

**Baldock Radio Station
Royston Road, Baldock
Herts SG7 6SH**



**Full Band Audit of Broadcast and
Telecommunications Mast at Malvern**

**Audit Site: 59-61 Worcester Road
Malvern
Worcestershire**

The Office of Communications (Ofcom) is responsible for management of the civil radio spectrum in the UK. Following recommendations of the Stewart Report in 2000 Ofcom is continuing a national measurement programme to ensure that emissions do not exceed the guidelines for public maximum exposure set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

Electric field strength measurements made in all bands between 30 MHz to 2.2 GHz are referenced to and presented alongside the relevant ICNIRP public maximum exposure levels. On the left hand side of the results page(s) is a graphical representation of the radio spectrum surveyed at each location on the site. To the right hand side of each graph is a table showing the ten highest level emissions recorded within the band.

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Report Summary

As the radio spectrum is continually changing, these measurements can only provide information on the radio frequency (RF) conditions for the specific locations at the time of the survey.

The Office of Communications (Ofcom) performed this survey of the RF emission environment in the vicinity of 59 – 61 Worcester Road, Malvern on the 19th December 2005. Measurements were made at 1.5 and 5 metres above ground level (a.g.l.) at either end of the building and at 1.5 m outside the front door.

The table, sorted in descending order of signal level, summarises the total results obtained at each measurement location.

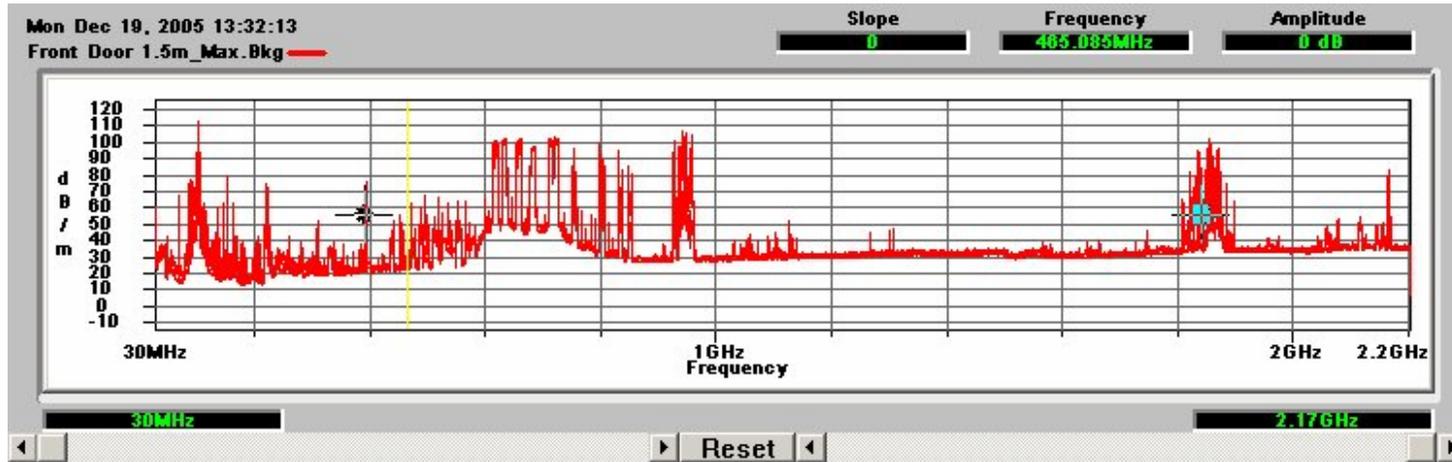
Summary of results:

Location	Total Band Exposure	Relationship to ICNIRP Limit
Outside front door at 1.5 m a.g.l.	3.41E-03	1/293
Path to rear of house 5 m a.g.l.	1.22E-03	1/820
Path to rear of house 1.5 m a.g.l.	7.42E-04	1/1348
Rear of potting shed 5 m a.g.l.	7.10E-04	1/1408
Rear of potting shed 1.5 m a.g.l.	4.47E-04	1/2237

Further explanation of the results and their context within the ICNIRP guidelines can be provided by the Ofcom officers at the time of the audit or by contacting Ofcom on 020 7981 3040 or by e-mail at contact@ofcom.org.uk. A glossary of terms can be found at the end of the report.

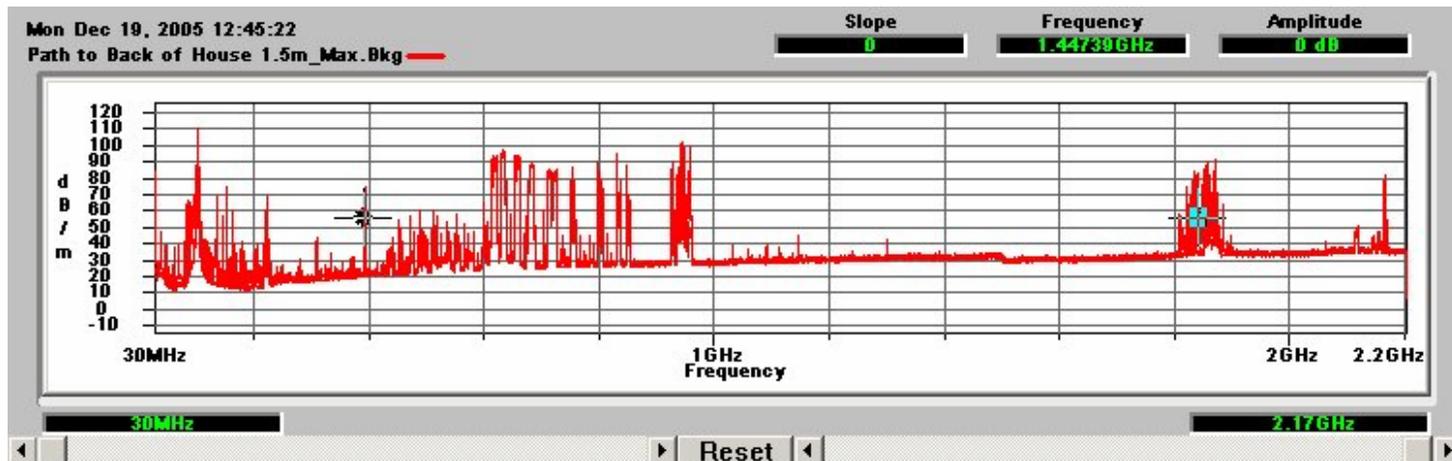
Results taken from all audit sites and further information on the audit programme can be found on the Ofcom website at www.ofcom.org.uk

Location 1: Outside front door.

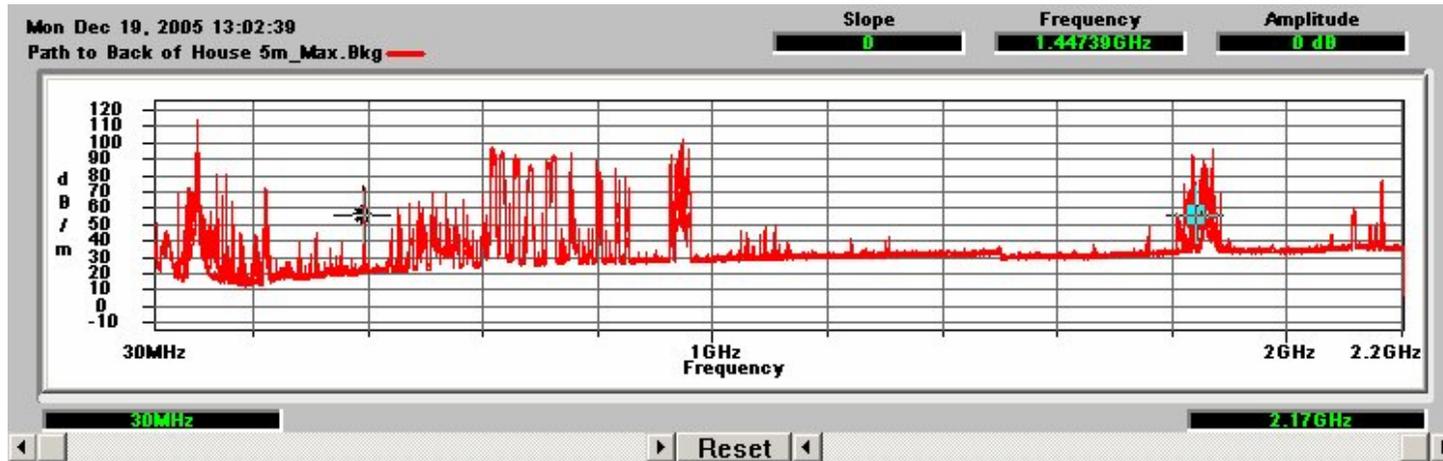


GPS	SO 77513 46548	
Total Exposure Quotient	3.41E-03	
Frequency	Fieldstrength	Exposure
MHz	dBuV/m	Quotient
102.7	111.8	2.01E-04
102.8	111.8	2.01E-04
102.9	111.8	2.01E-04
104.0	111.3	1.79E-04
104.1	105.7	4.93E-05
941.0	104.9	1.74E-05
946.0	104.2	1.48E-05
958.0	103.7	1.30E-05
636.6	101.0	1.05E-05
719.5	101.4	1.02E-05

Location 2: On path to back of south side of house.

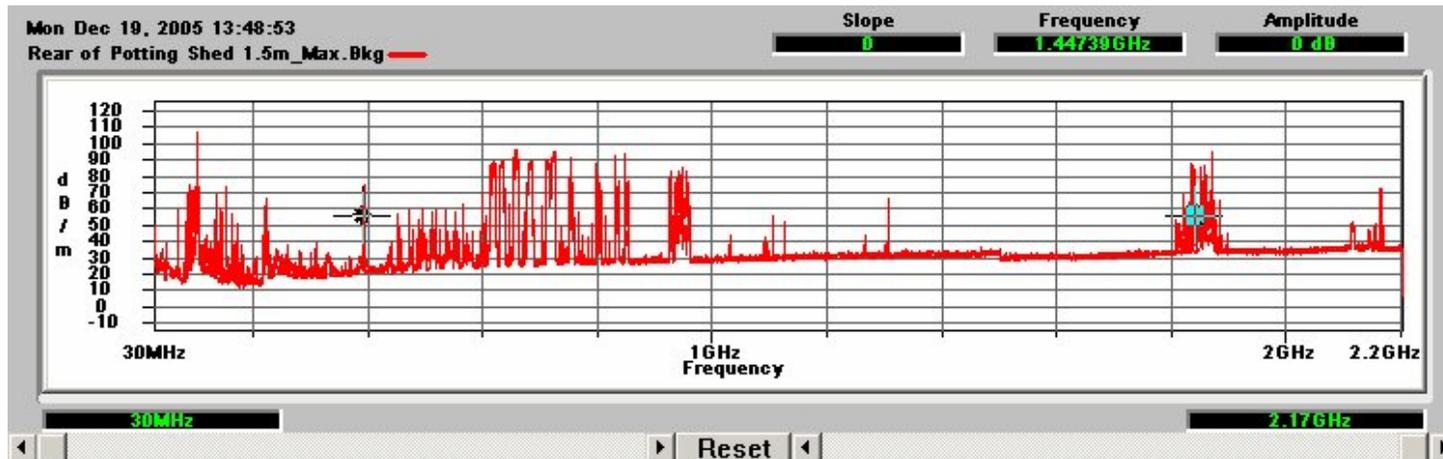


GPS	SO 77510 46529	
Total Exposure Quotient	7.42E-04	
Frequency	Fieldstrength	Exposure
MHz	dBuV/m	Quotient
102.8	109.1	1.08E-04
102.7	108.9	1.03E-04
102.9	107.8	7.99E-05
104.0	107.8	7.99E-05
104.1	98.4	9.18E-06
943.4	100.3	6.03E-06
941.0	99.7	5.29E-06
941.1	98.2	3.75E-06
958.0	98.1	3.60E-06
632.9	95.8	3.18E-06

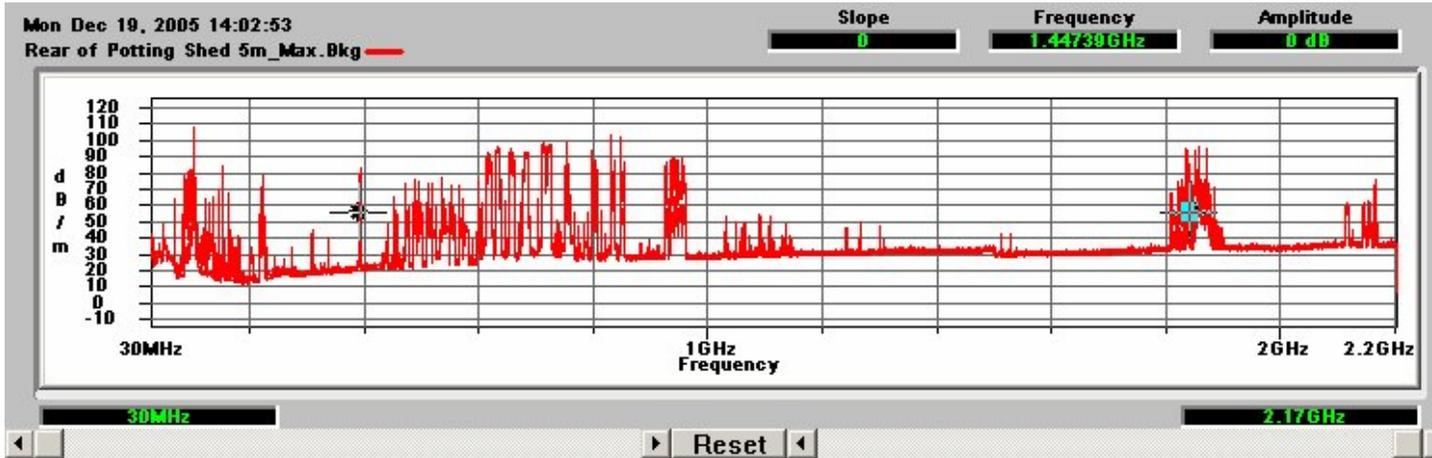


GPS	SO 77510 46529	
Total Exposure Quotient	1.22E-03	
Frequency MHz	Fieldstrength dBuV/m	Exposure Quotient
102.9	112.3	2.25E-04
102.8	112.0	2.10E-04
104.0	111.7	1.96E-04
104.1	107.6	7.63E-05
102.7	106.9	6.50E-05
946.0	101.2	7.39E-06
946.1	99.7	5.21E-06
616.6	96.1	3.53E-06
615.4	96.1	3.51E-06
616.5	96.0	3.45E-06

Location 3: On path to rear of potting shed



GPS	SO 77510 46558	
Total Exposure Quotient	4.47E-04	
Frequency MHz	Fieldstrength dBuV/m	Exposure Quotient
102.8	105.6	4.82E-05
102.9	105.4	4.60E-05
102.7	104.7	3.91E-05
104.0	103.4	2.90E-05
104.1	100.0	1.32E-05
103.9	98.7	9.76E-06
658.4	94.8	2.44E-06
656.6	94.8	2.43E-06
656.5	94.6	2.34E-06
656.9	94.3	2.16E-06



GPS	SO 77510 46558	
Total Exposure Quotient	7.10E-04	
Frequency MHz	Fieldstrength dBuV/m	Exposure Quotient
104.0	106.8	6.35E-05
102.8	101.5	1.87E-05
102.7	98.3	9.03E-06
831.3	101.5	9.01E-06
847.3	101.4	8.64E-06
103.9	97.8	7.90E-06
104.1	97.1	6.77E-06
102.9	96.2	5.57E-06
711.8	97.6	4.24E-06
711.4	97.5	4.15E-06

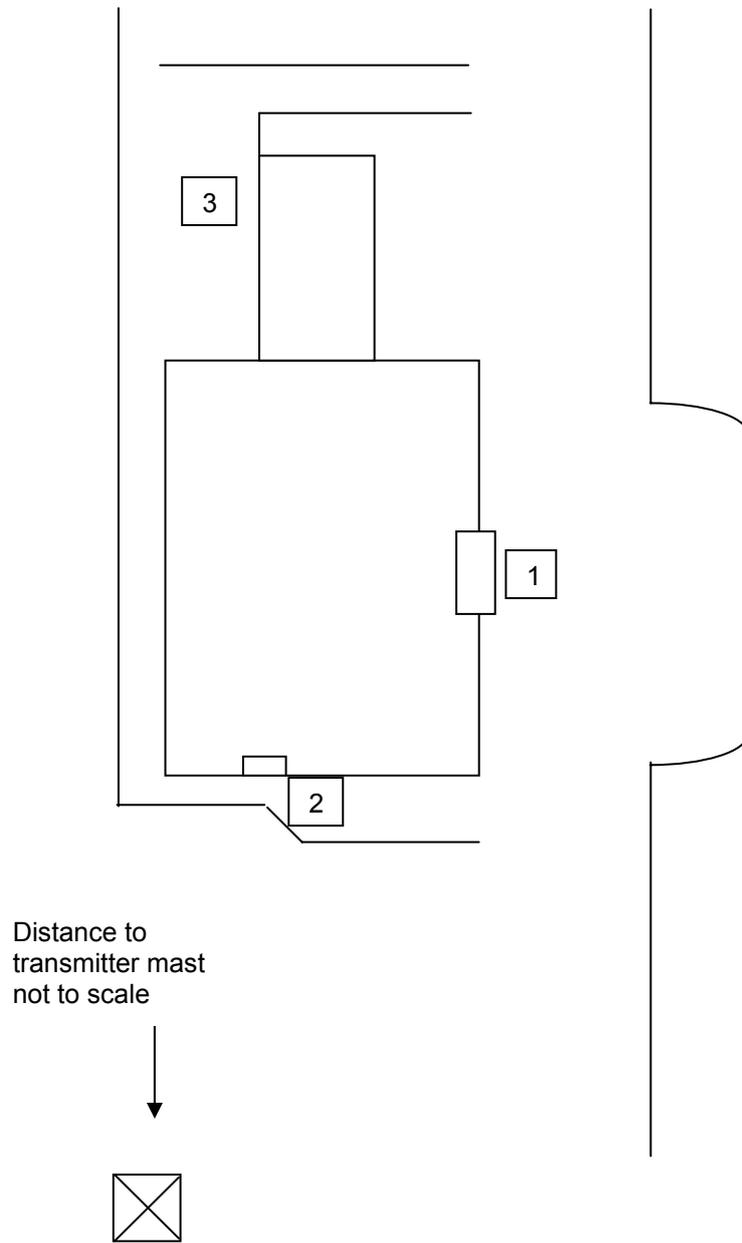
EM Exposure Background

All radio waves are electromagnetic waves (“EM”), which are composed of electric and magnetic fields. These waves are referred to as ‘non-ionising radiation’ as distinct from the ionising radiation produced by radioactive sources. We are all regularly exposed to EM radiation from a variety of sources.

Exposure to EM waves is measured in terms of the electric and magnetic field strengths, which are produced by a transmitter at locations, which could be accessed by the public. The electric field strength, E , is measured in volts per metre [V.m⁻¹]. The power that could be absorbed by an object at a given location is proportional to the area of the object multiplied by the square of the electric field strength.

In this report, the Exposure Quotient (“EQ”) is calculated to express the ratio of the measured power density levels (expressed in W/m²) to the ICNIRP Reference power density levels (derived from the Reference field strength levels). The EQ is then summed over all the frequencies in each of the surveyed bands to yield the band exposure quotient as shown in the Survey Results section of this document. A band EQ of 1 (unity) means that the ICNIRP Reference level has been reached at the surveyed frequency band.

Measurement locations:



Glossary

- Site:** The building or area around which sets of measurements are taken
- Location:** The position within a site at which a single set of measurements is taken. A set of measurements consists of multiple scans of many frequencies within a number of bands
- Band:** A portion of the electromagnetic spectrum reserved for specific radio services
- NGR:** The Ordnance Survey national grid reference coordinates of the location. In this survey NGRs are specified to 8-digit (10-metre) resolution. E.g. SJ 9755 9888
- GPS:** The Global Positioning System
- Start Time:** The date and time at which the receiver started taking its measurements at a location
- Officer:** The name of the Ofcom representative who carried out the audit
- Receiver:** The receiver used to perform the measurements
- Antenna:** The antenna used to perform the measurements
- Exposure:** The maximum measured electric field strength (dB(μ V/m)) converted to an equivalent power density (W/m^2)
- Power Density:**
The electromagnetic energy flowing through a unit area normal to the direction of propagation in a unit time. Measured in Watts per square metre (W/m^2)
- ICNIRP Limit:**
The reference level given by the International Commission for Non-Ionizing Radiation Protection (ICNIRP) for general public exposure to electromagnetic fields
- Frequency Exposure Quotient:**
The ratio of the measured maximum power density to the ICNIRP limit at a given frequency. A value close to 1 signifies that exposure levels could be near to the ICNIRP limit for that frequency
- Band Exposure Quotient:**
The sum of the frequency exposure quotients for a single band at a location
- Total Band Exposure Quotient:**
The sum of the frequency exposure quotients for all of the measured bands at a location
- GSM:** Global System for Mobile communication
- TETRA:** Terrestrial Trunked Radio
- UMTS:** Universal Mobile Telecommunications System (Third Generation mobile-phone services)
- 1.00E-03:** Exponential (or 'scientific') number format. Equal to one thousandth
- 1.00E-06:** Equal to one millionth
- 1.00E-09:** Equal to one thousand-millionth
- 1.00E-12:** Equal to one million-millionth