

Mobile Phone Base-Station Audit

Audit site: St Robert's RC Primary School
Ainsty Road
Harrogate
HG1 4AP

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. 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.

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 St Robert's RC Primary School on 10 December 2004.

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
Playground Centre	1.85E-04	1/5396
Raised hump outside kitchens	1.71E-04	1/5858
Furthest corner of playing field	1.48E-04	1/6735
Classroom 2S Mrs Snelson	4.13E-05	1/24216
Classroom 2C Mrs Smith	1.09E-05	1/91559
Outside Main Entrance	1.45E-06	1/691572

Issued on behalf of Ofcom.

Issued by:

Received by:

Martin Duckett
Technical Investigation Officer

Site: St Robert's RC Primary School

Location: Classroom 2C Mrs Smith

NGR: SE 3138 5624 **Taken from GPS**

Start Time: 10 December 2004 10:11:44

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

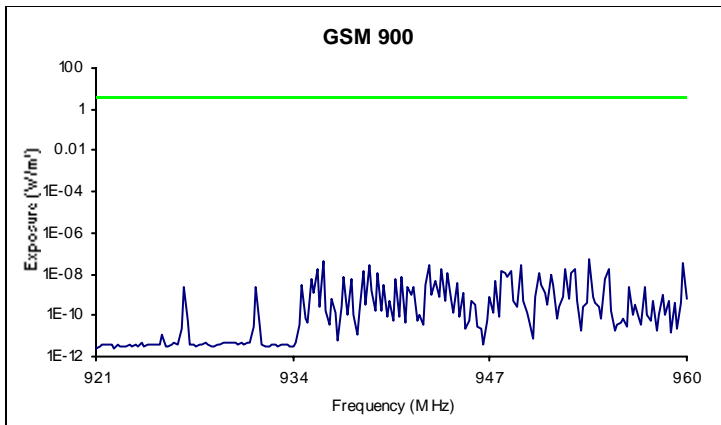
Serial Number: 837.752/007

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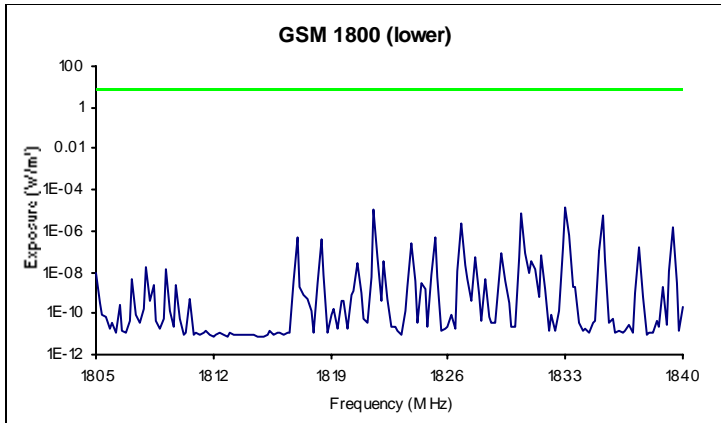
Manufacturer: Rohde & Schwarz

Model: HE200.4050.3609.02

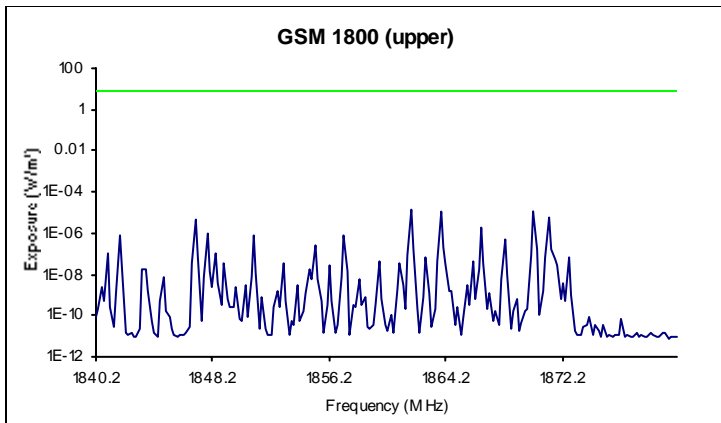
Serial Number: 758745/007



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
953.600	5.34E-08	4.77	1.12E-08
936.000	4.47E-08	4.68	9.54E-09
959.800	3.50E-08	4.80	7.29E-09
949.000	2.84E-08	4.75	5.98E-09
939.000	2.71E-08	4.70	5.77E-09
943.000	2.61E-08	4.71	5.54E-09
935.600	1.86E-08	4.68	3.98E-09
954.800	1.86E-08	4.77	3.89E-09
943.800	1.77E-08	4.72	3.75E-09
952.600	1.65E-08	4.76	3.46E-09
Band Exposure Quotient:			1.12E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,833.000	1.47E-05	9.16	1.61E-06
1,821.600	1.15E-05	9.11	1.26E-06
1,830.400	7.53E-06	9.15	8.23E-07
1,835.200	5.63E-06	9.18	6.13E-07
1,826.800	2.16E-06	9.13	2.36E-07
1,839.400	1.42E-06	9.20	1.55E-07
1,833.200	5.74E-07	9.17	6.26E-08
1,817.000	5.09E-07	9.09	5.60E-08
1,825.200	4.82E-07	9.13	5.28E-08
1,818.400	4.44E-07	9.09	4.89E-08
Band Exposure Quotient:			5.07E-06



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,861.800	1.29E-05	9.31	1.38E-06
1,863.800	1.24E-05	9.32	1.33E-06
1,870.200	1.09E-05	9.35	1.16E-06
1,871.200	5.34E-06	9.36	5.71E-07
1,847.000	4.16E-06	9.23	4.51E-07
1,866.600	1.88E-06	9.33	2.01E-07
1,847.800	8.71E-07	9.24	9.42E-08
1,851.000	7.45E-07	9.26	8.05E-08
1,841.800	7.33E-07	9.21	7.96E-08
1,857.200	7.36E-07	9.29	7.93E-08
Band Exposure Quotient:			5.74E-06

Total number of measurements 572

Total Band Exposure Quotient:

1.09E-05

Site: St Robert's RC Primary School

Location: Classroom 2S Mrs Snelson

NGR: SE 3142 5624 **Taken from GPS**

Start Time: 10 December 2004 10:33:58

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

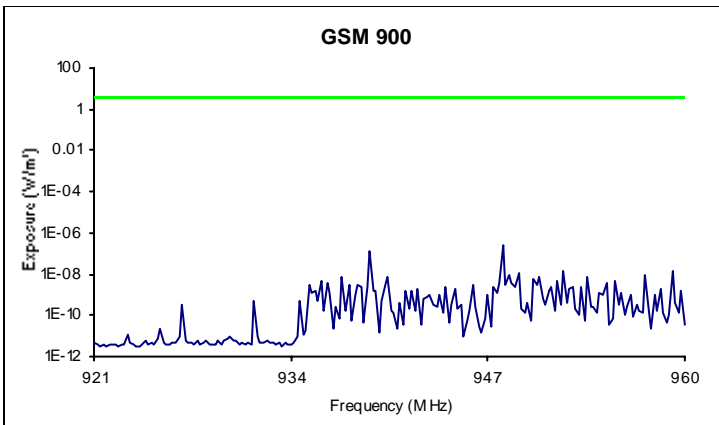
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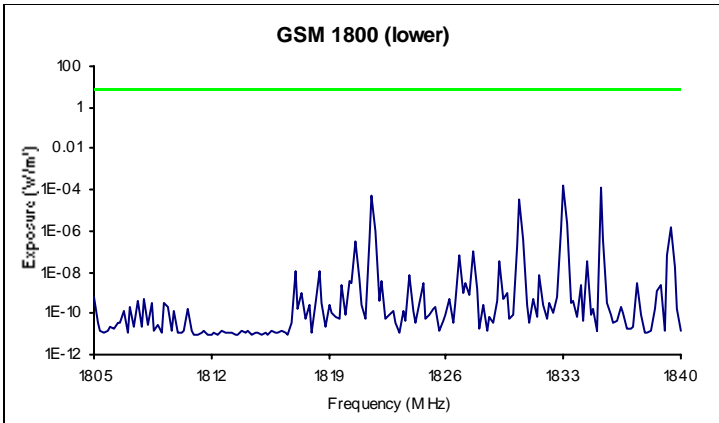
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Model: HE200.4050.3609.02

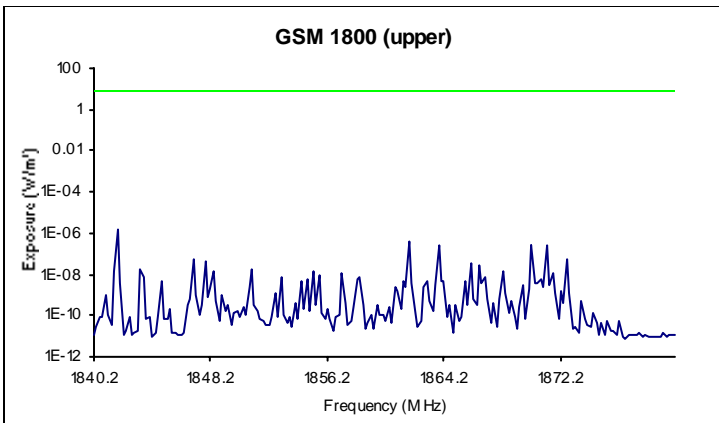
Serial Number: 758745/007



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
948.000	2.30E-07	4.74	4.86E-08
939.200	1.36E-07	4.70	2.89E-08
959.200	1.56E-08	4.80	3.25E-09
952.000	1.37E-08	4.76	2.87E-09
949.000	1.18E-08	4.75	2.49E-09
948.400	9.83E-09	4.74	2.07E-09
957.400	9.80E-09	4.79	2.05E-09
937.400	7.97E-09	4.69	1.70E-09
950.400	8.02E-09	4.75	1.69E-09
940.400	7.49E-09	4.70	1.59E-09
Band Exposure Quotient:			1.22E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,833.000	1.62E-04	9.16	1.76E-05
1,835.200	1.20E-04	9.18	1.31E-05
1,821.600	5.25E-05	9.11	5.76E-06
1,830.400	3.14E-05	9.15	3.43E-06
1,833.200	2.34E-06	9.17	2.55E-07
1,839.400	1.53E-06	9.20	1.66E-07
1,832.800	1.09E-06	9.16	1.19E-07
1,821.800	1.00E-06	9.11	1.10E-07
1,830.600	4.33E-07	9.15	4.74E-08
1,821.400	3.89E-07	9.11	4.27E-08
Band Exposure Quotient:			4.08E-05



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,841.800	1.40E-06	9.21	1.52E-07
1,861.800	4.08E-07	9.31	4.38E-08
1,871.200	2.80E-07	9.36	2.99E-08
1,863.800	2.70E-07	9.32	2.90E-08
1,870.200	2.33E-07	9.35	2.49E-08
1,847.000	5.24E-08	9.23	5.67E-09
1,872.600	5.11E-08	9.36	5.46E-09
1,847.800	3.89E-08	9.24	4.21E-09
1,866.000	3.42E-08	9.33	3.66E-09
1,866.600	2.84E-08	9.33	3.05E-09
Band Exposure Quotient:			3.32E-07

Total number of measurements 572

Total Band Exposure Quotient:

4.13E-05

Site: St Robert's RC Primary School

Location: Outside Main Entrance

NGR: SE 3137 5623 **Taken from GPS**

Start Time: 10 December 2004 10:52:35

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

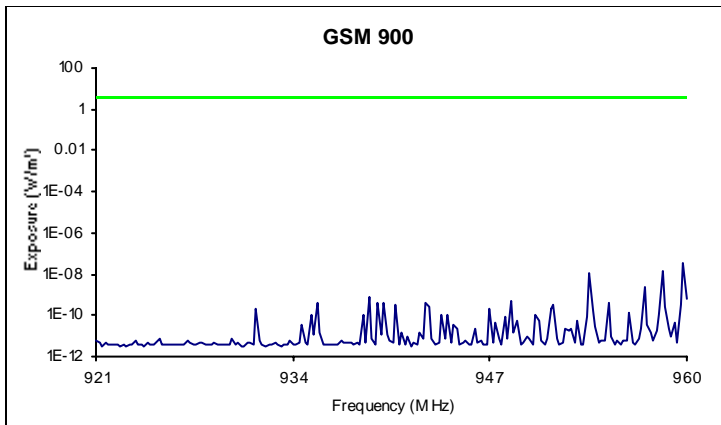
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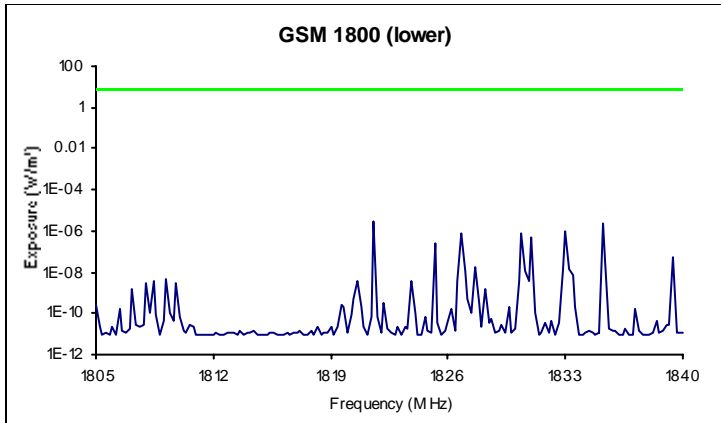
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Model: HE200.4050.3609.02

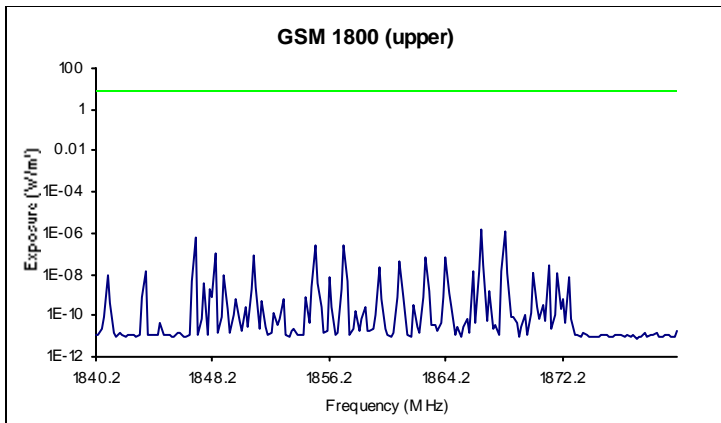
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Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
959.800	3.75E-08	4.80	7.81E-09
958.400	1.49E-08	4.79	3.10E-09
953.600	1.22E-08	4.77	2.57E-09
957.200	2.30E-09	4.79	4.80E-10
939.000	7.29E-10	4.70	1.55E-10
960.000	6.82E-10	4.80	1.42E-10
948.400	5.04E-10	4.74	1.06E-10
935.600	4.46E-10	4.68	9.54E-11
939.600	4.20E-10	4.70	8.95E-11
942.800	4.04E-10	4.71	8.58E-11
Band Exposure Quotient:			1.58E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,821.600	3.02E-06	9.11	3.32E-07
1,835.200	2.35E-06	9.18	2.56E-07
1,833.000	8.89E-07	9.16	9.70E-08
1,826.800	7.15E-07	9.13	7.82E-08
1,830.400	7.03E-07	9.15	7.68E-08
1,831.000	4.87E-07	9.15	5.32E-08
1,825.200	2.65E-07	9.13	2.90E-08
1,839.400	5.67E-08	9.20	6.16E-09
1,835.400	4.79E-08	9.18	5.22E-09
1,827.600	1.76E-08	9.14	1.92E-09
Band Exposure Quotient:			9.46E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,866.600	1.46E-06	9.33	1.56E-07
1,868.200	1.33E-06	9.34	1.43E-07
1,847.000	6.16E-07	9.23	6.67E-08
1,855.200	2.37E-07	9.28	2.56E-08
1,857.200	2.33E-07	9.29	2.51E-08
1,848.400	1.05E-07	9.24	1.13E-08
1,851.000	8.75E-08	9.26	9.46E-09
1,864.200	7.11E-08	9.32	7.63E-09
1,862.800	7.10E-08	9.31	7.62E-09
1,861.000	4.78E-08	9.30	5.14E-09
Band Exposure Quotient:			4.84E-07

Site: St Robert's RC Primary School

Location: Raised hump outside kitchens

NGR: SE 3137 5627 **Taken from GPS**

Start Time: 10 December 2004 11:50:16

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

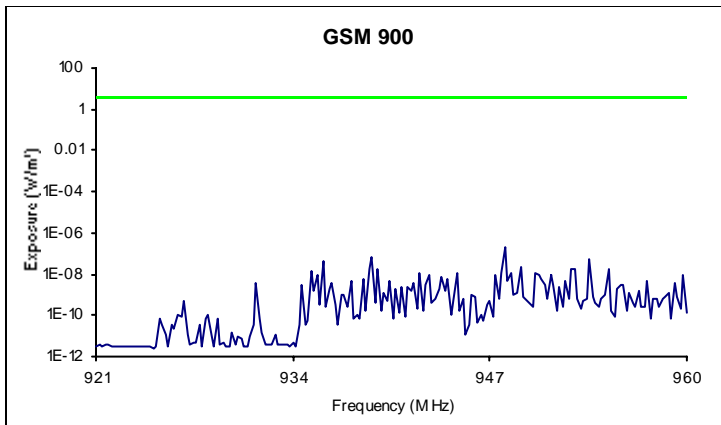
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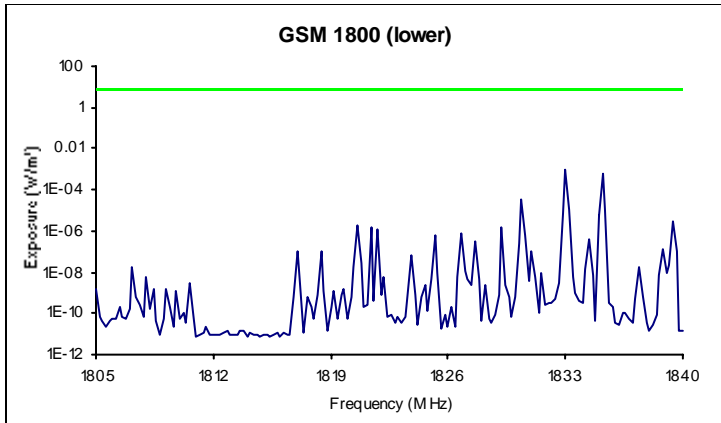
Manufacturer: Rohde & Schwarz

Model: HE200.4050.3609.02

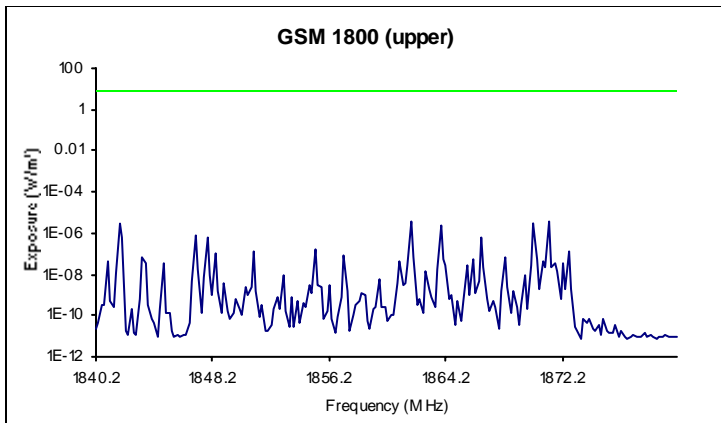
Serial Number: 758745/007



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
948.000	1.91E-07	4.74	4.04E-08
939.200	6.50E-08	4.70	1.39E-08
953.600	5.86E-08	4.77	1.23E-08
936.000	4.07E-08	4.68	8.70E-09
949.000	2.31E-08	4.75	4.86E-09
952.400	1.98E-08	4.76	4.16E-09
939.600	1.92E-08	4.70	4.09E-09
952.600	1.93E-08	4.76	4.06E-09
939.000	1.63E-08	4.70	3.48E-09
954.800	1.62E-08	4.77	3.39E-09
Band Exposure Quotient:			1.55E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,833.000	9.09E-04	9.16	9.92E-05
1,835.200	5.50E-04	9.18	5.99E-05
1,830.400	3.69E-05	9.15	4.03E-06
1,833.200	1.20E-05	9.17	1.31E-06
1,835.400	1.12E-05	9.18	1.22E-06
1,832.800	6.90E-06	9.16	7.53E-07
1,835.000	5.37E-06	9.18	5.86E-07
1,839.400	2.78E-06	9.20	3.02E-07
1,820.600	1.70E-06	9.10	1.86E-07
1,821.400	1.45E-06	9.11	1.59E-07
Band Exposure Quotient:			1.68E-04



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,871.200	4.05E-06	9.36	4.33E-07
1,861.800	3.55E-06	9.31	3.81E-07
1,870.200	2.93E-06	9.35	3.13E-07
1,841.800	2.85E-06	9.21	3.10E-07
1,863.800	2.15E-06	9.32	2.30E-07
1,847.000	7.93E-07	9.23	8.59E-08
1,866.600	6.22E-07	9.33	6.67E-08
1,842.000	5.96E-07	9.21	6.48E-08
1,847.800	5.89E-07	9.24	6.37E-08
1,855.200	1.50E-07	9.28	1.61E-08
Band Exposure Quotient:			2.12E-06

Total number of measurements 572

Total Band Exposure Quotient:

1.71E-04

Site: St Robert's RC Primary School

Location: Playground Centre

NGR: SE 3141 5627 **Taken from GPS**

Start Time: 10 December 2004 12:17:20

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

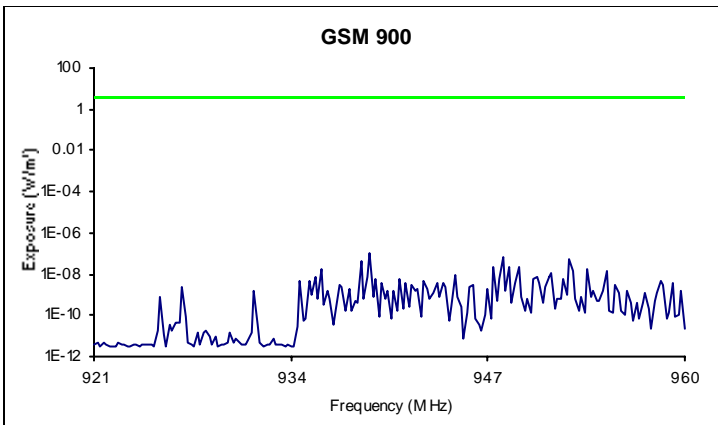
Serial Number: 837.752/007

Antenna:

Manufacturer: Rohde & Schwarz

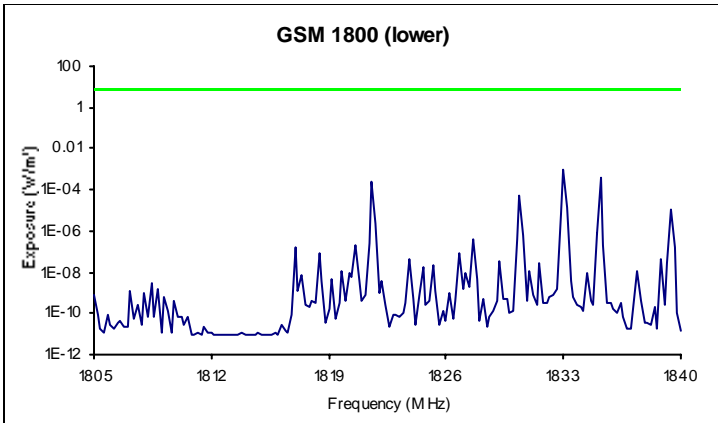
Model: HE200.4050.3609.02

Serial Number: 758745/007



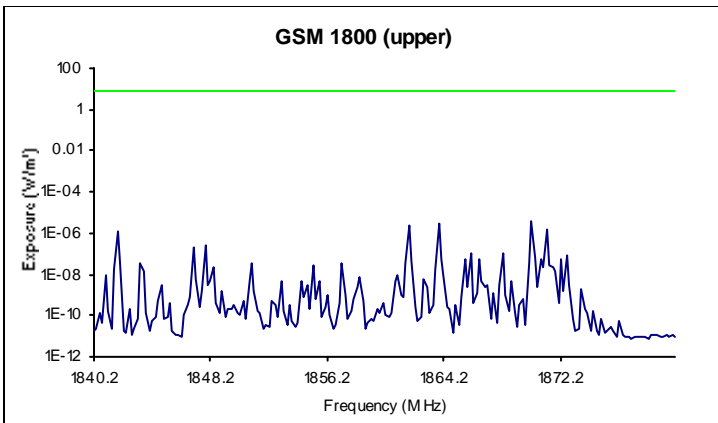
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
939.200	1.01E-07	4.70	2.15E-08
948.000	7.45E-08	4.74	1.57E-08
952.400	5.58E-08	4.76	1.17E-08
938.600	4.49E-08	4.69	9.58E-09
948.400	2.25E-08	4.74	4.75E-09
949.000	2.15E-08	4.75	4.54E-09
947.400	2.10E-08	4.74	4.42E-09
936.000	1.95E-08	4.68	4.17E-09
953.600	1.73E-08	4.77	3.62E-09
952.600	1.47E-08	4.76	3.08E-09

Band Exposure Quotient: 1.28E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,833.000	9.31E-04	9.16	1.02E-04
1,835.200	4.27E-04	9.18	4.65E-05
1,821.600	2.29E-04	9.11	2.52E-05
1,830.400	5.85E-05	9.15	6.39E-06
1,833.200	1.31E-05	9.17	1.43E-06
1,839.400	1.16E-05	9.20	1.26E-06
1,832.800	6.74E-06	9.16	7.35E-07
1,821.800	2.35E-06	9.11	2.58E-07
1,835.000	7.77E-07	9.18	8.47E-08
1,830.600	5.85E-07	9.15	6.39E-08

Band Exposure Quotient: 1.84E-04



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,870.200	3.86E-06	9.35	4.13E-07
1,863.800	2.77E-06	9.32	2.97E-07
1,861.800	2.63E-06	9.31	2.83E-07
1,871.200	1.54E-06	9.36	1.65E-07
1,841.800	1.30E-06	9.21	1.42E-07
1,847.800	2.34E-07	9.24	2.54E-08
1,847.000	2.09E-07	9.23	2.26E-08
1,866.000	1.13E-07	9.33	1.21E-08
1,868.200	1.06E-07	9.34	1.13E-08
1,872.600	8.68E-08	9.36	9.27E-09

Band Exposure Quotient: 1.48E-06

Total number of measurements 572

Total Band Exposure Quotient: 1.85E-04

Site: St Robert's RC Primary School

Location: Furthest corner of playing field

NGR: SE 3147 5626 **Taken from GPS**

Start Time: 10 December 2004 12:37:43

Officer: Martin Duckett

Receiver:

Manufacturer: ROHDE&SCHWARZ

Model: EB200

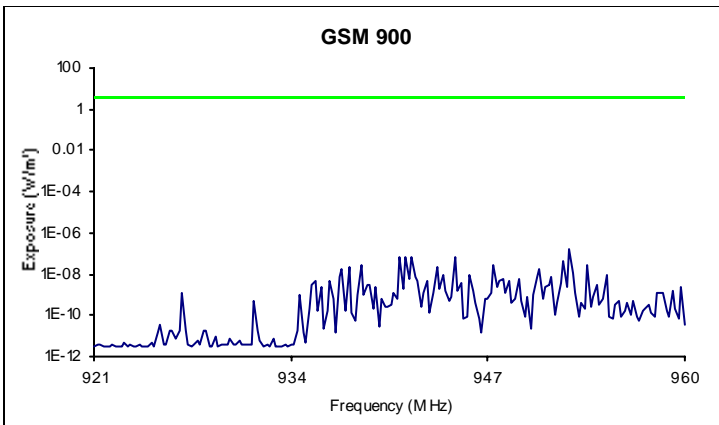
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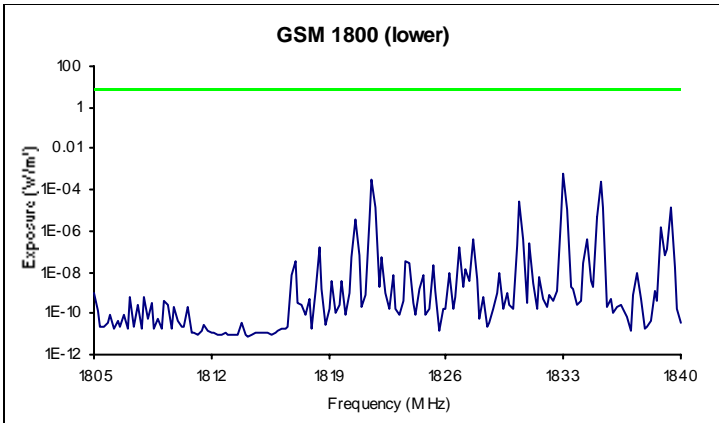
Manufacturer: Rohde & Schwarz

Model: HE200.4050.3609.02

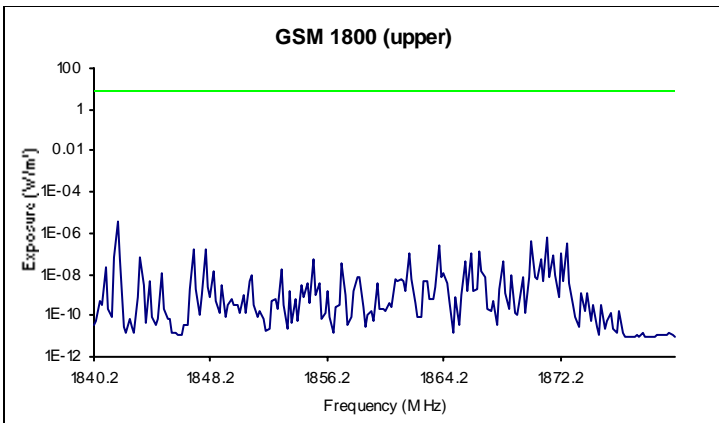
Serial Number: 758745/007



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
952.400	1.47E-07	4.76	3.08E-08
944.800	7.39E-08	4.72	1.56E-08
941.600	6.54E-08	4.71	1.39E-08
942.000	6.11E-08	4.71	1.30E-08
941.200	6.10E-08	4.71	1.30E-08
952.000	4.04E-08	4.76	8.48E-09
947.400	3.03E-08	4.74	6.40E-09
938.600	2.71E-08	4.69	5.77E-09
953.600	2.68E-08	4.77	5.61E-09
937.800	2.41E-08	4.69	5.14E-09
Band Exposure Quotient:			1.71E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,833.000	6.74E-04	9.16	7.36E-05
1,821.600	3.39E-04	9.11	3.72E-05
1,835.200	2.35E-04	9.18	2.56E-05
1,830.400	2.80E-05	9.15	3.06E-06
1,835.400	1.55E-05	9.18	1.69E-06
1,821.800	1.32E-05	9.11	1.45E-06
1,839.400	1.27E-05	9.20	1.38E-06
1,833.200	1.20E-05	9.17	1.31E-06
1,832.800	4.77E-06	9.16	5.21E-07
1,835.000	4.68E-06	9.18	5.10E-07
Band Exposure Quotient:			1.48E-04



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,841.800	4.03E-06	9.21	4.38E-07
1,871.200	6.13E-07	9.36	6.55E-08
1,870.200	3.86E-07	9.35	4.13E-08
1,872.600	3.08E-07	9.36	3.29E-08
1,863.800	2.52E-07	9.32	2.71E-08
1,847.000	1.78E-07	9.23	1.92E-08
1,847.800	1.62E-07	9.24	1.75E-08
1,866.600	1.43E-07	9.33	1.53E-08
1,861.800	1.12E-07	9.31	1.21E-08
1,866.000	1.01E-07	9.33	1.08E-08
Band Exposure Quotient:			7.77E-07

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(μ V/m)) converted to an equivalent power density (W/m²)
- 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/m²)
- 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 ²
400MHz to 2GHz	f / 200 W/m ²
2GHz to 300GHz	10 W/m ²

(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