



Commission for
Communications Regulation

Spectrum Compliance

Annual Report 2015 – 2016

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1 Glossary

CEPT – The European Conference of Postal and Telecommunications Administrations

DECT – Digital Enhanced Cordless Telecommunications

DSL – Digital Subscriber Line

FSS – Fixed Satellite Services

MSS – Mobile Satellite Services

PMR – Private Mobile Radio

SRD – Short Range Device

2 Introduction

ComReg is responsible for ensuring compliance with wireless telegraphy legislation and the Electromagnetic Compatibility (EMC) and Radio Equipment Directives in the State¹ and enforcing same as required.

While this is a diverse area, some of the key issues that arise are:

- Investigation of radio interference to safety-of-life services such as emergency services and air traffic control
- Investigation of radio interference to licensed operators
- Market surveillance including seizure of non-compliant equipment via Customs
- Random surveys of transmission sites for non-ionising radiation as part of licence conditions
- Enforcement action, including executing search warrants, and subsequent prosecutions targeting suppliers of non-compliant equipment which can cause harmful interference² and unlicensed broadcasters

This is the first year that ComReg has published an Annual Report in respect of Spectrum Compliance activities and it is hoped that this report will highlight the work undertaken in this area. ComReg welcomes observations from interested third parties on the content of this report.

¹ ComReg has various powers under the below legislation that allow it to complete this function:

- Wireless Telegraphy Acts 1926 to 2009, as amended
- Broadcasting and Wireless Telegraphy Act 1988, as amended
- Communications Regulation Acts 2002 to 2011, as amended
- EU Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93.

² *Interference* which endangers the functioning of a *Radionavigation service* or of other *safety services* or seriously degrades, obstructs, or repeatedly interrupts a *Radiocommunications service* operating in accordance with these Regulations

3 Statistics

3.1 Radio Interference Investigations

In the period from July 2015 to June 2016 Spectrum Compliance received 131 reports of harmful interference to radio services. This is a 24.8% increase over the previous period.

The reports received in the 2015 to 2016 period can be broken down³ as follows:

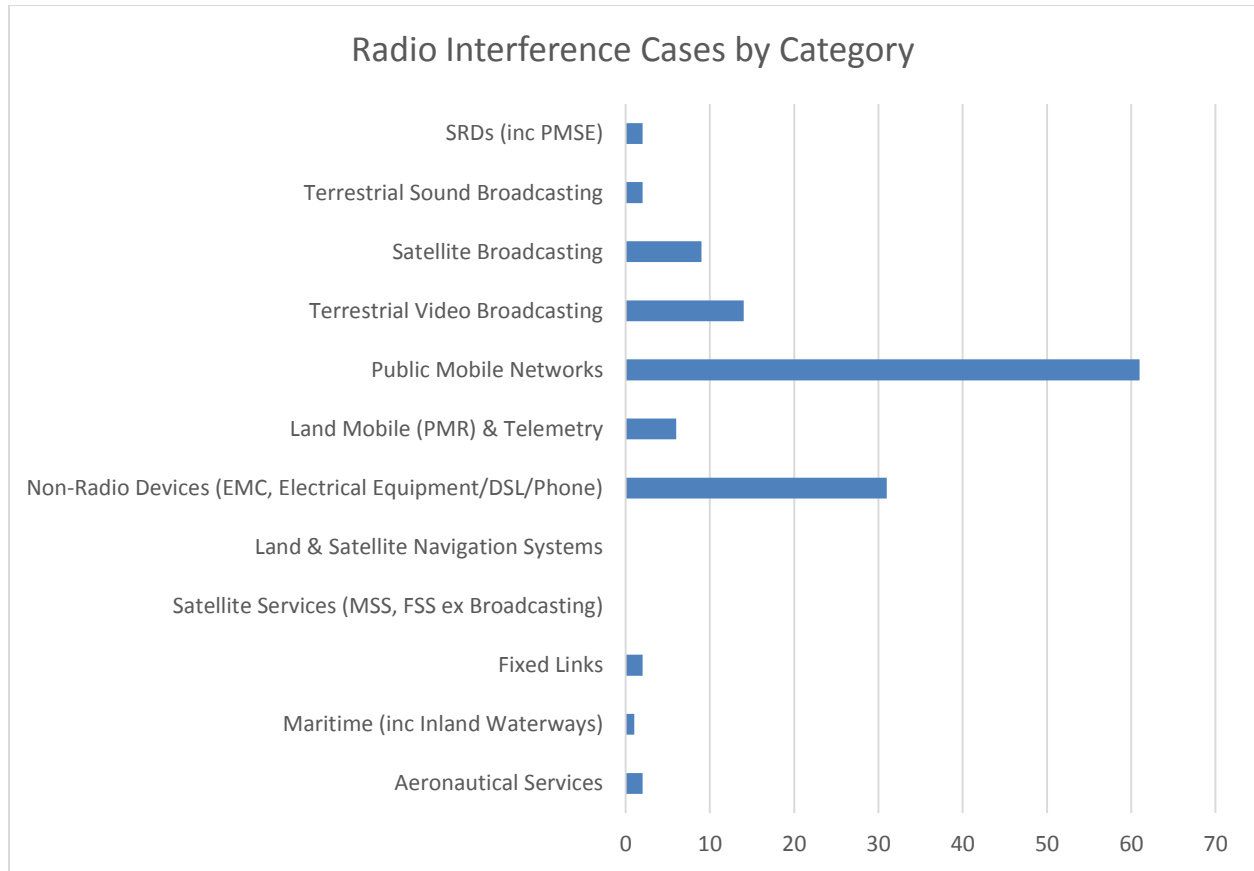


Figure 1 Total number of Interference Case Received by Category

³ The categories listed are aligned with those use by other National Regulatory Agencies throughout CEPT countries.

Common sources of radio interference to various services include:

- Mobile phone boosters/repeaters
- American DECT cordless phone
- Faulty power supplies
- Faulty television aerial masthead amplifiers
- Unlicensed broadcasters
- Unlicensed business radios
- Incorrectly installed transmitters
- Non-compliant electronic devices

As ComReg has limited resources with which to investigate such matters cases are prioritised based on the severity of the interference and the nature of the service affected.

The highest priority is reserved for cases which significantly disrupt communications for Air Traffic Control (ATC) or the Emergency Services. Full details can be found in Table 1 below.

Priority Classification	Definition
Class 1	Interference that is an imminent threat to safety-of-life and serious interference caused to emergency services, air traffic control and maritime traffic control which seriously hampers Radiocommunications.
Class 2	Interference that renders a licenced channel unusable or has a detrimental effect on the economic interests of a licensee.
Class 3	Interference that is a nuisance to a licenced user but does not render the licenced channel unusable or severely impact the economic interests of the licensee, or severe interference to domestic reception and amateurs.
Class 4	Occasional or minor interference to a licenced user that has no detrimental effect on the licensee's operations, or nuisance interference to domestic reception and amateurs.
Class 5	Spurious complaints that do not warrant the direct intervention of ComReg but that are recorded for statistical purposes.

Table 1 - Classification of cases of harmful interference

3.2 Market Surveillance

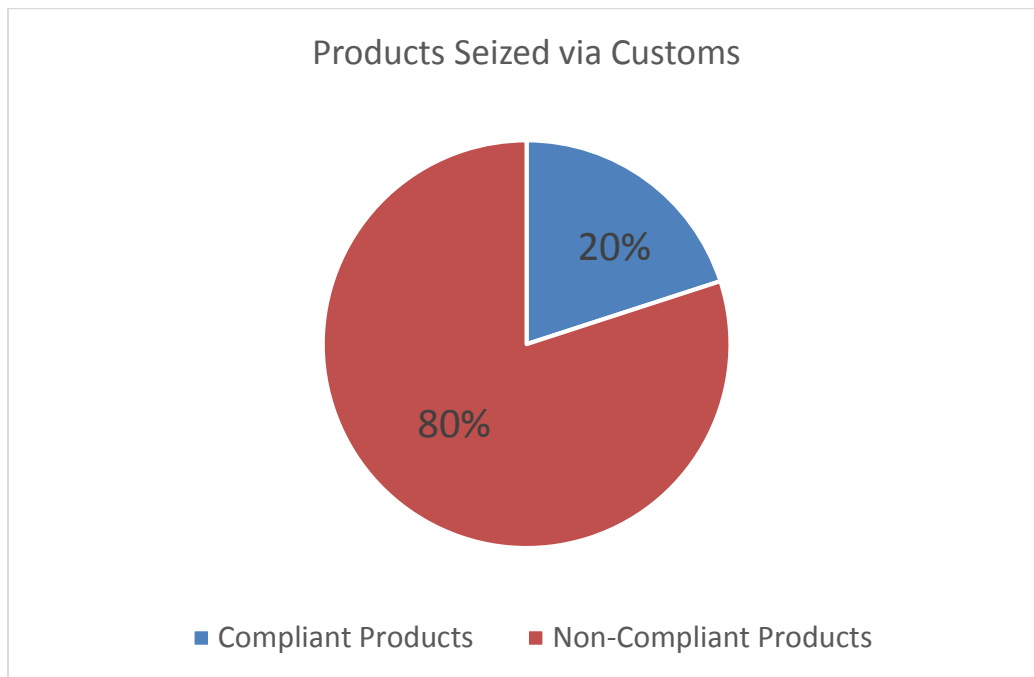
As mentioned previously, Spectrum Compliance works closely with Customs to ensure non-compliant electronic equipment do not enter the State. Equipment types that are seized due to non-compliance with EU Directives and Regulations include:

- Radio jammers⁴
- Mobile phone boosters/repeaters
- GPS trackers
- Green laser pens
- Keyless entry systems
- Radar detector
- Wireless bug detectors
- Wireless speaker
- Wireless headphones
- Digital cameras
- Battery chargers
- WiFi repeaters

Such devices have been found to cause harmful interference to a range of services including mobile phone networks and aeronautical services.

Often devices will be found to be non-compliant for administrative reasons. If an addressee is able to provide the appropriate documentation showing that the device is compliant then the device may be released to the addressee.

In the 2015 to 2016 period 112 suspect devices were seized via Customs of which approximately 80% were found to be non-compliant.



⁴ Please note that radio jammers are banned from importation under *S.I. No. 66/2011 - Wireless Telegraphy Act, 1972 (Prohibition of Sale, Letting on Hire, Manufacture, and Importation of Wireless Telegraphy Interference Apparatus) Order, 2011*, which means they also fall under the remit of Customs directly.

3.3 Compliance & Enforcement

ComReg has a statutory obligation to maintain the integrity of the radio spectrum and Spectrum Compliance is tasked with delivering it. This often results in the need to take compliance or enforcement action against unlicensed operators as appropriate.

The options for such actions covers a wide range; examples of which are listed below:

- Verbal warnings
- Written warnings
- Forfeiture of non-compliant equipment
- Communications Regulations Acts 2002 to 2011 Section 13D Notices
- Authorised Officer visits
- Search warrant executions
- Prosecution of offences

In the 2015/16 operating year ComReg brought two successful prosecutions.

The first was against a homeowner found in possession of an unlawful mobile phone repeater that had been causing harmful interference to a mobile network operator. The accused was ordered to pay €800 to the poor box and the Probation Act was applied.

The second prosecution was against an installer of unlawful traffic detection radar devices that were causing harmful interference to a wireless broadband provider. The accused was ordered to pay €5,000 to charity with €2,500 going to Barretstown and €2,500 going to Temple Street Children's Hospital. The Probation Act was applied.

There are a number of investigation files that are currently being reviewed.

It should also be noted that not all investigations result in prosecution. Where cooperation is forthcoming from parties alleged to have committed offences, cases are often resolved without need for further action.

4 Future Plans

In the coming year, resource permitting, ComReg will place greater emphasis on proactive work.

Such work is aimed at ensuring that licensed operators are compliant with the terms of their licences and that unlicensed operators discovered before they cause a problem thus preventing potential future radio interference cases from occurring by regularising unlawful spectrum usage.

Areas of proactive work that will be focussed on in the coming year include:

- Microwave link surveys
- Enforcement operations targeting unlicensed broadcasters
- Equipment compliance investigations

As substantiated further below, it is likely that harmful interference to radiocommunications services is set to increase over the next 3-5 years. This is supported by a number of current trends in spectrum usage. Increases in data usage, coupled with an increasing demand for mobility, means that more spectrum than ever before is being assigned to licensees for provision of broadband data services.

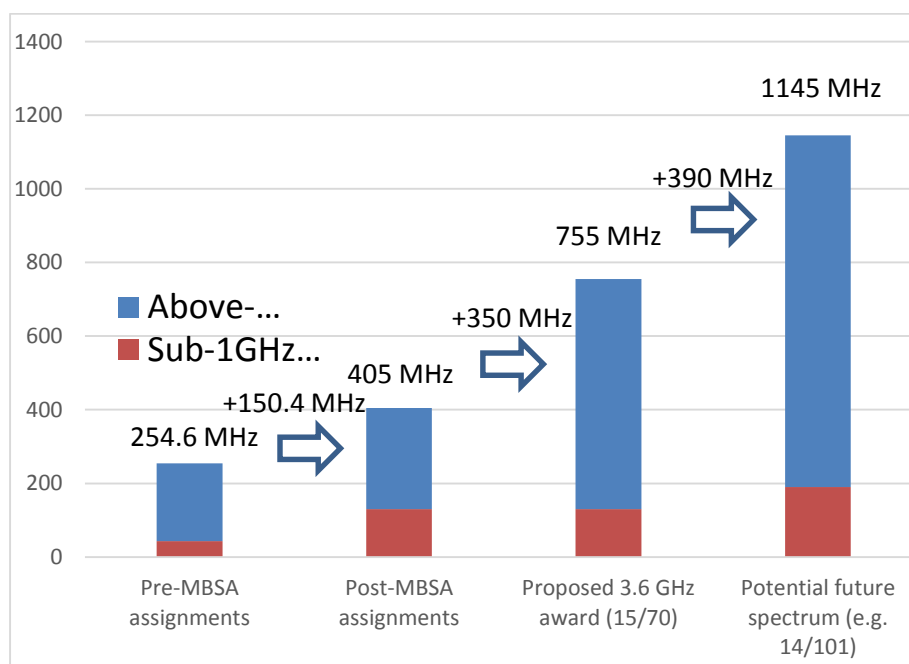


Figure 2 Total harmonised spectrum available for mobile, nomadic, and fixed wireless broadband services

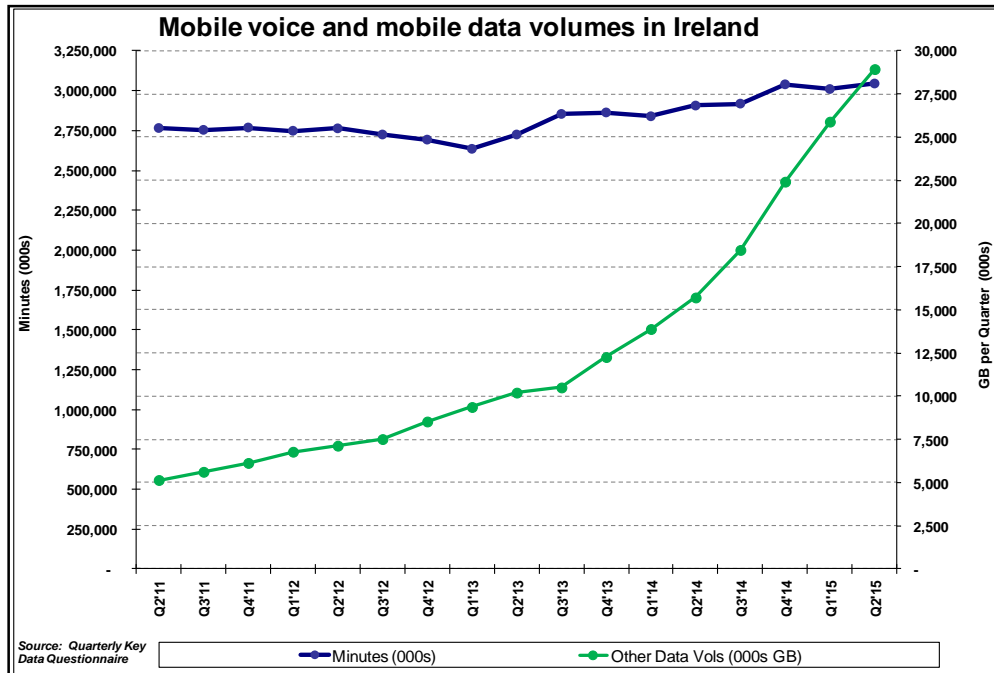


Figure 3 Mobile voice versus mobile data volumes

The above data was collected by ComReg but it is not an anomaly - the Cisco VNI Mobile Data Forecast, projects that by 2019 data rates in Western Europe will reach c.2,800,000 Terabytes per month. That is approximately the data capacity of 600 million standard DVD's.

Increased spectrum availability alone will not provide the capacity required to meet this demand; technological advances will be required in tandem. More spectrally efficient protocols will have to be employed to meet demand, for instance LTE, LTE+ and 5G, etc.

The corollary of this is that more complex modulation schemes will be utilised which are more susceptible to disruption from harmful interference. Even low level sources of interference, which are present at the moment, will cause disruption to services and prompt complaints from licensees.

In addition to the above, Machine-to-Machine (M2M) advances will also play a role in the increasing instances of radio interference. Simply put, not only will there be more spectrum licensed than ever before, there will be more devices sharing the spectrum than ever before.

It is expected that the number of M2M connected modules will grow from 91 million in 2014 to 612 million in 2019, for comparison, there were 367 million mobile users as of

2014 expected to grow to 382.6 million by 2019. This is also in addition to the existing, traditional users of the spectrum, e.g. mobile devices, customer-premises equipment (CPE), Private Mobile Radio (PMR), Aeronautical, etc.

The use of higher frequency ranges is also likely to increase in the coming years given the proliferation of microwave links in Ireland resulting in congested bands. In addition to this, there is much speculation that bands in the range above 10GHz will be used for the provision of 5G mobile services. The use of greater than 10GHz spectrum, coupled with the increasing use of existing microwave radio spectrum, will add to the complexity of interference investigations.

For these reasons, spectrum monitoring of bands due for future release will be an integral part of Spectrum Compliance's work programme. With this in mind ComReg will continue to expand its remote radio monitoring system that enables State-wide radio spectrum monitoring from a central location.