An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

# 2026 Programme of Measurement of Non-Ionising Radiation

## First Interim Report

**Interim Report**

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**An Coimisiún um Rialáil Cumarsáide**
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## Additional Information

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# 1 Introduction

1. The Commission for Communications Regulation ("ComReg") is the national authority responsible for the management of Ireland's *radio frequency spectrum*[1]. Radio spectrum is used to support a wide range of applications and electronic communications services, such as radio and television broadcasting, mobile telephony, emergency services communications, and wireless broadband.

2. It is a condition of various *Wireless Telegraphy licences* issued by ComReg that licensees must ensure that *non-ionising radiation ("NIR")* emissions from each transmitter operated under the licence must be within the limits set down in the guidelines published by the *International Commission on Non-Ionizing Radiation Protection ("ICNIRP")* ("ICNIRP Exposure Limits")[2]. Levels of NIR emissions from a licensed transmitter must not exceed the ICNIRP Exposure Limits in any part of the site or surrounding area to which the general public has access. This is also a condition of a *General Authorisation* for the provision of an electronic communications network ("ECN") and/or service ("ECS").

3. To assess compliance with the ICNIRP Exposure Limits, ComReg conducts a "Programme of Measurement of Non-Ionising Radiation" ("Programme of Measurement"), under which NIR surveys are conducted in proximity to a sample number of licensed transmitter sites nationwide each year. Each survey involves measurement of NIR levels at the point of highest exposure (in a public area) associated with the relevant transmitter.

4. This report is one of an ongoing series of interim reports which outline ComReg's Programme of Measurements and summarises the results of the first set of site surveys (20 sites) undertaken during the 2026 programme. These surveys were conducted in August 2026 by Compliance Engineering Ireland Ltd., which was contracted by ComReg to assist it with the Programme of Measurement.

[1] See the Appendix for explanatory notes on the items highlighted in Italics.
[2] Note that these measurements were conducted using the 2020 ICNIRP Guidelines.

# 2 Sites Survey and Summary of Measurement Results

## 2.1 Sites surveyed in August 2026

| | County/City | Address | Site Ids | Site within 50m |
|---|---|---|---|---|
| 1. | Carlow | O Brien Road Carlow | EIR_CW_3653 | CL0074 / CW_3653 / CW005 |
| 2. | Dublin City | Wellington Court | EIR_DN_1034 | DN_1034 / DN175 / DU1031 |
| 3. | Dublin City | Amiens Street | EIR_DN_1093 | DN_1093 / DU1435 / DX222 |
| 4. | Dublin City | Rossmore Drive Chapelizod | EIR_DN_1032 | DN_1032 / DN164 / DU1078 |
| 5. | Dublin City | Sandymount Hotel | EIR_DN_3280 | DN_3280 / DN280 / DU1026 |
| 6. | Dublin City | Military Road | EIR_DN_1464 | DN_1464 / DN_1862 / DX014 |
| 7. | Fingal | ESB Glasmore | EIR_DN_1669 | DN_1669 / DN434 / DU1793 |
| 8. | Fingal | Castleknock Tennis Club | EIR_DN_1087 | DN_1087 / DN585 / DU1521 |
| 9. | Fingal | Bayside Shopping Centre | EIR_DN_1175 | DN_1175 / DN744 / DU1688 |
| 10. | Fingal | Kettles Lane | EIR_DN_3568 | DN_3568 / DN792 / DU1104 |
| 11. | Fingal | Skerries Train Station | EIR_DN_1614 | DN_1614 / DN629 / DU0861 |
| 12. | Kikenny | Callan Water Tower | EIR_KK_4455 | KK_4455 / KK0100 / KK052 |
| 13. | Kikenny | Ormonde St Car Park | EIR_KK_2028 | KK_2028 / KK0005 / KK113 |
| 14. | Kikenny | Freshford | EIR_KK_1882 | KK_1882 / KK0135 / KK025 |
| 15 | Kikenny | Loughboy Kilkenny | EIR_KK_1515 | KK_1515 / KK0095 / KK109 |

| | | | | |
|---|---|---|---|---|
| 16 | Louth | Malones Terrace Ardee | EIR_LH_1617 | LH_1617 / LH103 / LO0143 |
| 17 | Louth | Carlingford Garda Station | EIR_LH_4576 | LH_4576 / LH078 / LO0089 |
| 18 | Meath | Supervalu Ratoath | EIR_ MH_4239 | MH_4239 / MHRAT / MT0225 |
| 19 | Meath | Slane Garda Station | EIR_MH_1980 | MH_1980 / MH045 / MT0178 |
| 20 | Meath | Knightsbrook Trim | EIR_ MH_1609 | MH_1609 / MH117 / MT0210 |

## 2.2 Summary of Measurement Results

5. At each of the 20 sites surveyed, *the aggregate level of Non-Ionising Radiation* measured was found to fall below the ICNIRP Exposure Limits for the general public.

## 2.3 View Individual Site Survey Reports

6. Further details of the measurements and how they were conducted are set out in separate survey reports for each site. Copies of the reports are available on Site viewer (http://siteviewer.comreg.ie), an on-line facility provided by ComReg, which shows the locations of GSM, UMTS (3G), LTE (4G) and NR (5G) mobile phone base stations throughout Ireland on a map.

# Appendix 1: Explanatory Notes

## Note 1: Radio Frequency Spectrum

A 1.1 In physics the radio frequency spectrum is commonly defined as that part of the *electromagnetic spectrum* at frequencies between 3 kHz and 300 GHz. In the context of radiocommunications, the International Telecommunications Union ("ITU") characterises the radio spectrum as the part of the electromagnetic spectrum at frequencies lower than 3 000 GHz[3].

A 1.2 Radio spectrum is used to support a wide range of applications and electronic communications services, such as radio and television broadcasting, mobile telephony, emergency services communications and wireless broadband.

A 1.3 Radio technologies use electromagnetic waves to send information in free space. Many different radio applications can be used at the same time by employing waves of different *frequency*.

A 1.4 Radio spectrum is divided into "bands" (i.e. ranges of frequencies) and different applications use different bands. For example:

- terrestrial TV broadcasting networks (e.g. Saorview) transmit in the frequency range 470 - 790 MHz;
- mobile phone networks in the 700, 800, 900, 1800, 2100 MHz bands[4];
- domestic cordless phones in the range 1880 – 1900 MHz;
- Wi-Fi in the frequency range 2400 – 2483.5 MHz (and also 5150 – 5350 MHz and 5470 – 5725 MHz);
- while satellite communications tend to use even higher frequencies.

A 1.5 See Figure below.

[3] No. 1.5 of Article 1 of the Radio Regulations, Edition of 2016, International Telecommunications Union
[4] 700 Band: 758 – 788 MHz downlink, 703 – 733 MHz uplink
800 band: 791 – 821 MHz downlink, 832 – 862 MHz uplink
900 band: 880 – 915 MHz uplink, 925 – 960 MHz downlink
1800 band: 1700 – 1785 MHz uplink, 1805 – 1880 MHz downlink
2100 band: 1920 – 1980 MHz uplink, 2110 – 2170 MHz downlink

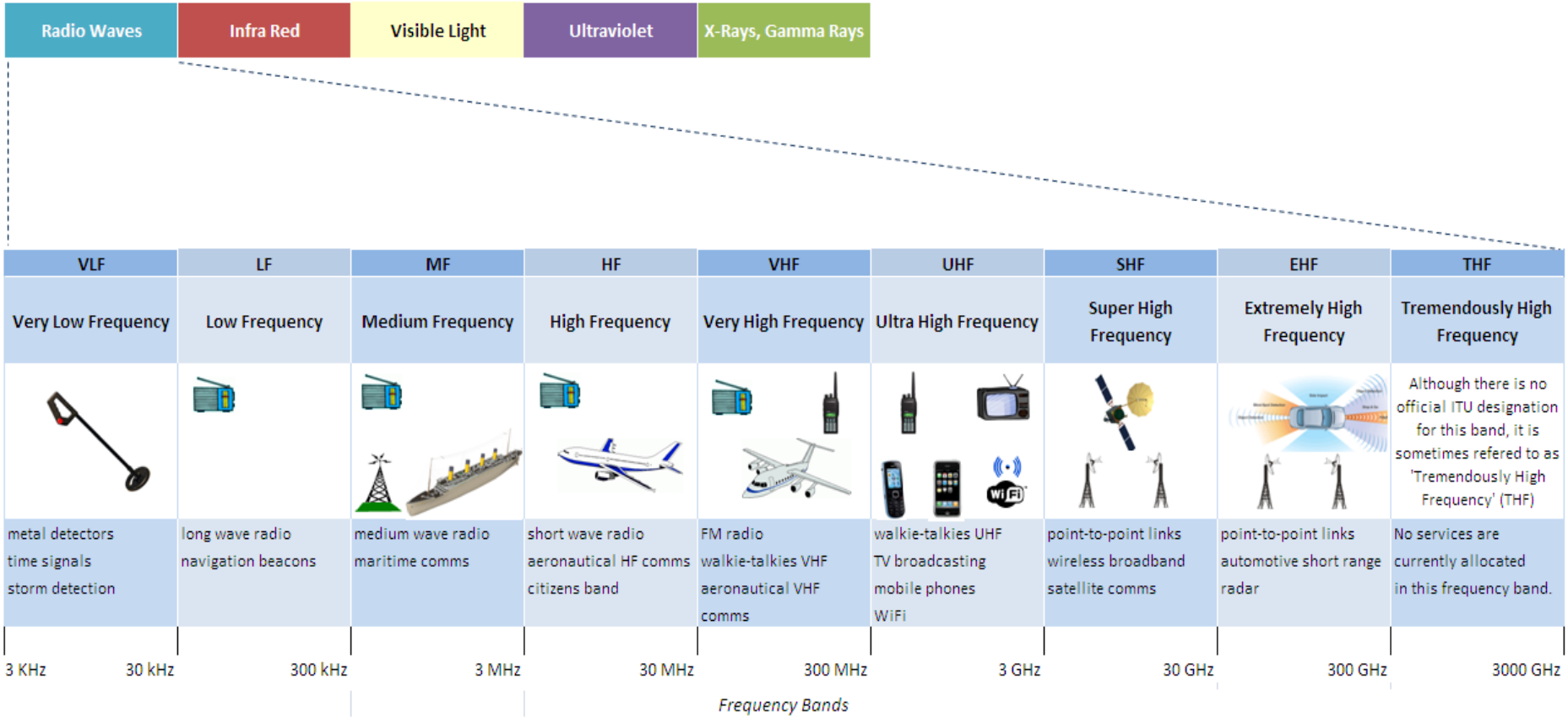


*Figure 1: The Radio Frequency Spectrum (not to scale)*[5]

[5] Subdivision of radio spectrum as per No. 2.1 of Article 2 of the Radio Regulations, Edition of 2016, International Telecommunications Union (IT

## Note 2: Wireless Telegraphy Licences

A 1.6 ComReg is the authority charged with the authorisation of radio equipment in Ireland, except for Ships Radio. ComReg has set down specific rules and regulations for the possession and use of many forms of radio equipment. These regulations can specify the licensing regime or exempt certain radio equipment from licensing.

A 1.7 The possession and use of radio equipment in Ireland is governed by the Wireless Telegraphy Act 1926 (Act No 45 of 1926) (as amended), which requires that an appropriate Wireless Telegraphy licence must be held, unless a licence-exemption applies. ComReg licenses, among other things, wireless systems, such as mobile phone and wireless broadband networks, emergency services communications, satellite earth stations, point-to-point links and television and radio broadcasting.

## Note 3: Non-Ionising Radiation

A 1.8 Radio waves and microwaves used for wireless telecommunications are a form of non-ionising radiation. This radiation is characterised by energy per photon less than approximately 12 eV, wavelengths greater than 100 nm, or frequencies lower than $3 \times 10^{15}$ Hz.

A 1.9 It includes all radiations and fields of the electromagnetic spectrum that do not normally have sufficient energy to produce ionisation in matter and have sufficient energy only for excitation. As such, it does not break bonds that hold molecules in cells together.

A 1.10 According to ICNIRP, the known biological effects at very high radiation intensity are, depending on frequency, heating, burns, accumulation of charge on body surface and disturbance of nerve responses and muscle stimulation.

## Note 4: International Commission on Non-Ionizing Radiation Protection (ICNIRP)

A 1.11 ICNIRP[6] is a non-governmental organisation formally recognised by the World Health Organisation. It is an independent body of scientific experts in fields relating

[6] For further information see www.icnirp.org.

to NIR, such as medicine, dermatology, ophthalmology, epidemiology, biology, photobiology, physiology, physics, electrical engineering and dosimetry.

A 1.12 ICNIRP provides guidance and recommendations on protection from exposure to NIR. The ICNIRP Exposure Limits were developed following reviews of peer-reviewed scientific literature, including thermal and non-thermal effects, and are based on evaluations of biological effects that have been established to have health consequences.

A 1.13 ICNIRP has defined two separate sets of guideline exposure limits for occupational and general public exposure:

**(1) Occupational Exposure**

The occupationally exposed population consists of adults who are generally exposed under known conditions and are trained to be aware of potential risk and to take appropriate precautions (e.g. telecommunications engineers working on a transmitter).

**(2) General Public Exposure**

The general public comprises individuals of all ages and of varying health status which might increase the variability of the individual susceptibilities. In many cases, members of the public are unaware of their exposure to electromagnetic fields. Moreover, individual members of the public cannot reasonably be expected to take precautions to minimise or avoid exposure. Therefore, ICNIRP advises more stringent exposure restrictions for the public than for the occupationally exposed population.

A 1.14 The ICNIRP Exposure Limits are set out in two documents:

*"Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz)"*, ICNIRP, published in Health Physics 118(5): 483-524; 2020.
https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf

*and*

*"Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz - 100 kHz)"*, ICNIRP, published in Health Physics 99(6):818-836; 2010.
https://www.icnirp.org/cms/upload/publications/ICNIRPLFgdl.pdf

## Note 5: General Authorisation

A 1.15 Under European and national law any person intending to provide an electronic communications network or service shall, before doing so, notify the relevant national authority (ComReg in Ireland) of their intention to provide such a network/service.

A 1.16 A person is deemed to be authorised to provide an electronic communications network or service once a completed notification has been received by ComReg. There may also be a requirement to hold a Wireless Telegraphy Licence depending on the service provided and equipment used to provide same. Persons holding an authorisation are subject to the conditions set out in a General Authorisation, one of which stipulates that the Authorised Person shall comply with any radiation emission standards adopted and published by ICNIRP.

## Note 6: Aggregate Level of Non-Ionising Radiation

A 1.17 At any measurement location it is most likely that numerous signals transmitted on different frequencies will be detectable. For example, the overall electromagnetic field may comprise contributions on many frequencies (e.g. multiple signals from several different mobile operators with antennas on the same mast) from the adjacent transmitter site and also secondary contributions from more distant transmitters (e.g. adjacent cell mobile base stations, TV transmitters serving the area etc.).

A 1.18 ICNIRP has specified a means of assessing situations of simultaneous exposure to fields of different frequencies. Where applicable, additivity is examined separately for the effects of electrical stimulation effects (relevant up to 100 kHz) and thermal considerations (relevant above 100 kHz). The ICNIRP Guideline documents set out in detail how simultaneous exposure to multiple frequency fields is assessed.

## Note 7: The Electromagnetic Spectrum

A 1.19 The electromagnetic spectrum is the range of all possible frequencies of electromagnetic radiation. It extends from radio waves at lower frequencies, through microwaves and visible light (a very small part of the spectrum) all the way to the extremely high frequency gamma rays that are a product of radioactive atoms. The electromagnetic spectrum contains both non-ionising and ionising radiation as shown in Figure 2.

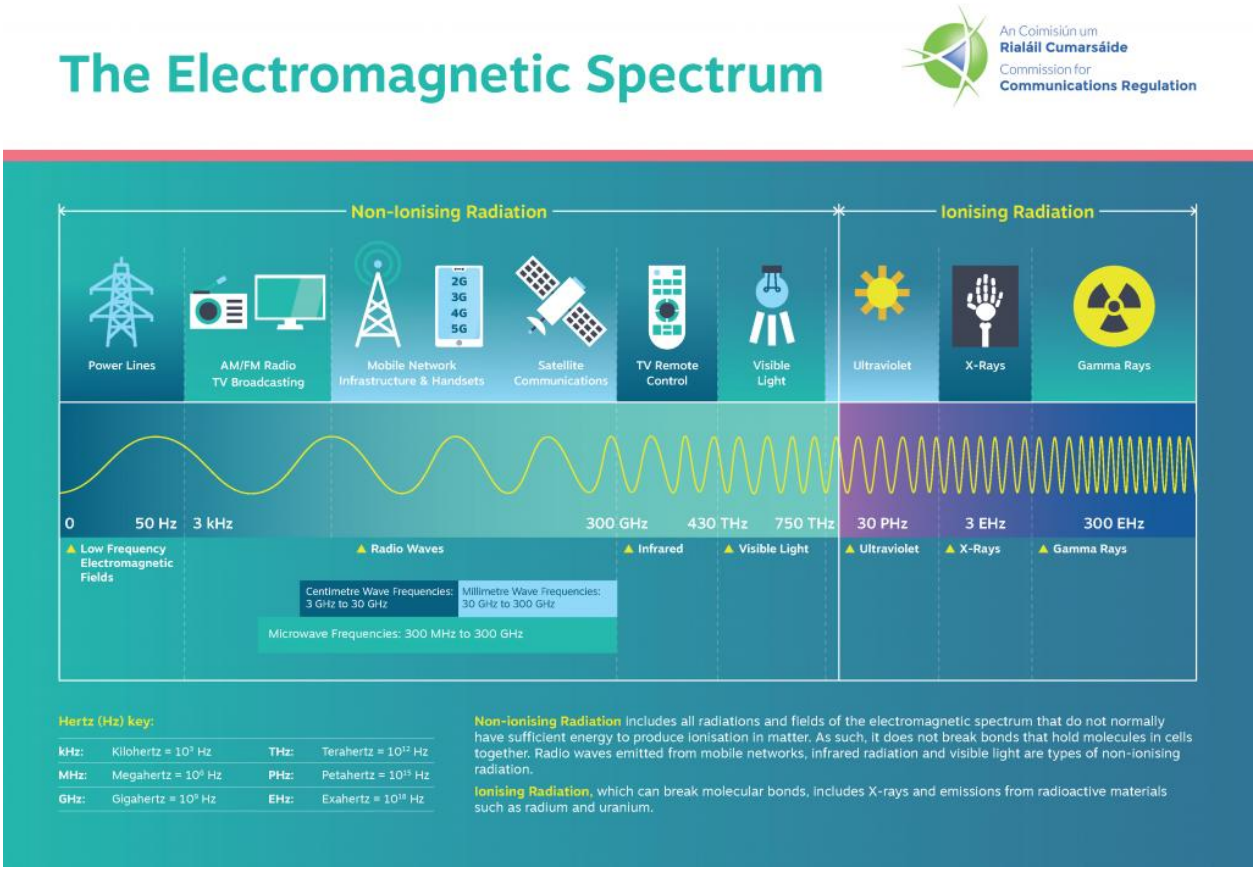


*Figure 2: The Electromagnetic Spectrum*

## Note 8: Frequency

The frequency of an electromagnetic wave is the number of cycles it repeats in one second. It is expressed in Hertz (Hz) or a multiple of Hertz, e.g. kHz (kilohertz - 1,000 Hertz), MHz (megahertz - 1,000,000 Hertz) or GHz (gigahertz - 1,000,000,000 Hertz).