



Commission for
Communications Regulation

Report

Programme of Measurement of Non-Ionising Radiation emissions

0497 - Claremont Court

Site Measurement Date:

17th June 2004

Contents

1	Introduction	3
2	Background	4
2.1	ROLE OF THE COMMISSION FOR COMMUNICATIONS REGULATION	4
2.2	ROLE OF MASON COMMUNICATIONS LTD.	4
3	NIR Site Measurements Conclusion and Results	5
3.1	CONCLUSION OF SITE REPORT RESULTS	7
3.2	SITE REPORT – CLAREMONT COURT	8
3.2.1	<i>Detailed Results</i>	8
3.2.2	<i>SITE SKETCH MAP</i>	14
3.2.3	<i>SITE PHOTOGRAPHS</i>	15
	Annex 1	16
	Annex 2	19
	Glossary	21

1 Introduction

The Commission for Communications Regulation (ComReg) is the licensing authority for the use of the radio frequency spectrum in Ireland. This spectrum is a national resource which has been used for communications purposes for over 100 years. Applications of radio spectrum, today, include the transmission of a wide range of services, including radio and television broadcasting, mobile telephony and other telecommunications services such as internet connection.

As the licensing authority for radiocommunications in Ireland, ComReg is responsible for ensuring that communications operators comply with their licence condition relating to non-ionising radiation. The radiation emissions from communications sites must be within the levels set down in the latest international guidelines.

The full programme consists of the measurement of Non-Ionising Radiation emissions at 400 sites throughout the country. The programme is being carried out by Mason Communications in conjunction with Radio Frequency Investigations on behalf of ComReg.

For each site, ComReg requires that the measured levels of non-ionising radiation emissions should not exceed the ICNIRP limits in any part of the site or surrounding area where the general public have access. Non-ionising radiation is that part of the electromagnetic spectrum below 2420 million MHz. Radiowaves, infra-red radiation and visible light are examples of NIR.(See Annex 1)

This report is arranged as follows:

The first section is an introduction to the programme.

The second section outlines the role of the ComReg in the area of NIR. It also outlines Mason Communications role in the programme.

The third section is Mason Communications' report on the measurement programme for the site. The site report contains a conclusion on the extent of compliance of the site with the general public exposure limits of the ICNIRP Guidelines 1998.

The Annex section contains two sections which are as follows:

1. An explanation of Non-Ionising Radiation and an explanation of the International Committee for Non-Ionising Radiation Protection and the guideline limits associated with that body.
2. A guide to the methodology used in the site measurements.

There is also a glossary explaining each of the terms used through the report.

2 Background

2.1 Role of the Commission for Communications Regulation

In 2003/2004 measurements of Non-Ionising Radiation emissions are being taken at 400 sites throughout the country in a programme agreed with the Minister for Communications, Marine and Natural Resources, and the Minister for the Environment and Local Government. The programme is being carried out by Mason Communications in conjunction with Radio Frequency Investigations (RFI) on behalf of ComReg.

The aim of the programme is to ensure that emissions from communications sites comply with the general public exposure limits set down by the International Commission for Non-Ionising Radiation Protection (ICNIRP). Some sites have been nominated by the public and the other sites are chosen by Mason/RFI, based on population coverage. Currently, radiation emissions from communications sites must be within the levels set down in the ICNIRP guidelines.

At the outset of the programme, ComReg invited nominations from the interested parties for telecommunication masts to be included. The last date for nominations was 6th June 2003 and on this date some thirty sites had been nominated by the public and 25 by the Minister's department. The other sites were chosen on a random basis by Mason/RFI. Both methods of choosing sites were based on population distribution.

2.2 Role of Mason Communications Ltd.

Following a competitive tender process held in early 2003, Mason Communications in conjunction with Radio Frequency Investigations Ltd. were chosen to carry out the site measurements and to produce a report on each site. Mason Communications Ireland Ltd. is a wholly owned subsidiary of Mason Group Ltd. Mason advises many of the leading organisations in Ireland on converging markets and converging technologies. The management of this programme by Mason Communications involved the services of Radio Frequency Investigations (RFI) Ltd. RFI has been performing Non-Ionising Radiation site surveys since its formation in 1987. RFI is accredited to ISO 17025, which ensures independence from other bodies that may be involved directly or indirectly in this programme.

3 NIR Site Measurements Conclusion and Results

ComReg has commissioned Mason Communications, as an independent consultancy service, to conduct a survey of 400 sites. Mason Communications and their measuring sub-contractor “Radio Frequency Investigation (RFI) Ltd” will work on the programme throughout 2003 and 2004.

Mason/RFI engineers measure the power density of transmissions in the various radio bands to be surveyed¹. The results, derived from electric field voltage measurements, are referenced to and presented alongside the relevant International Commission on Non-Ionising Radiation Protection (ICNIRP) recommended public maximum exposure levels.

Section 3.2 provides a set of graphs and tables for each location where measurements were made.

At each location electric field strength measurements, conducted in the frequency bands of interest, are recorded and converted to power density levels for direct comparison with the ICNIRP guideline levels. These power density levels are tabulated alongside the relevant ICNIRP limits. The tables present the highest emission level readings recorded within a band. To the left of each of the results tables, a graphical snapshot of the radio spectrum being analysed is presented.

The power density and the quotient contained in these graphs are given in exponential (E) format. The reason for this is that the value is too long to be represented as a decimal number in the tables. An example of this is as follows:

$$3.61469\text{E-}09 = 3.61469 \times 10^{-9} = .00000000361469$$

It is therefore very important to note the values after E to identify the highest reading at any site. For each table at each position the highest reading is at the top of the relevant list.

¹ See Annex 2 for the site measurement methodology

**Site Survey Report from
Mason Communications Ltd /
Radio Frequency Investigation Ltd**

**Audit Site: DF17 – Claremont Court
(Nominated)**

	NAME	SIGNATURE	DATE
PREPARED BY	S. Roe		12 th July 2004
REVIEWED BY	P. Kidney		12 th July 2004
SIGNED-OFF BY	P. Coakley		12 th July 2004
This report has been reviewed by Mason Communications and accurately reflects the measurements taken at Claremont Court by Dan Smith on 17 th June 2004.			

3.1 Conclusion of site report results

The following table is a summary of the highest readings taken at this site:

Site	Frequency Range	Highest reading W/m ²	ICNIRP guideline Limit W/m ²
Claremont Court	300MHz – 1GHz	0.000019573	4.781
	GSM 900	0.000023263	4.76985
	GSM 1800	0.000030596	9.24
	1GHz – 2GHz	0.000017851	9.265

The overall measurements taken at the site and given in part 3.2 of this report conclude that the NIR emissions from the site are below the ICNIRP guideline limits.

3.2 Site Report – Claremont Court

3.2.1 Detailed Results

3.2.1.1 Position 1. Claremont Court, in Cul-de-Sac, Opposite Number 170, approximately 200 m South West of Mast.

Site: Claremont Court	Receiver: Manufacturer: Hewlett Packard Model: 8594A Serial Number: 3108U00205
Location: Position 1	Antenna: Manufacturer: EMCO Model: 3146A Serial Number: 3993
NGR: O 13961 37064	
Date: 17/06/04	
Officer: Dan Smith	

300 MHz to 1 GHz					
	Frequency (MHz)	S (power density) W/m ²	ICNIRP Limit W/m ²	Times less than ICNIRP	Quotient
	956.2	0.000019573	4.781	244264.3539	4.09393E-06
	455.8	0.000000186	2.279	12220407.14	8.18303E-08
	569.5	0.000000116	2.8475	24536074.57	4.07563E-08
	538	0.000000095	2.69	28254890.61	3.53921E-08
	746.3	0.000000074	3.7315	50144672.15	1.99423E-08
	392.8	0.000000038	1.964	51937714.37	1.92538E-08
	802.2	0.000000034	4.011	117110008.4	8.53898E-09
	587	0.000000029	2.935	101847284.9	9.81862E-09
	944	0.000000020	4.72	240039851.2	4.16597E-09
				Total Quotient	4.31362E-06

GSM 900