

Mobile Phone Base-Station Audit

Audit site: CEDAR LODGE SCHOOL
GRAYS LANE
NEWTOWNABBEY
BT38 7EB

The Radiocommunications Agency (RA) is responsible for management of the civil radio spectrum in the UK. The Government has asked the RA 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).

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 RA officers at the time of the audit or by contacting the RA on 020 7211 0211 or by e-mail at rfaudit@ra.gsi.gov.uk

Results taken from all audit sites and further information on the audit programme can be found on the RA website at www.radio.gov.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.

The Radiocommunications Agency performed this survey of the RF emission environment prevailing in the vicinity of CEDAR LODGE SCHOOL on 26 September 2002.

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
CENTER OF INFANT PLAYGROUND	6.62E-07	1/1511084
REAR OF SCIENCE ROOM	6.11E-07	1/1635496
CENTER OF SENIOR PLAYGROUND	4.10E-07	1/2441534
CENTER OF JUNIOR PLAYGROUND	3.29E-07	1/3035005
CENTER OF ASSEMBLY HALL.	8.70E-08	1/11498044
CENTER OF NURSES SICK BAY	7.74E-08	1/12921662

Issued on behalf of the Radiocommunications Agency.

Issued by:

Received by:

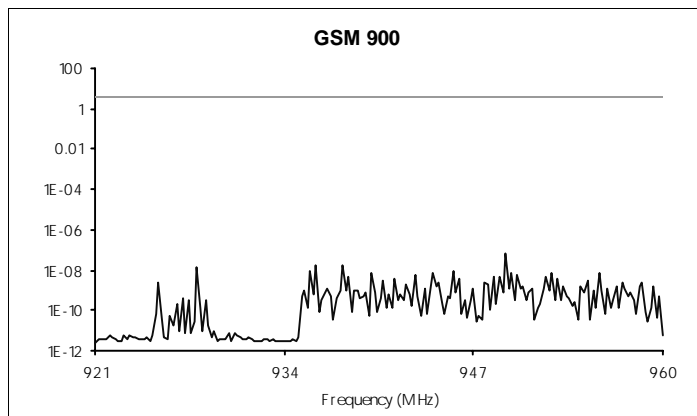
Brian McHenry
Radiocommunications Specialist

Site: CEDAR LODGE SCHOOL
Location: CENTER OF NURSES SICK BAY

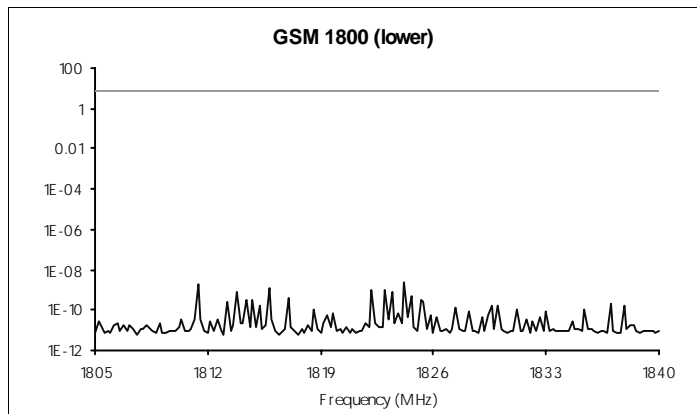
NGR: IJ 4079 6012 **Taken from GPS**
Start Time: 26 September 2002 12:30:52
Officer: Brian McHenry

Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 838.228/017

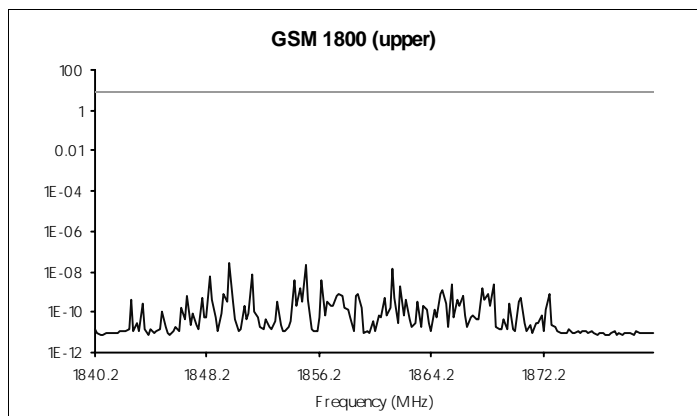
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200.4050.3609.02
 Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
949.200	7.47E-08	4.75	1.57E-08
936.200	1.91E-08	4.68	4.07E-09
938.000	1.59E-08	4.69	3.39E-09
928.000	1.56E-08	4.64	3.35E-09
935.800	9.33E-09	4.68	1.99E-09
945.600	8.31E-09	4.73	1.76E-09
952.400	7.70E-09	4.76	1.62E-09
949.600	7.65E-09	4.75	1.61E-09
940.000	7.31E-09	4.70	1.56E-09
955.600	6.91E-09	4.78	1.45E-09
Band Exposure Quotient:			6.30E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,824.200	2.20E-09	9.12	2.41E-10
1,811.400	1.92E-09	9.06	2.12E-10
1,815.800	1.14E-09	9.08	1.25E-10
1,823.000	1.10E-09	9.12	1.21E-10
1,822.200	1.05E-09	9.11	1.15E-10
1,813.800	7.84E-10	9.07	8.65E-11
1,823.400	7.10E-10	9.12	7.79E-11
1,824.600	5.53E-10	9.12	6.06E-11
1,817.000	3.86E-10	9.09	4.25E-11
1,825.200	3.49E-10	9.13	3.82E-11
Band Exposure Quotient:			1.66E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,849.800	2.70E-08	9.25	2.92E-09
1,855.200	2.27E-08	9.28	2.44E-09
1,861.400	1.51E-08	9.31	1.63E-09
1,851.400	6.96E-09	9.26	7.52E-10
1,848.400	5.89E-09	9.24	6.38E-10
1,854.400	3.93E-09	9.27	4.24E-10
1,856.400	3.36E-09	9.28	3.62E-10
1,865.600	2.47E-09	9.33	2.65E-10
1,868.600	2.43E-09	9.34	2.60E-10
1,862.000	2.04E-09	9.31	2.20E-10
Band Exposure Quotient:			1.27E-08

Total number of measurements: 572

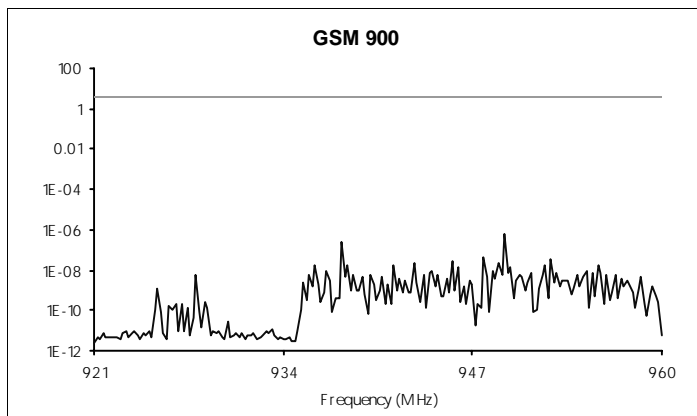
Total Band Exposure Quotient: **7.74E-08**

Site: CEDAR LODGE SCHOOL
Location: CENTER OF JUNIOR PLAYGROUND

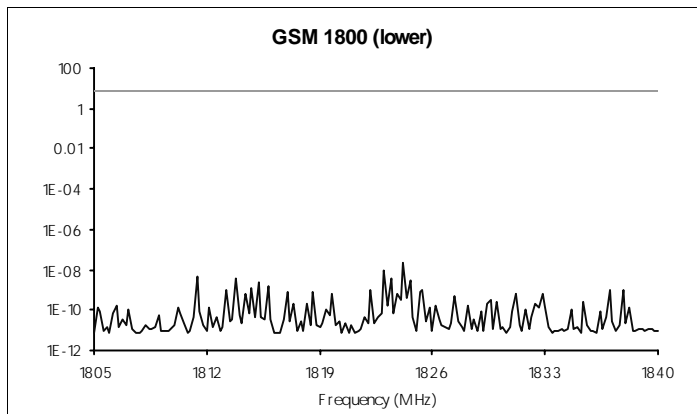
NGR: IJ40796012 **Taken from GPS**
Start Time: 26 September 2002 12:45:09
Officer: Brian McHenry

Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 838.228/017

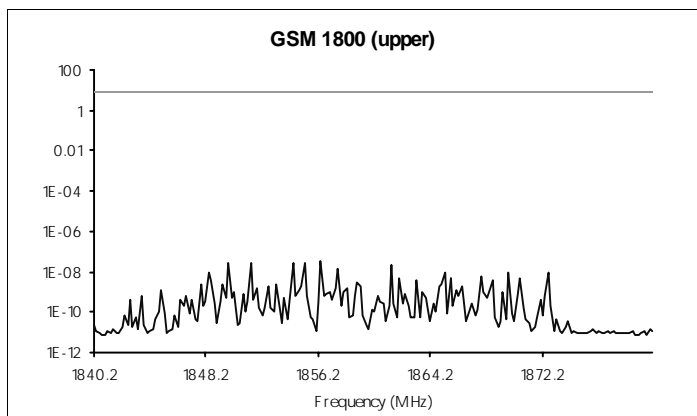
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200.4050.3609.02
 Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
949.200	5.93E-07	4.75	1.25E-07
938.000	2.36E-07	4.69	5.02E-08
947.800	4.00E-08	4.74	8.44E-09
952.400	3.28E-08	4.76	6.90E-09
945.600	2.57E-08	4.73	5.43E-09
943.000	2.17E-08	4.71	4.61E-09
948.800	2.01E-08	4.74	4.23E-09
952.000	1.89E-08	4.76	3.97E-09
955.600	1.78E-08	4.78	3.72E-09
938.400	1.67E-08	4.69	3.56E-09
Band Exposure Quotient:			2.89E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,824.200	2.47E-08	9.12	2.70E-09
1,823.000	8.73E-09	9.12	9.58E-10
1,811.400	4.29E-09	9.06	4.74E-10
1,823.400	3.82E-09	9.12	4.19E-10
1,813.800	3.34E-09	9.07	3.69E-10
1,824.600	2.71E-09	9.12	2.97E-10
1,815.200	2.16E-09	9.08	2.39E-10
1,815.800	1.64E-09	9.08	1.81E-10
1,814.800	1.33E-09	9.07	1.47E-10
1,822.200	1.10E-09	9.11	1.21E-10
Band Exposure Quotient:			7.85E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,856.400	3.36E-08	9.28	3.62E-09
1,849.800	3.03E-08	9.25	3.28E-09
1,855.200	2.66E-08	9.28	2.87E-09
1,851.400	2.53E-08	9.26	2.73E-09
1,854.400	2.48E-08	9.27	2.68E-09
1,861.400	2.00E-08	9.31	2.14E-09
1,857.600	1.40E-08	9.29	1.51E-09
1,872.600	9.96E-09	9.36	1.06E-09
1,869.800	9.04E-09	9.35	9.67E-10
1,848.400	8.72E-09	9.24	9.43E-10
Band Exposure Quotient:			3.27E-08

Total number of measurements: 572

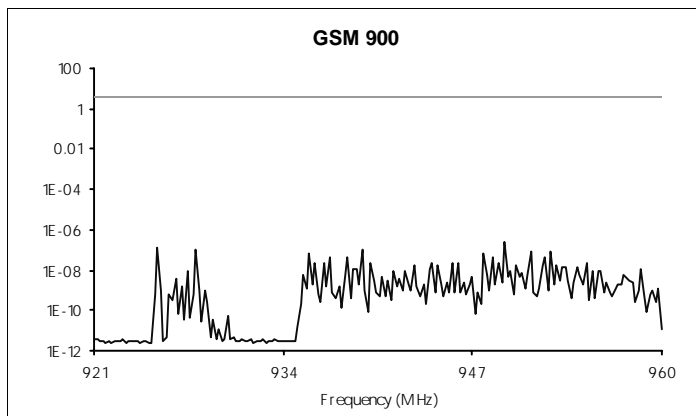
Total Band Exposure Quotient: **3.29E-07**

Site: CEDAR LODGE SCHOOL
Location: CENTER OF SENIOR PLAYGROUND

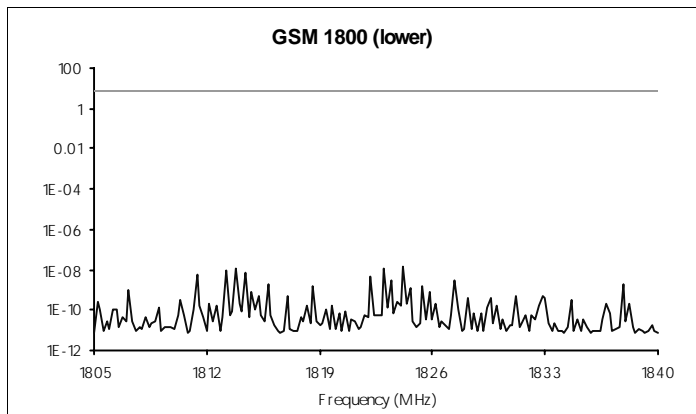
NGR: IJ 4079 6012 **Taken from GPS**
Start Time: 26 September 2002 13:04:03
Officer: Brian McHenry

Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 838.228/017

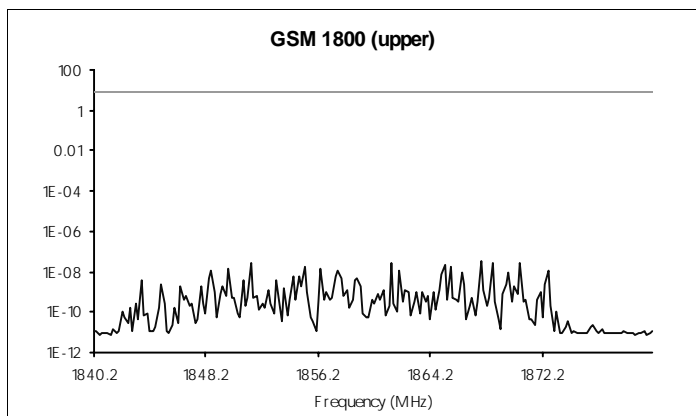
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200.4050.3609.02
 Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
949.200	2.71E-07	4.75	5.71E-08
925.400	1.35E-07	4.63	2.91E-08
928.000	1.13E-07	4.64	2.43E-08
939.400	9.41E-08	4.70	2.00E-08
952.400	8.84E-08	4.76	1.86E-08
951.000	7.85E-08	4.75	1.65E-08
935.800	6.60E-08	4.68	1.41E-08
947.800	6.63E-08	4.74	1.40E-08
952.000	4.74E-08	4.76	9.96E-09
948.400	4.70E-08	4.74	9.92E-09
Band Exposure Quotient:			3.54E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,824.200	1.49E-08	9.12	1.63E-09
1,813.800	1.13E-08	9.07	1.25E-09
1,823.000	1.07E-08	9.12	1.18E-09
1,813.200	9.42E-09	9.07	1.04E-09
1,814.400	8.03E-09	9.07	8.85E-10
1,811.400	6.06E-09	9.06	6.69E-10
1,822.200	4.37E-09	9.11	4.80E-10
1,823.400	3.25E-09	9.12	3.56E-10
1,827.400	2.85E-09	9.14	3.12E-10
1,815.800	2.12E-09	9.08	2.33E-10
Band Exposure Quotient:			1.02E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,867.800	3.43E-08	9.34	3.67E-09
1,861.400	3.02E-08	9.31	3.25E-09
1,868.600	2.92E-08	9.34	3.13E-09
1,851.400	2.83E-08	9.26	3.06E-09
1,870.600	2.73E-08	9.35	2.92E-09
1,865.200	2.47E-08	9.33	2.65E-09
1,865.600	1.92E-08	9.33	2.06E-09
1,855.200	1.76E-08	9.28	1.90E-09
1,856.400	1.47E-08	9.28	1.58E-09
1,849.800	1.45E-08	9.25	1.57E-09
Band Exposure Quotient:			4.51E-08

Total number of measurements: 572

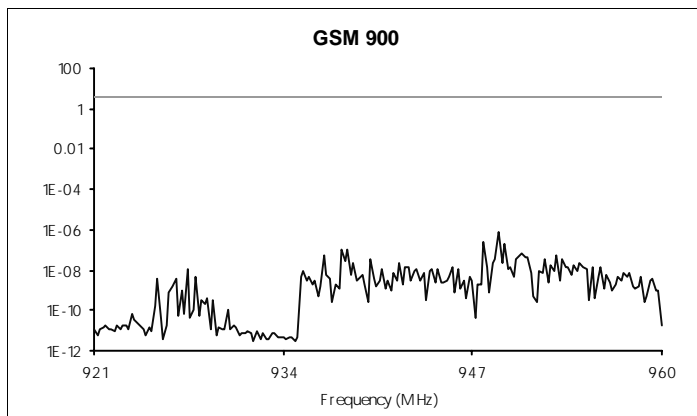
Total Band Exposure Quotient: **4.10E-07**

Site: CEDAR LODGE SCHOOL
Location: CENTER OF INFANT PLAYGROUND

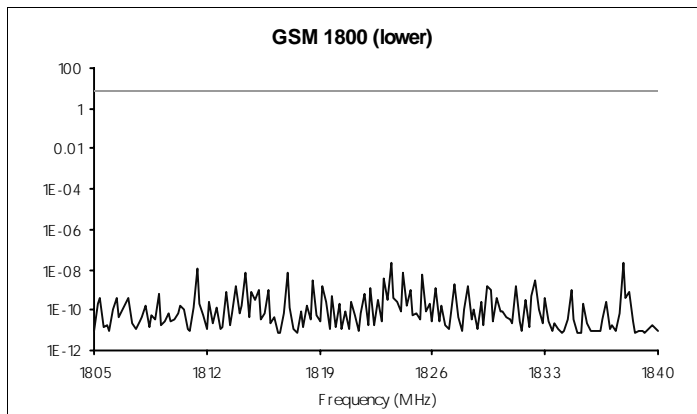
NGR: IJ 4079 6012 **Taken from GPS**
Start Time: 26 September 2002 13:18:28
Officer: Brian McHenry

Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 838.228/017

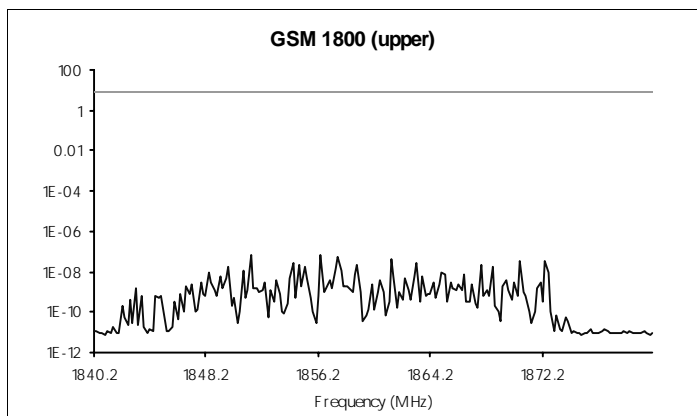
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200.4050.3609.02
 Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m ²)	ICNIRP Limit (W/m ²)	Frequency Exposure Quotient
948.800	8.57E-07	4.74	1.81E-07
947.800	2.52E-07	4.74	5.32E-08
949.200	2.26E-07	4.75	4.75E-08
938.000	1.05E-07	4.69	2.24E-08
938.400	1.01E-07	4.69	2.14E-08
950.400	6.67E-08	4.75	1.40E-08
936.800	5.63E-08	4.68	1.20E-08
950.200	5.30E-08	4.75	1.12E-08
952.800	5.09E-08	4.76	1.07E-08
950.800	4.22E-08	4.75	8.87E-09
Band Exposure Quotient:			5.72E-07



Frequency (MHz)	Maximum Exposure (W/m ²)	ICNIRP Limit (W/m ²)	Frequency Exposure Quotient
1,837.800	2.30E-08	9.19	2.51E-09
1,823.400	2.20E-08	9.12	2.41E-09
1,811.400	1.18E-08	9.06	1.30E-09
1,817.000	7.88E-09	9.09	8.68E-10
1,814.400	7.16E-09	9.07	7.89E-10
1,824.200	6.95E-09	9.12	7.62E-10
1,825.400	5.41E-09	9.13	5.93E-10
1,823.000	3.64E-09	9.12	3.99E-10
1,818.600	3.15E-09	9.09	3.46E-10
1,832.400	2.74E-09	9.16	2.99E-10
Band Exposure Quotient:			1.40E-08



Frequency (MHz)	Maximum Exposure (W/m ²)	ICNIRP Limit (W/m ²)	Frequency Exposure Quotient
1,851.400	6.80E-08	9.26	7.35E-09
1,856.400	6.11E-08	9.28	6.59E-09
1,857.600	4.98E-08	9.29	5.36E-09
1,861.400	3.98E-08	9.31	4.28E-09
1,872.400	3.45E-08	9.36	3.69E-09
1,870.600	3.29E-08	9.35	3.52E-09
1,854.400	2.66E-08	9.27	2.87E-09
1,863.200	2.64E-08	9.32	2.83E-09
1,854.800	2.37E-08	9.27	2.56E-09
1,867.800	2.37E-08	9.34	2.54E-09
Band Exposure Quotient:			7.56E-08

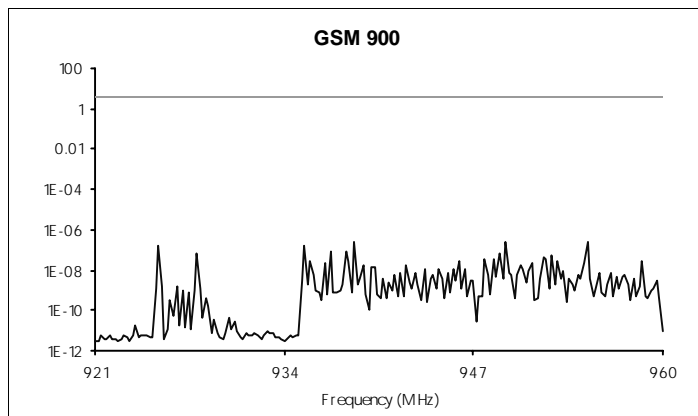
Total number of measurements: 572

Total Band Exposure Quotient: **6.62E-07**

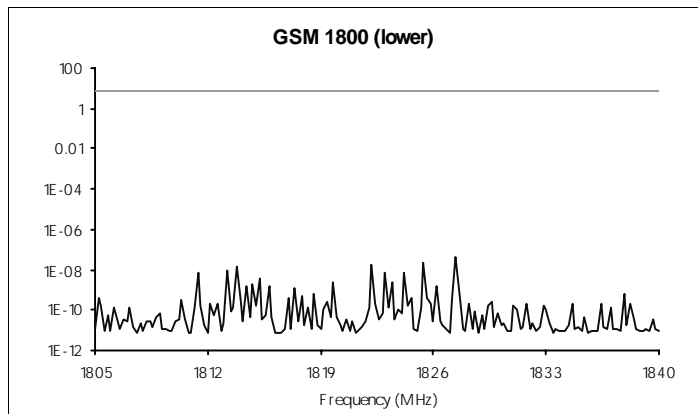
Site: CEDAR LODGE SCHOOL
Location: REAR OF SCIENCE ROOM

NGR: IJ 4079 6012 **Taken from GPS**
Start Time: 26 September 2002 13:47:14
Officer: Brian McHenry

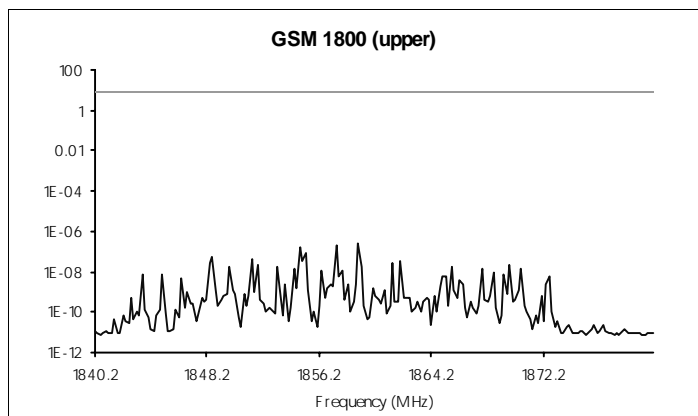
Receiver:
Manufacturer: ROHDE&SCHWARZ
Model: EB200
Serial Number: 838.228/017
Antenna:
Manufacturer: Rohde & Schwarz
Model: HE200.4050.3609.02
Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
954.800	2.81E-07	4.77	5.89E-08
949.200	2.53E-07	4.75	5.33E-08
938.800	2.41E-07	4.69	5.14E-08
925.400	1.70E-07	4.63	3.67E-08
935.400	1.51E-07	4.68	3.23E-08
938.200	8.55E-08	4.69	1.82E-08
937.200	8.15E-08	4.69	1.74E-08
948.800	6.96E-08	4.74	1.47E-08
928.000	6.64E-08	4.64	1.43E-08
952.400	5.33E-08	4.76	1.12E-08
Band Exposure Quotient:			4.63E-07



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,827.400	4.12E-08	9.14	4.51E-09
1,825.400	2.15E-08	9.13	2.36E-09
1,822.200	1.82E-08	9.11	2.00E-09
1,813.800	1.56E-08	9.07	1.73E-09
1,813.200	8.99E-09	9.07	9.92E-10
1,811.400	7.46E-09	9.06	8.23E-10
1,824.200	7.45E-09	9.12	8.17E-10
1,823.000	6.78E-09	9.12	7.44E-10
1,815.200	3.59E-09	9.08	3.96E-10
1,819.800	2.62E-09	9.10	2.88E-10
Band Exposure Quotient:			1.72E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,859.000	2.33E-07	9.29	2.51E-08
1,857.400	2.08E-07	9.29	2.23E-08
1,854.800	1.80E-07	9.27	1.94E-08
1,855.200	8.23E-08	9.28	8.87E-09
1,848.600	5.25E-08	9.24	5.68E-09
1,851.400	4.39E-08	9.26	4.74E-09
1,862.000	3.39E-08	9.31	3.64E-09
1,855.000	3.20E-08	9.28	3.45E-09
1,848.400	2.76E-08	9.24	2.98E-09
1,861.400	2.69E-08	9.31	2.89E-09
Band Exposure Quotient:			1.32E-07

Total number of measurements: 572

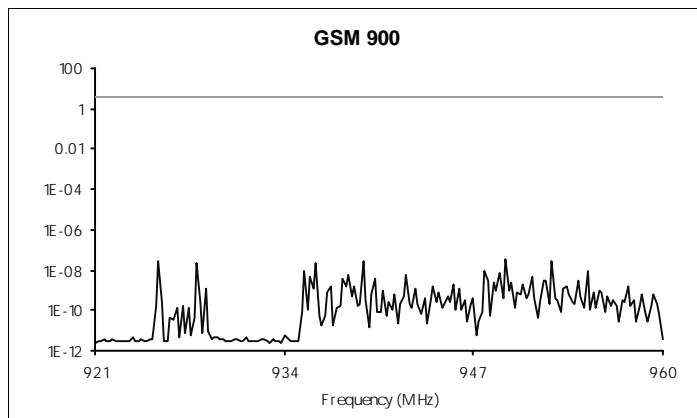
Total Band Exposure Quotient: **6.11E-07**

Site: CEDAR LODGE SCHOOL
Location: CENTER OF ASSEMBLY HALL.

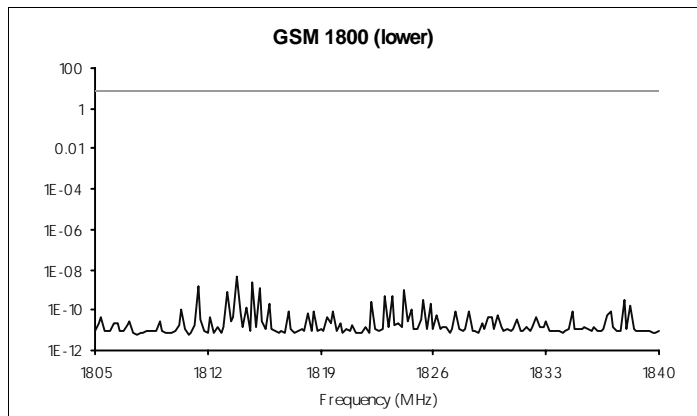
NGR: IJ 4079 6012 **Taken from GPS**
Start Time: 26 September 2002 14:01:51
Officer: Brian McHenry

Receiver:
Manufacturer: ROHDE&SCHWARZ
Model: EB200
Serial Number: 838.228/017

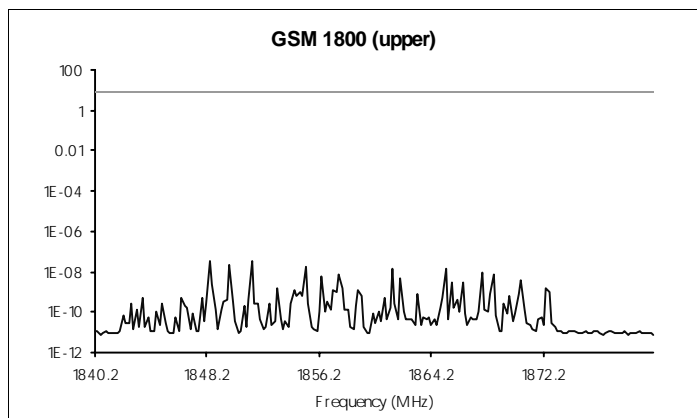
Antenna:
Manufacturer: Rohde & Schwarz
Model: HE200.4050.3609.02
Serial Number: 838789/032



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
949.200	3.57E-08	4.75	7.53E-09
925.400	3.09E-08	4.63	6.67E-09
952.400	2.67E-08	4.76	5.61E-09
939.400	2.59E-08	4.70	5.52E-09
928.000	2.47E-08	4.64	5.31E-09
936.200	2.09E-08	4.68	4.47E-09
947.800	9.81E-09	4.74	2.07E-09
935.400	9.54E-09	4.68	2.04E-09
954.800	8.49E-09	4.77	1.78E-09
948.800	7.81E-09	4.74	1.65E-09
Band Exposure Quotient:			6.21E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,813.800	4.51E-09	9.07	4.97E-10
1,814.800	2.66E-09	9.07	2.93E-10
1,811.400	1.59E-09	9.06	1.76E-10
1,815.200	1.22E-09	9.08	1.34E-10
1,824.200	8.96E-10	9.12	9.82E-11
1,813.200	8.39E-10	9.07	9.26E-11
1,823.000	5.03E-10	9.12	5.51E-11
1,823.400	4.92E-10	9.12	5.39E-11
1,837.800	3.41E-10	9.19	3.71E-11
1,825.400	3.33E-10	9.13	3.65E-11
Band Exposure Quotient:			1.92E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,851.400	3.74E-08	9.26	4.04E-09
1,848.400	3.09E-08	9.24	3.35E-09
1,849.800	2.30E-08	9.25	2.48E-09
1,855.200	1.64E-08	9.28	1.77E-09
1,865.200	1.52E-08	9.33	1.63E-09
1,861.400	1.48E-08	9.31	1.59E-09
1,867.800	8.41E-09	9.34	9.01E-10
1,857.600	7.71E-09	9.29	8.30E-10
1,868.600	6.69E-09	9.34	7.16E-10
1,856.400	6.40E-09	9.28	6.90E-10
Band Exposure Quotient:			2.30E-08

Total number of measurements: 572

Total Band Exposure Quotient: **8.70E-08**

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