

## **Mobile Phone Base-Station Audit**

**Audit site: WEST MIDDLESEX UNIVERSITY HOSPITAL  
TWICKENHAM ROAD  
LONDON  
TW7 6AF**

In 2000 the Government asked the Radiocommunications Agency to implement a national measurement programme to ensure that emissions from cellular base stations do not exceed the guidelines for public maximum exposure set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Ofcom took over the functions of the Radiocommunications Agency, along with those of the Independent Television Commission, Radio Authority, Ofcom and Broadcasting Standards Commission, on 29 December 2003.

Electric field strength measurements made in various bands 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. The green line on each graph indicates the ICNIRP guideline exposure level for that frequency band. To the right hand side of each graph is a table showing the ten highest level emissions recorded within a band.

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 0845 456 3000, or by email at [contact@Ofcom.org.uk](mailto:contact@Ofcom.org.uk). 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](http://www.ofcom.org.uk).

## 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.

Ofcom performed this survey of the RF emission environment prevailing in the vicinity of WEST MIDDLESEX UNIVERSITY HOSPITAL on 22 March 2005.

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

Summary of results:		
Location	Total Band Exposure	Relationship to ICNIRP Limit
WEST PERIMETER OF CAR PARK	2.16E-04	1/4633
PAEDIATRICS (SUNSHINE WARD) CONSULTING/EXAMINATION ROOM 6.	4.09E-05	1/24469
HEPPLE CLOSE CAR PARK	1.01E-05	1/99191
PAEDIATRICS (OUPATIENTS WAITING ROOM)	5.44E-06	1/183925
PAEDIATRICS (STARLIGHT ROOM 16).	3.17E-06	1/315113
PAEDIATRICS (LIFT AREA)	7.94E-07	1/1259055

Issued on behalf of Ofcom.

Issued by:

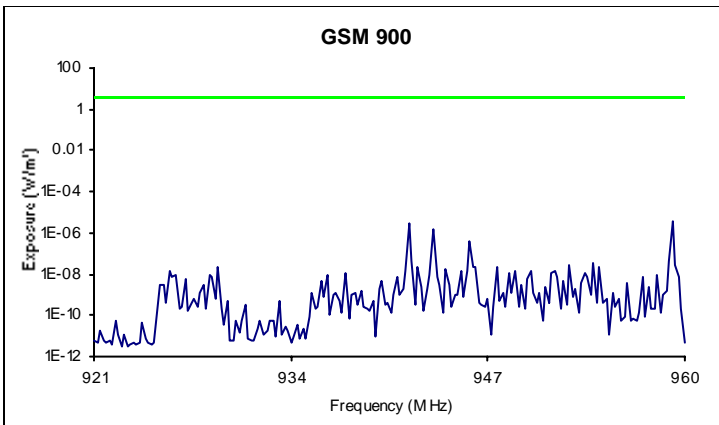
Received by:

BW  
Technical Investigation Officer

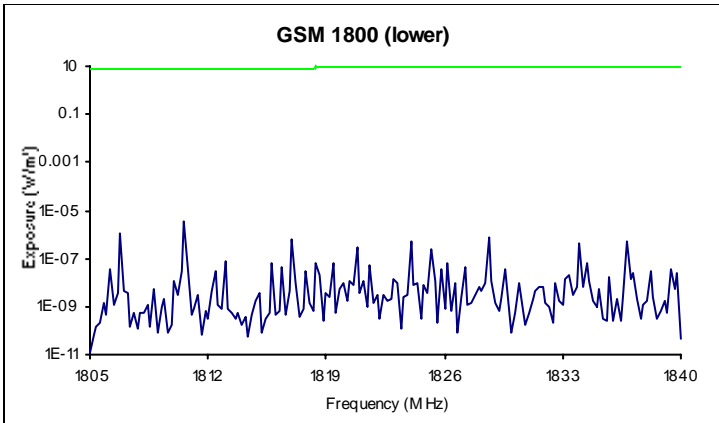
PENNY RASTALL  
ENVIRONMENTAL MANAGER

**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** PAEDIATRICS (STARLIGHT ROOM 16).  
**NGR:** TQ 1657 7632 **Taken from GPS**  
**Start Time:** 22 March 2005 12:33:12  
**Officer:** BW

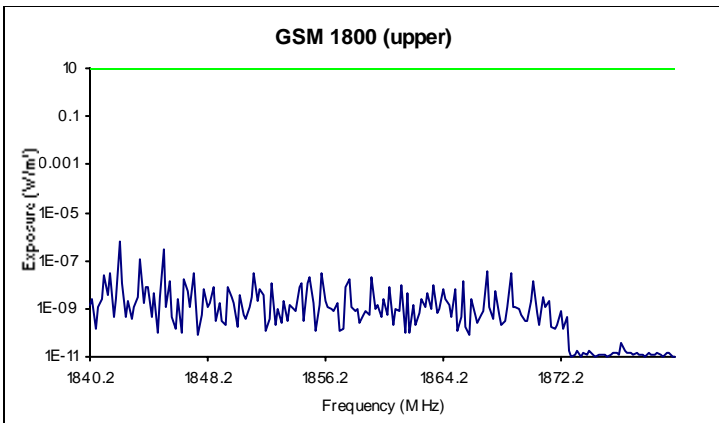
**Receiver:**  
 Manufacturer: ROHDE&SCHWARZ  
 Model: EB200  
 Serial Number: 837.752/028  
**Antenna:**  
 Manufacturer: Rohde & Schwarz  
 Model: HE200  
 Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
959.200	3.66E-06	4.80	7.63E-07
941.800	2.79E-06	4.71	5.93E-07
943.400	1.69E-06	4.72	3.58E-07
945.800	3.89E-07	4.73	8.22E-08
942.000	4.04E-08	4.71	8.57E-09
959.000	3.92E-08	4.79	8.17E-09
954.000	3.30E-08	4.77	6.91E-09
952.400	3.06E-08	4.76	6.44E-09
959.400	3.04E-08	4.80	6.34E-09
946.200	2.29E-08	4.73	4.84E-09
<b>Band Exposure Quotient:</b>			<b>1.94E-06</b>



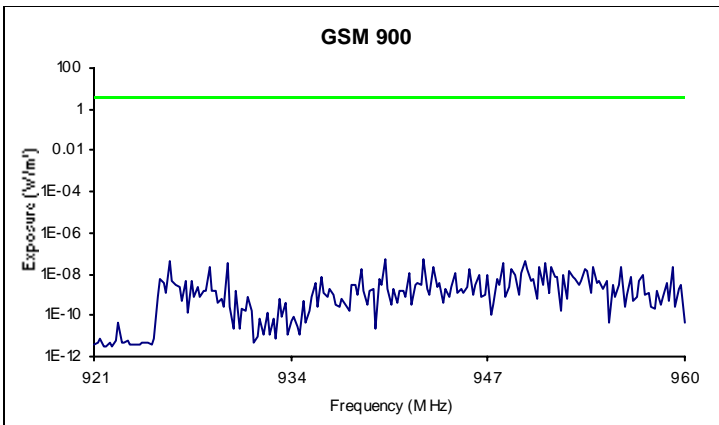
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,810.600	3.65E-06	9.05	4.03E-07
1,806.800	1.17E-06	9.03	1.30E-07
1,828.600	8.04E-07	9.14	8.80E-08
1,817.000	5.98E-07	9.09	6.58E-08
1,824.000	4.81E-07	9.12	5.27E-08
1,836.800	4.80E-07	9.18	5.23E-08
1,834.000	4.16E-07	9.17	4.54E-08
1,820.800	3.16E-07	9.10	3.47E-08
1,825.200	2.25E-07	9.13	2.47E-08
1,813.000	8.39E-08	9.06	9.26E-09
<b>Band Exposure Quotient:</b>			<b>1.05E-06</b>



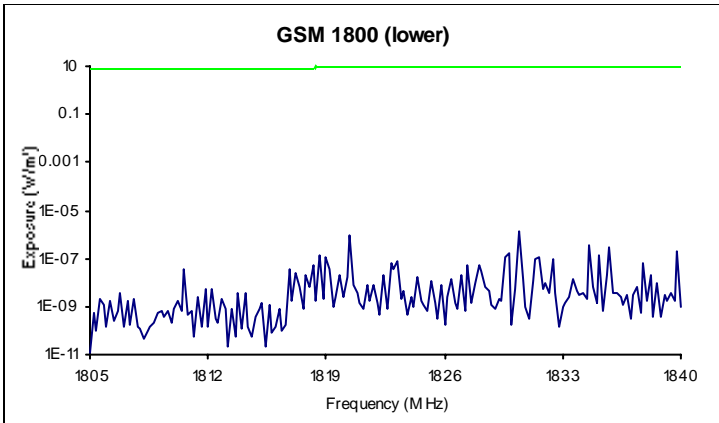
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,842.200	6.85E-07	9.21	7.44E-08
1,845.200	3.22E-07	9.23	3.49E-08
1,843.600	1.11E-07	9.22	1.21E-08
1,867.200	3.84E-08	9.34	4.11E-09
1,841.600	3.20E-08	9.21	3.48E-09
1,851.400	3.11E-08	9.26	3.36E-09
1,847.200	3.09E-08	9.24	3.34E-09
1,856.000	3.06E-08	9.28	3.30E-09
1,868.800	3.06E-08	9.34	3.27E-09
1,841.200	2.37E-08	9.21	2.58E-09
<b>Band Exposure Quotient:</b>			<b>1.89E-07</b>

**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** PAEDIATRICS (SUNSHINE WARD)  
CONSULTING/EXAMINATION ROOM 6.  
**NGR:** TQ 1660 7628 **Taken from GPS**  
**Start Time:** 22 March 2005 12:57:38  
**Officer:** BW

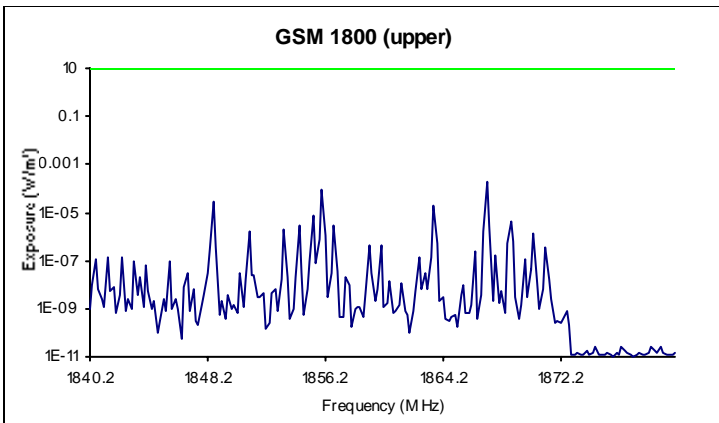
**Receiver:**  
Manufacturer: ROHDE&SCHWARZ  
Model: EB200  
Serial Number: 837.752/028  
**Antenna:**  
Manufacturer: Rohde & Schwarz  
Model: HE200  
Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
942.800	5.58E-08	4.71	1.18E-08
940.200	4.83E-08	4.70	1.03E-08
926.000	4.27E-08	4.63	9.21E-09
949.400	4.01E-08	4.75	8.45E-09
929.800	3.84E-08	4.65	8.25E-09
950.800	3.67E-08	4.75	7.72E-09
948.000	3.33E-08	4.74	7.02E-09
954.000	2.33E-08	4.77	4.89E-09
951.200	2.16E-08	4.76	4.55E-09
950.400	2.16E-08	4.75	4.54E-09
<b>Band Exposure Quotient:</b>			<b>1.88E-07</b>



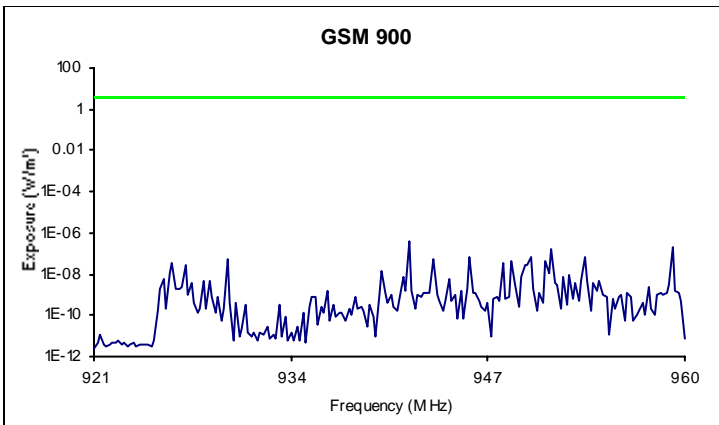
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,830.400	1.40E-06	9.15	1.53E-07
1,820.400	9.98E-07	9.10	1.10E-07
1,834.600	3.55E-07	9.17	3.87E-08
1,835.800	2.89E-07	9.18	3.15E-08
1,839.800	1.88E-07	9.20	2.04E-08
1,829.800	1.72E-07	9.15	1.88E-08
1,818.600	1.51E-07	9.09	1.66E-08
1,835.200	1.48E-07	9.18	1.61E-08
1,831.600	1.17E-07	9.16	1.28E-08
1,819.000	1.14E-07	9.10	1.26E-08
<b>Band Exposure Quotient:</b>			<b>5.78E-07</b>



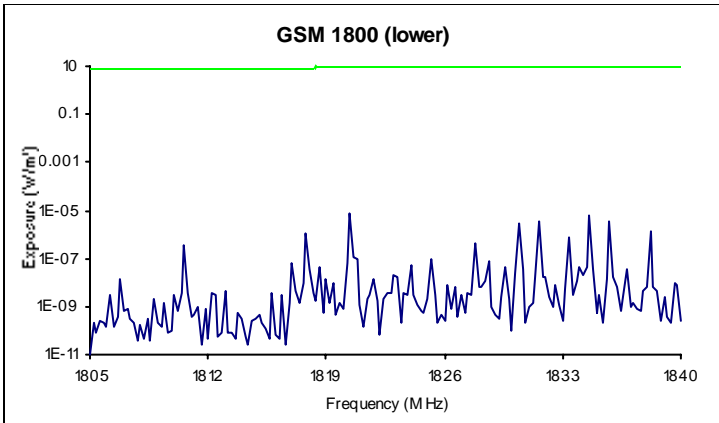
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,867.200	1.97E-04	9.34	2.11E-05
1,856.000	9.25E-05	9.28	9.96E-06
1,848.600	3.02E-05	9.24	3.27E-06
1,863.600	1.79E-05	9.32	1.92E-06
1,855.400	8.23E-06	9.28	8.87E-07
1,868.800	4.52E-06	9.34	4.84E-07
1,856.800	2.93E-06	9.28	3.15E-07
1,854.400	2.72E-06	9.27	2.94E-07
1,867.400	2.66E-06	9.34	2.85E-07
1,853.400	2.01E-06	9.27	2.17E-07
<b>Band Exposure Quotient:</b>			<b>4.01E-05</b>

**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** PAEDIATRICS (OUPATIENTS WAITING ROOM)  
**NGR:** TQ 1656 7629  
**Start Time:** 22 March 2005 13:31:08  
**Officer:** BW

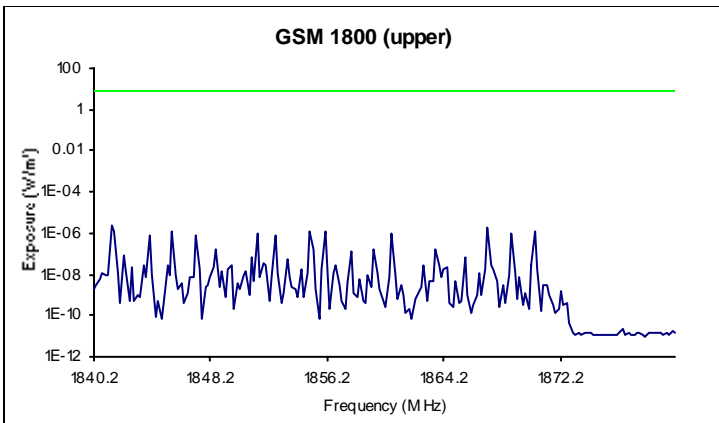
**Receiver:**  
 Manufacturer: ROHDE&SCHWARZ  
 Model: EB200  
 Serial Number: 837.752/028  
**Antenna:**  
 Manufacturer: Rohde & Schwarz  
 Model: HE200  
 Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
941.800	4.22E-07	4.71	8.97E-08
959.200	2.01E-07	4.80	4.19E-08
951.200	1.76E-07	4.76	3.70E-08
953.400	7.20E-08	4.77	1.51E-08
945.800	6.60E-08	4.73	1.40E-08
949.800	6.37E-08	4.75	1.34E-08
943.400	5.72E-08	4.72	1.21E-08
929.800	4.94E-08	4.65	1.06E-08
950.800	4.41E-08	4.75	9.28E-09
948.600	3.91E-08	4.74	8.25E-09
<b>Band Exposure Quotient:</b>			<b>3.27E-07</b>



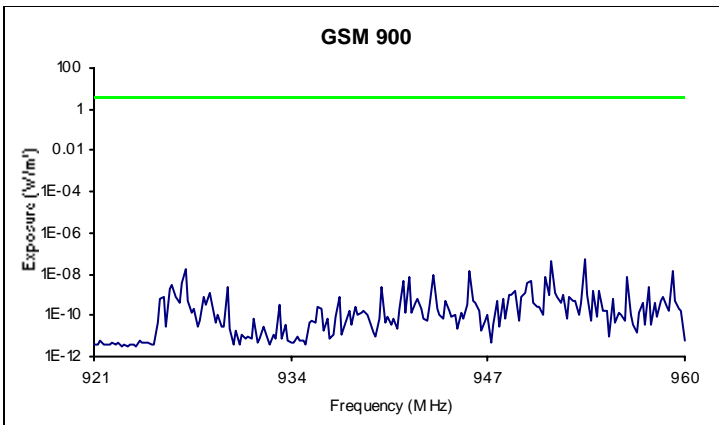
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,820.400	8.12E-06	9.10	8.92E-07
1,834.600	6.76E-06	9.17	7.37E-07
1,835.800	3.40E-06	9.18	3.70E-07
1,831.600	3.29E-06	9.16	3.60E-07
1,830.400	2.73E-06	9.15	2.99E-07
1,838.200	1.45E-06	9.19	1.58E-07
1,817.800	1.07E-06	9.09	1.17E-07
1,833.400	8.11E-07	9.17	8.85E-08
1,827.800	4.31E-07	9.14	4.72E-08
1,810.600	3.65E-07	9.05	4.03E-08
<b>Band Exposure Quotient:</b>			<b>3.26E-06</b>



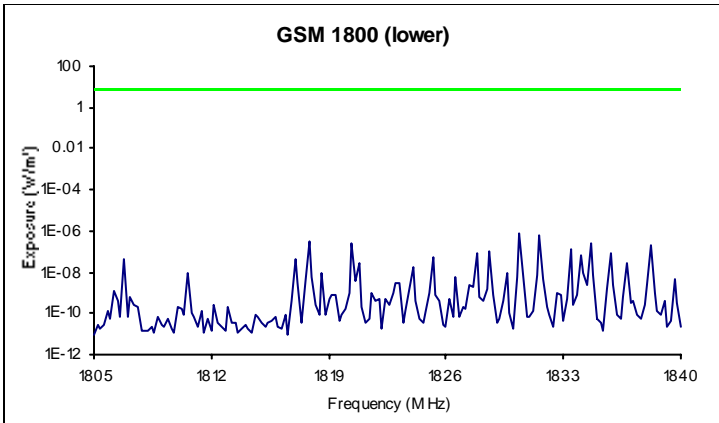
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,841.400	2.11E-06	9.21	2.30E-07
1,867.200	2.02E-06	9.34	2.16E-07
1,856.000	1.19E-06	9.28	1.28E-07
1,870.400	1.19E-06	9.35	1.28E-07
1,845.600	1.17E-06	9.23	1.27E-07
1,841.600	1.14E-06	9.21	1.23E-07
1,855.000	1.11E-06	9.28	1.20E-07
1,860.600	9.76E-07	9.30	1.05E-07
1,851.400	8.96E-07	9.26	9.68E-08
1,868.800	9.03E-07	9.34	9.66E-08
<b>Band Exposure Quotient:</b>			<b>1.85E-06</b>

**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** PAEDIATRICS (LIFT AREA)  
**NGR:** TQ 1655 7631 **Taken from GPS**  
**Start Time:** 22 March 2005 14:01:30  
**Officer:** BW

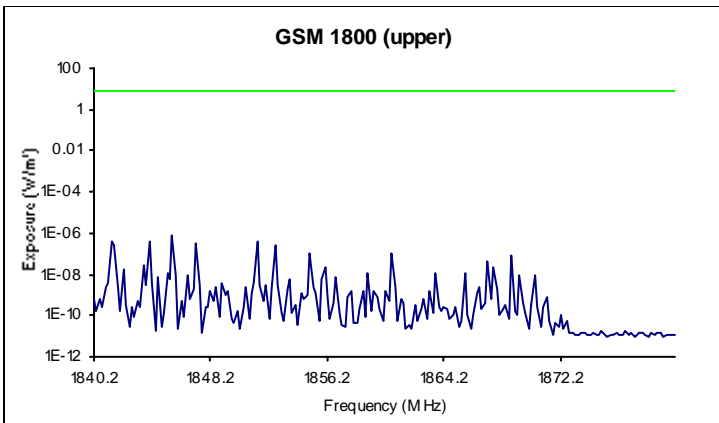
**Receiver:**  
 Manufacturer: ROHDE&SCHWARZ  
 Model: EB200  
 Serial Number: 837.752/028  
**Antenna:**  
 Manufacturer: Rohde & Schwarz  
 Model: HE200  
 Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
953.400	5.85E-08	4.77	1.23E-08
951.200	3.94E-08	4.76	8.28E-09
927.000	1.78E-08	4.63	3.85E-09
945.800	1.51E-08	4.73	3.20E-09
959.200	1.46E-08	4.80	3.04E-09
943.400	8.46E-09	4.72	1.79E-09
956.200	7.59E-09	4.78	1.59E-09
950.800	6.84E-09	4.75	1.44E-09
941.800	6.54E-09	4.71	1.39E-09
941.400	5.07E-09	4.71	1.08E-09
<b>Band Exposure Quotient:</b>			<b>5.14E-08</b>



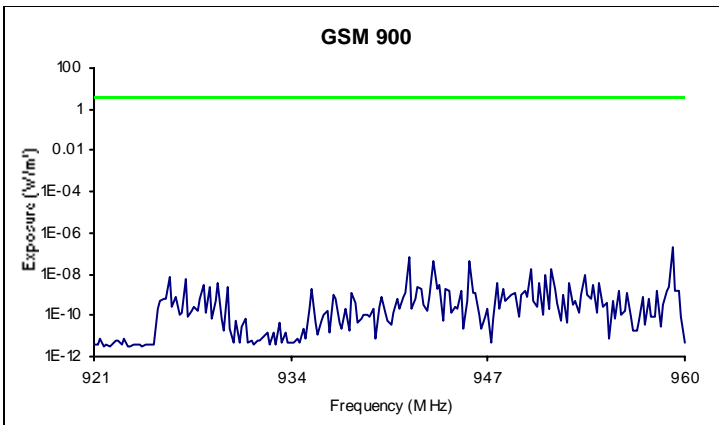
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,830.400	7.03E-07	9.15	7.68E-08
1,831.600	6.88E-07	9.16	7.51E-08
1,817.800	3.07E-07	9.09	3.38E-08
1,820.400	2.81E-07	9.10	3.09E-08
1,834.600	2.69E-07	9.17	2.93E-08
1,838.200	1.83E-07	9.19	1.99E-08
1,833.400	1.38E-07	9.17	1.50E-08
1,828.600	9.45E-08	9.14	1.03E-08
1,827.800	9.01E-08	9.14	9.86E-09
1,835.800	8.14E-08	9.18	8.87E-09
<b>Band Exposure Quotient:</b>			<b>3.56E-07</b>



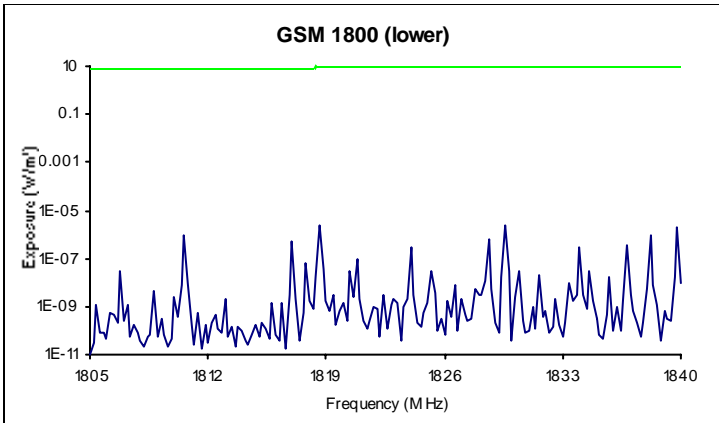
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,845.600	8.28E-07	9.23	8.98E-08
1,841.400	4.42E-07	9.21	4.80E-08
1,844.000	4.34E-07	9.22	4.70E-08
1,851.400	4.00E-07	9.26	4.33E-08
1,847.200	3.31E-07	9.24	3.58E-08
1,841.600	2.54E-07	9.21	2.76E-08
1,852.600	2.47E-07	9.26	2.67E-08
1,860.600	1.10E-07	9.30	1.18E-08
1,855.000	9.89E-08	9.28	1.07E-08
1,868.800	8.05E-08	9.34	8.61E-09
<b>Band Exposure Quotient:</b>			<b>3.86E-07</b>

**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** HEPPLER CLOSE CAR PARK  
**NGR:** TQ 1666 7627 **Taken from GPS**  
**Start Time:** 22 March 2005 14:29:50  
**Officer:** BW

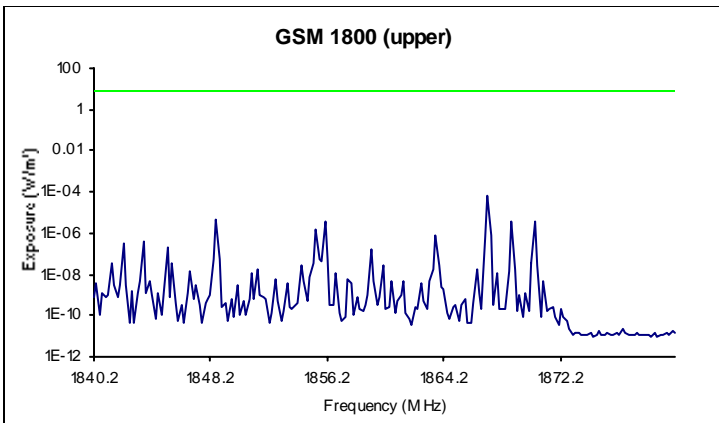
**Receiver:**  
 Manufacturer: ROHDE&SCHWARZ  
 Model: EB200  
 Serial Number: 837.752/028  
**Antenna:**  
 Manufacturer: Rohde & Schwarz  
 Model: HE200  
 Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
959.200	2.15E-07	4.80	4.49E-08
941.800	6.25E-08	4.71	1.33E-08
943.400	4.34E-08	4.72	9.20E-09
945.800	3.98E-08	4.73	8.41E-09
951.200	1.97E-08	4.76	4.15E-09
949.800	1.60E-08	4.75	3.37E-09
953.400	9.28E-09	4.77	1.95E-09
950.800	8.22E-09	4.75	1.73E-09
926.000	7.24E-09	4.63	1.56E-09
927.000	5.51E-09	4.63	1.19E-09
<b>Band Exposure Quotient:</b>			<b>1.11E-07</b>



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,818.600	2.62E-06	9.09	2.88E-07
1,829.600	2.43E-06	9.15	2.66E-07
1,839.800	2.06E-06	9.20	2.24E-07
1,838.200	9.61E-07	9.19	1.05E-07
1,810.600	8.55E-07	9.05	9.44E-08
1,828.600	6.69E-07	9.14	7.32E-08
1,817.000	4.75E-07	9.09	5.23E-08
1,836.800	3.64E-07	9.18	3.97E-08
1,834.000	2.82E-07	9.17	3.07E-08
1,824.000	2.70E-07	9.12	2.96E-08
<b>Band Exposure Quotient:</b>			<b>1.27E-06</b>

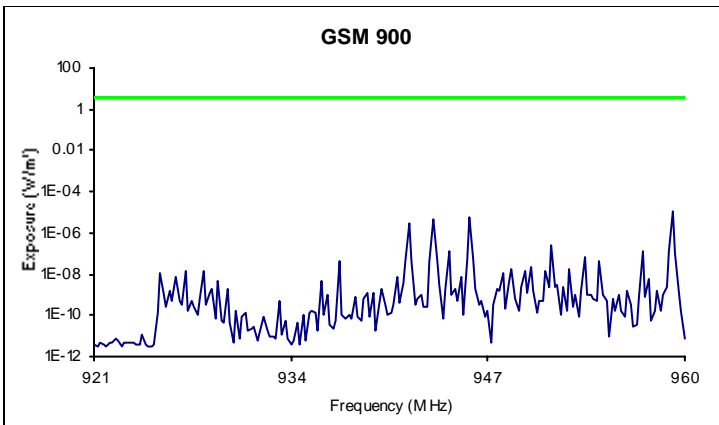


Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,867.200	5.95E-05	9.34	6.37E-06
1,848.600	4.58E-06	9.24	4.95E-07
1,856.000	4.04E-06	9.28	4.35E-07
1,870.400	4.04E-06	9.35	4.32E-07
1,868.800	3.43E-06	9.34	3.67E-07
1,855.400	1.50E-06	9.28	1.61E-07
1,863.600	8.54E-07	9.32	9.17E-08
1,867.400	7.15E-07	9.34	7.66E-08
1,867.000	5.68E-07	9.34	6.08E-08
1,843.600	4.43E-07	9.22	4.81E-08
<b>Band Exposure Quotient:</b>			<b>8.70E-06</b>

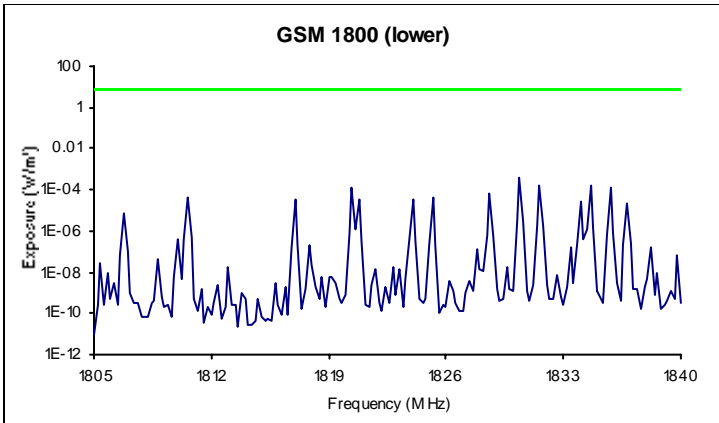


**Site:** WEST MIDDLESEX UNIVERSITY HOSPITAL  
**Location:** WEST PERIMETER OF CAR PARK  
**NGR:** TQ 1629 7636 **Taken from GPS**  
**Start Time:** 22 March 2005 15:06:06  
**Officer:** BW

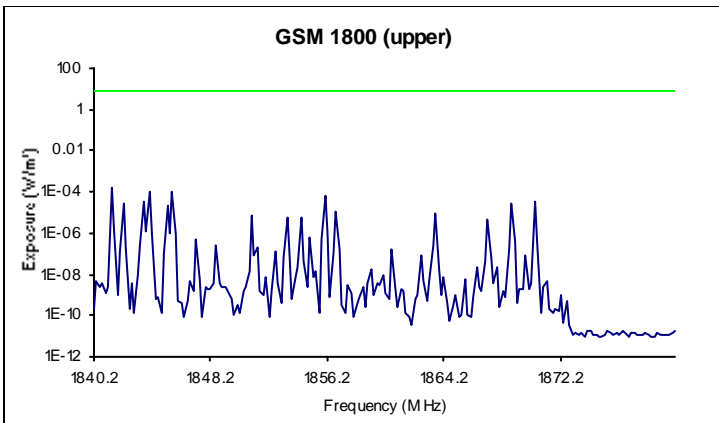
**Receiver:**  
 Manufacturer: ROHDE&SCHWARZ  
 Model: EB200  
 Serial Number: 837.752/028  
**Antenna:**  
 Manufacturer: Rohde & Schwarz  
 Model: HE200  
 Serial Number: 758745/019



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
959.200	1.18E-05	4.80	2.47E-06
945.800	5.75E-06	4.73	1.22E-06
943.400	4.54E-06	4.72	9.63E-07
941.800	3.06E-06	4.71	6.50E-07
951.200	2.43E-07	4.76	5.10E-08
944.400	1.44E-07	4.72	3.05E-08
957.200	1.32E-07	4.79	2.76E-08
959.000	1.24E-07	4.79	2.58E-08
959.400	1.01E-07	4.80	2.10E-08
953.400	6.27E-08	4.77	1.32E-08
<b>Band Exposure Quotient:</b>			<b>5.60E-06</b>



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,830.400	3.77E-04	9.15	4.12E-05
1,834.600	1.78E-04	9.17	1.94E-05
1,831.600	1.73E-04	9.16	1.89E-05
1,835.800	1.23E-04	9.18	1.34E-05
1,820.400	1.17E-04	9.10	1.29E-05
1,828.600	5.96E-05	9.14	6.52E-06
1,825.200	4.29E-05	9.13	4.71E-06
1,810.600	4.00E-05	9.05	4.42E-06
1,824.000	3.56E-05	9.12	3.91E-06
1,820.800	3.54E-05	9.10	3.89E-06
<b>Band Exposure Quotient:</b>			<b>1.42E-04</b>



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,841.400	1.76E-04	9.21	1.91E-05
1,845.600	9.96E-05	9.23	1.08E-05
1,844.000	9.71E-05	9.22	1.05E-05
1,856.000	5.97E-05	9.28	6.43E-06
1,843.600	3.60E-05	9.22	3.91E-06
1,870.400	3.44E-05	9.35	3.68E-06
1,842.200	2.79E-05	9.21	3.03E-06
1,868.800	2.73E-05	9.34	2.92E-06
1,845.200	1.99E-05	9.23	2.15E-06
1,856.800	1.19E-05	9.28	1.28E-06
<b>Band Exposure Quotient:</b>			<b>6.86E-05</b>



## 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 RA 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( $\mu$ V/m)) converted to an equivalent power density (W/m<sup>2</sup>)
- 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<sup>2</sup>)
- ICNIRP Limit:** The reference level given by the International Commission for Non-Ionizing Radiation Protection (ICNIRP) for general public exposure to electromagnetic fields

<i>Frequency</i>	<i>ICNIRP limit</i>
10MHz to 400 MHz	2 W/m <sup>2</sup>
400MHz to 2GHz	f / 200 W/m <sup>2</sup>
2GHz to 300GHz	10 W/m <sup>2</sup>

(where f is frequency in MHz)

**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
- ETACS:** Extended Total Access Communications
- TETRA:** Terrestrial Trunked Radio
- 3G:** 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