Channels Not aligned with UK

Future Release Channel not aligned with UK

Future Release Channel aligned with UK

Table 3: Cell Frequencies for National Telemetry Licences

[9] Reserve channels may be made available in instances where co-ordination issues arise.

A 1.2 List of Channels for Non-national Telemetry Licences

Channel number (VHF)	Sub-channel centre frequency (MHz)	Sub-channel centre frequency (MHz)	Channel type Duplex (kHz)
1	165.2563	170.0625	2 x 12.5
2	165.2688	170.0750	2 x 12.5
3	165.2813	170.0875	2 x 12.5
4	165.3188	170.1250	2 x 12.5
5	165.3313	170.1375	2 x 12.5
6	165.3813	170.1875	2 x 12.5
7	165.3938	170.2000	2 x 12.5
8	165.4063	170.2125	2 x 12.5
9	165.4188	170.2250	2 x 12.5
10	165.4313	170.2375	2 x 12.5
11	165.4438	170.2500	2 x 12.5
12	165.4563	170.2625	2 x 12.5
13	165.4688	170.2750	2 x 12.5
14	165.4813	170.2875	2 x 12.5
15	165.4938	170.3000	2 x 12.5

Table 4: VHF On-site, Local Area and Wide Area Telemetry Channel Assignments

Channel Number (UHF)	Sub-channel Centre Frequency (MHz)	Sub-channel Centre Frequency (MHz)	Channel type Duplex (kHz)
1	455.5500	469.5500	2 x 12.5
2	455.5625	469.5625	2 x 12.5
3	455.5750	469.5750	2 x 12.5
4	455.5875	469.5875	2 x 12.5
5	455.6000	469.6000	2 x 12.5
6	455.6125	469.6125	2 x 12.5
7	455.6250	469.6250	2 x 12.5
8	455.6375	469.6375	2 x 12.5
9	455.6500	469.6500	2 x 12.5
10	455.6625	469.6625	2 x 12.5
11	455.6750	469.6750	2 x 12.5
12	455.6875	469.6875	2 x 12.5
13	455.7000	469.7000	2 x 12.5
14	455.7125	469.7125	2 x 12.5
15	455.7250	469.7250	2 x 12.5
16	455.7375	469.7375	2 x 12.5
17	455.7500	469.7500	2 x 12.5
18	455.7625	469.7625	2 x 12.5
19	455.7750	469.7750	2 x 12.5
20	455.7875	469.7875	2 x 12.5
21	455.8000	469.8000	2 x 12.5
22	455.8125	469.8125	2 x 12.5
23	455.8250	469.8250	2 x 12.5
24	455.8375	469.8375	2 x 12.5

Table 5: UHF On-site, Local Area and Wide Area Telemetry Channel Assignments

Annex: 2 Cellular Structure of National Frequency Plan

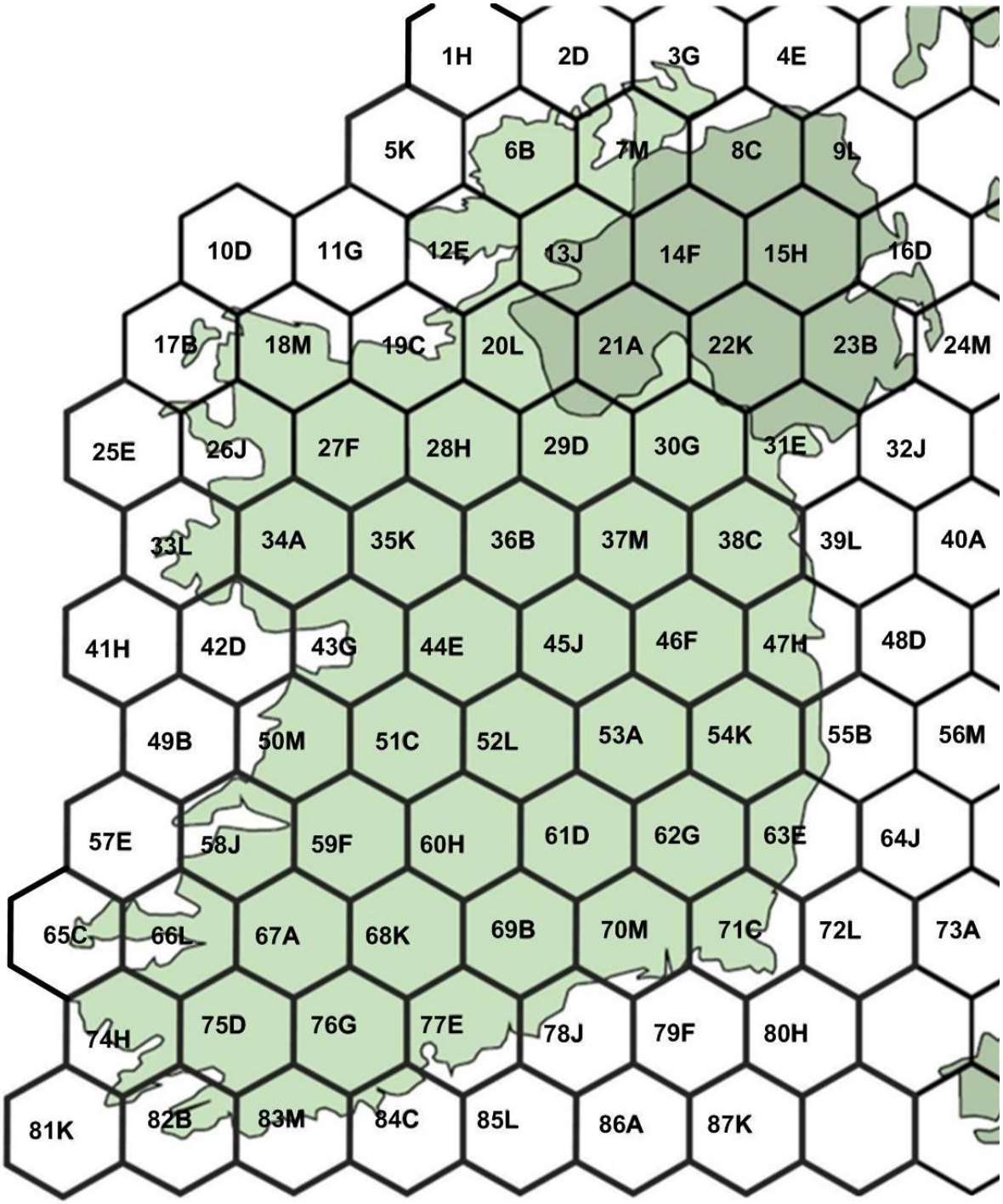

Figure 1: The National Licence Cellular Frequency Plan

Annex: 3 National Telemetry Cell-centre Co-ordinates

Cell Centre Coordinates in National Irish Grid Reference (NIGR)

Cell Number	Lattice Reference on the map (using 12 cell frequency reuse cluster)	Coordinates	
		Easting	Northing
1	1H	167340	449594
2	2D	210618	452660
3	3G	253914	456158
4	4E	297242	459918
5	5K	147749	410692
6	6B	191587	413584
7	7M	235138	416550
8	8C	278612	420186
9	9L	322270	424273
10	10D	83461	369356
11	11G	127516	371360
12	12E	171841	373980
13	13J	215933	377099
14	14F	260047	380657
15	15H	304034	384383
16	16D	347845	388864
17	17B	62823	330576
18	18M	107520	332397
19	19C	151982	334895
20	20L	196559	337750
21	21A	241088	340866
22	22K	285368	344652
23	23B	329582	348866
24	24M	373915	353357
25	25E	41861	291717
26	26J	86940	293596
27	27F	131794	295817
28	28H	176859	298315
29	29D	221602	301399
30	30G	266361	305005
31	31E	310985	308863
32	32J	355624	313246
33	33L	65869	254627
34	34A	111375	256578
35	35K	156824	259054
36	36B	202042	261951
37	37M	247059	265299
38	38C	292204	269127
39	39L	337143	273398
40	40A	382035	277936
41	41H	44397	215327
42	42D	90455	217422
43	43G	136112	219859
44	44E	181713	222645

Cell Number	Lattice Reference on the map (using 12 cell frequency reuse cluster)	Coordinates	
		Easting	Northing
45	45J	227348	225792
46	46F	272830	229448
47	47H	318357	233300
48	48D	363529	237894
49	49B	69128	178103
50	50M	115168	180510
51	51C	161330	183194
52	52L	207348	186232
53	53A	253481	189719
54	54K	299036	193519
55	55B	344695	197848
56	56M	390210	202521
57	57E	47439	139712
58	58J	94051	141591
59	59F	140262	143811
60	60H	186847	146661
61	61D	233096	150103
62	62G	279285	153898
63	63E	325681	158071
64	64J	371436	162290
65	65C	25539	100831
66	66L	72706	102686
67	67A	119643	104894
68	68K	166252	107616
69	69B	212731	110518
70	70M	259566	114224
71	71C	306184	118109
72	72L	352642	122507
73	73A	398877	127160
74	74H	50417	63762
75	75D	97995	66031
76	76G	145162	68565
77	77E	192103	71359
78	78J	239166	74609
79	79F	286086	78210
80	80H	333386	82374
81	81K	28687	25381
82	82B	76472	27281
83	83M	123762	29350
84	84C	171506	32397
85	85L	218953	35369
86	86A	266367	38537
87	87K	313593	42554

Table 6: National Cell-centre Co-ordinates and Numbers