

Baldock Radio Station
Royston Road, Baldock
Herts SG7 6SH



Mobile Phone
Base-Station Audit

Audit Site: Hazlewood Community Primary School
Canterbury Way
Woodlands Park
Wideopen
Newcastle upon Tyne
NE13 6JJ

Work Performed by		Distribution List	
James Loughlin Field Manager	3G measurements & Report	Lloyd Tailby	2
Mike Reynolds Field Officer	3G measurements	J Hunter	1
Jeff Hunter T.I. Officer	2G measurements & 2G Report	Technical Manager	1
		Case/Year file	2

This page left intentionally blank

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 Hazlewood Community Primary School on the 17th August 2005. Both second generation (2G) and third generation (3G) base station emissions were measured separately and the signal levels combined to give the Total Band Exposure as detailed below.

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

Summary of results:

Location	3G Exposure Quotient	2G Exposure Quotient	TOTAL 3G + 2G Exp. Quot.	Related to the ICNIRP limit
Playing Field	1.06E-05	2.55E-04	2.66E-04	1/3766
Front Playground	7.14E-06	1.72E-04	1.79E-04	1/5582
Back Playground	1.42E-05	5.04E-05	6.46E-05	1/15469
Reception Classroom	2.21E-07	1.97E-05	1.99E-05	1/50199
Nursery Classroom	2.59E-07	7.73E-06	7.99E-06	1/125169

2G data is an annex to this report

The Washington office carried out the 2G audit, while mobile team 2 from Baldock completed a concurrent 3G survey. The results from both have been combined to provide the summary of results on page 3.

Initially the base station was scanned at to ascertain the extent of 3G activity. Only one carrier associated with this base station site was detected.

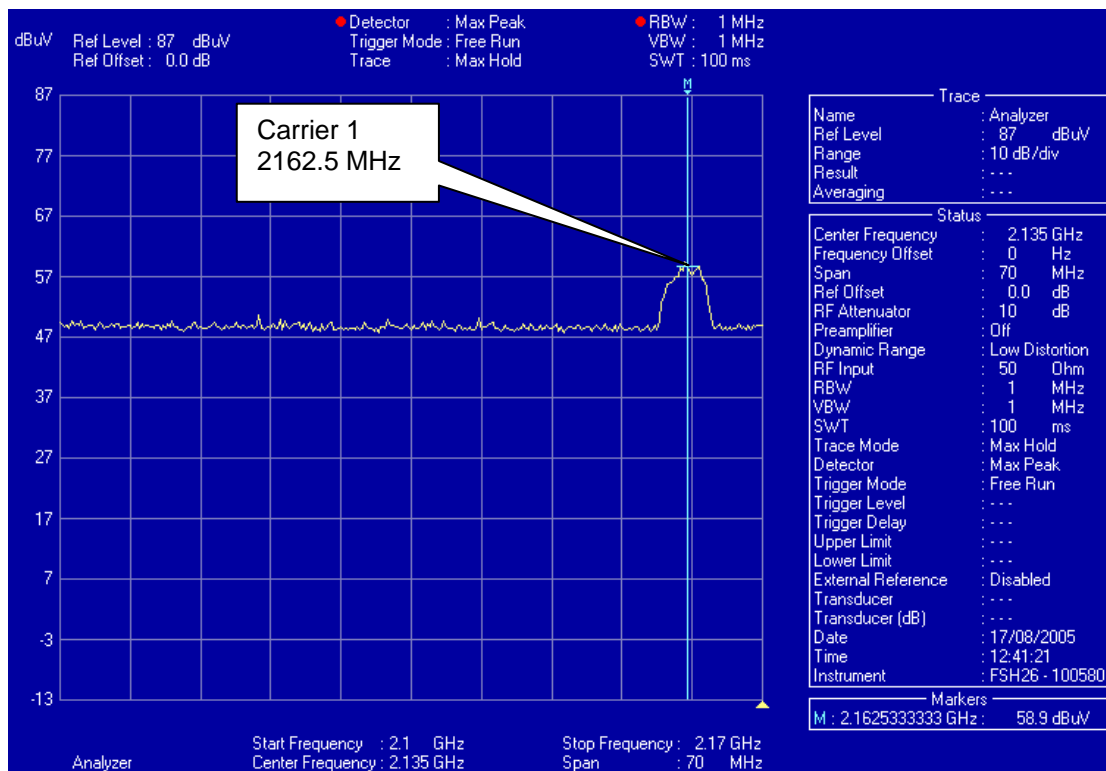


Figure 1

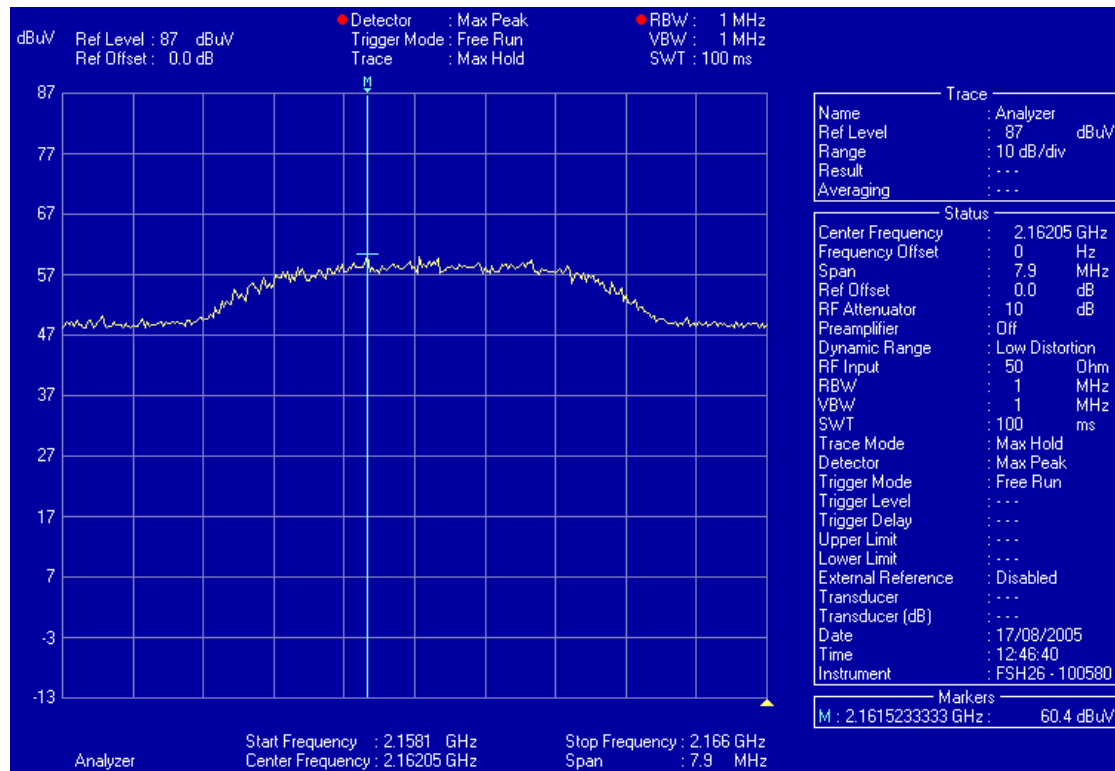
Figure 1 shows the whole band activity. Carrier 1 was active at this site. At each measurement location the measuring antenna was then set up on a tripod 1.5m above ground or floor level. In this position and the carrier's field strength was recorded.

For each measurement location the 3G exposure quotient was then calculated. This in turn was added to the 2G exposure quotient before calculating the Total Exposure Quotient for each survey site.

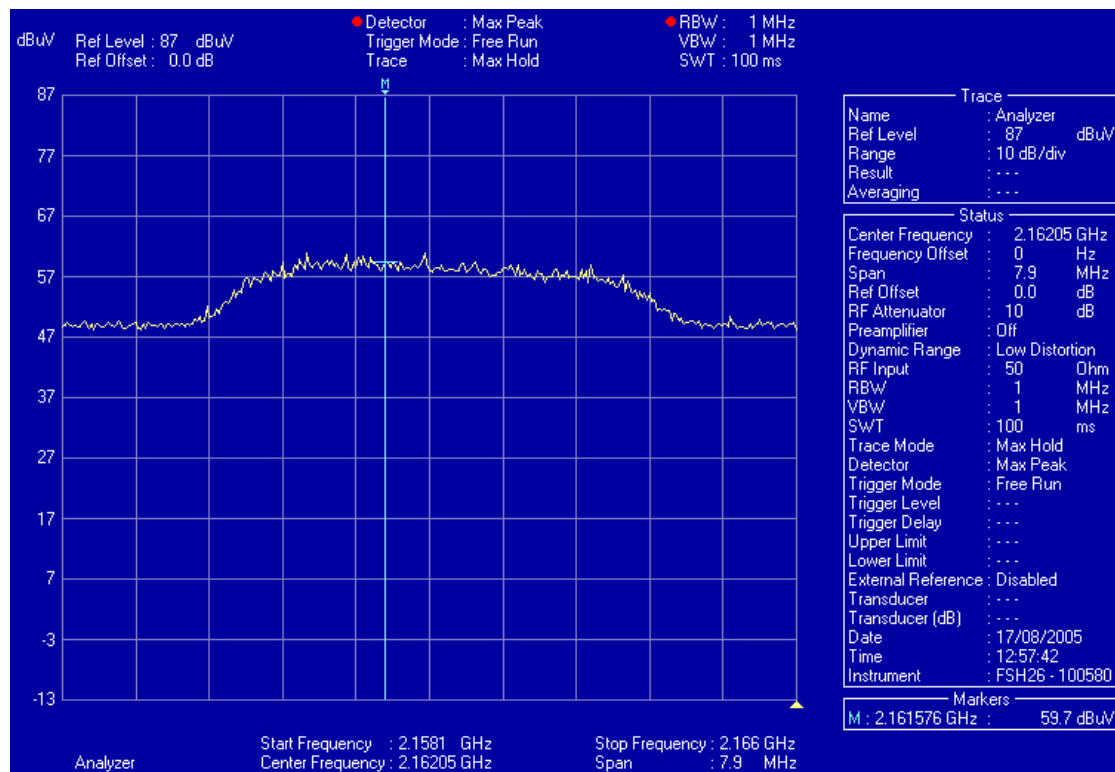
All the 3G measurement data is given on page 5, while the 2G data is contained in the annex to this report.

Equipment: Rohde & Schwarz FSH6 Spectrum Analyser serial number: 100580 CEMS number: 200103
 EMCO DRG 3115 horn Antenna 2153 200005
 Garmin GPS75 receiver 37524369 200011
 Reynolds 3 metre cable type 219-0088 0201 ML2/002 196

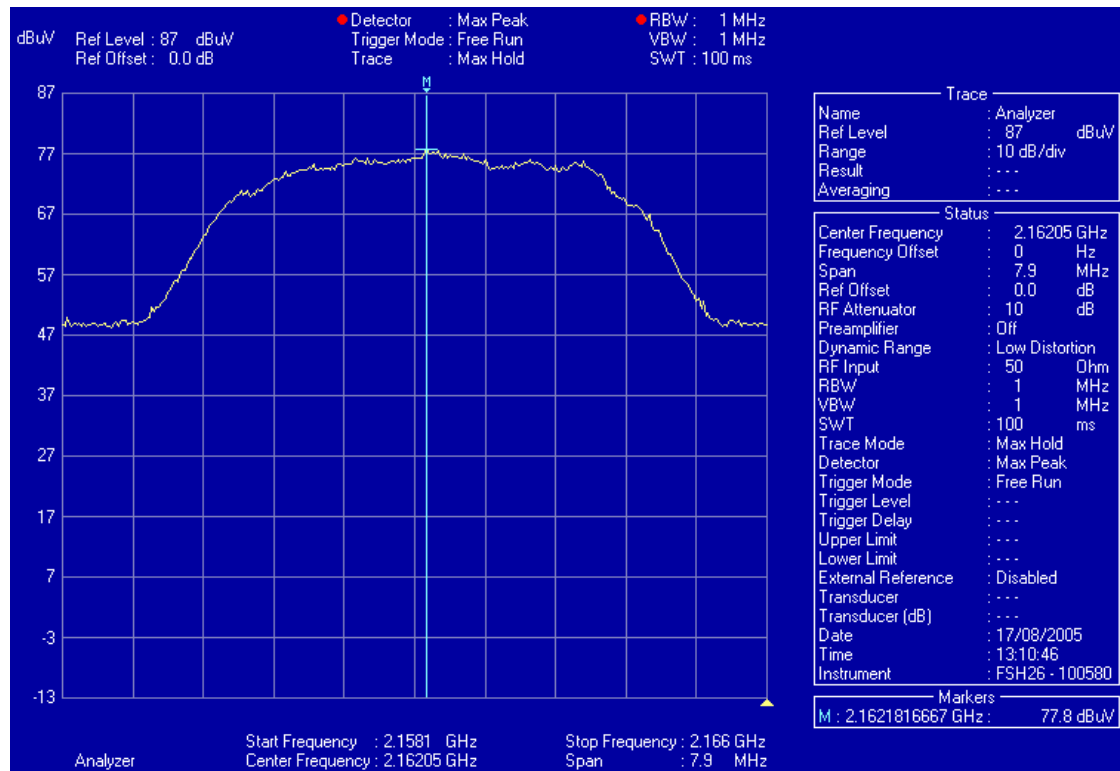
Location	Frequency	Fieldstrength	Fieldstrength	Fieldstrength	Power	Power	ICNIRP	3G	3G
								Exposure	Exposure
	MHz	dBuV/m	uV/m	V/m	W/m ²	W/m ²	W/m ²	Quotient	Quotient
Nursery Classroom	2162	89.9	31,260.8	0.031261	0.0000025922	2.592E-06	10	0.000000259220	2.59E-07
Reception Classroom	2161.6	89.2	28,840.3	0.028840	0.0000022062	2.206E-06	10	0.000000220620	2.21E-07
Back Playground	2162.2	107.3	231,739.5	0.231740	0.0001424494	0.0001424	10	0.000014244940	1.42E-05
Front Playground	2163.6	104.3	164,059.0	0.164059	0.0000713935	7.139E-05	10	0.000007139350	7.14E-06
Playing Field	2161.7	106	199,526.2	0.199526	0.0001055985	0.0001056	10	0.000010559850	1.06E-05



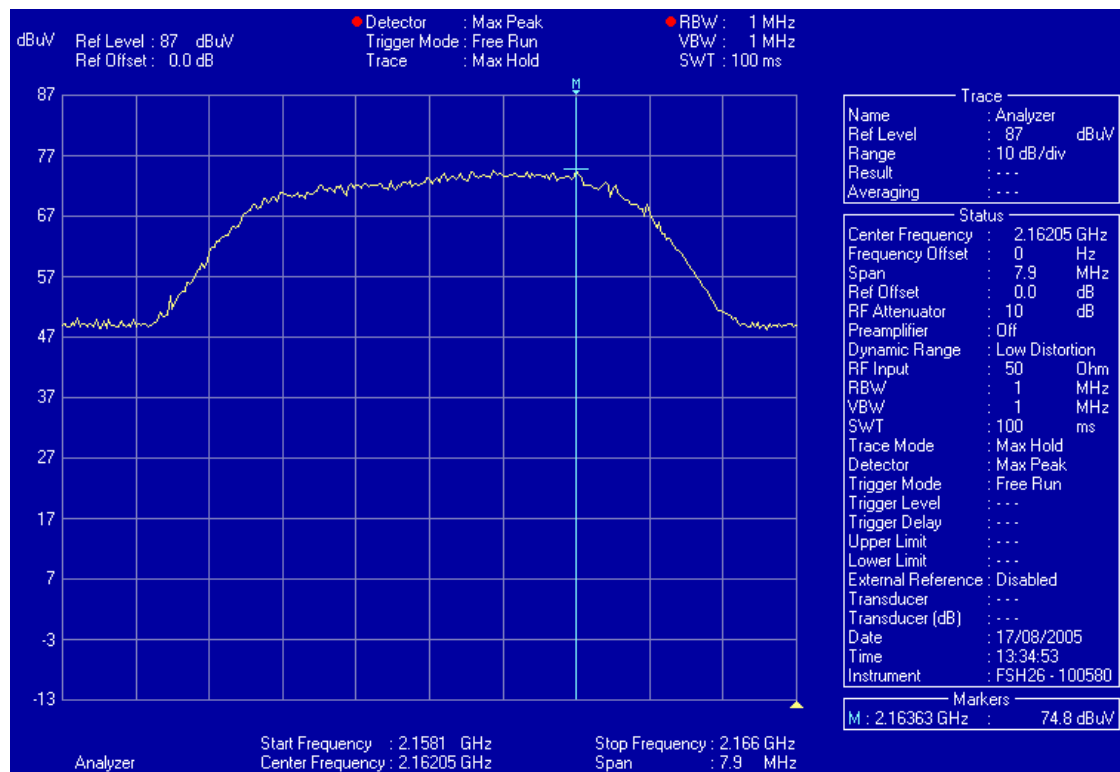
Location 1: Nursery Classroom



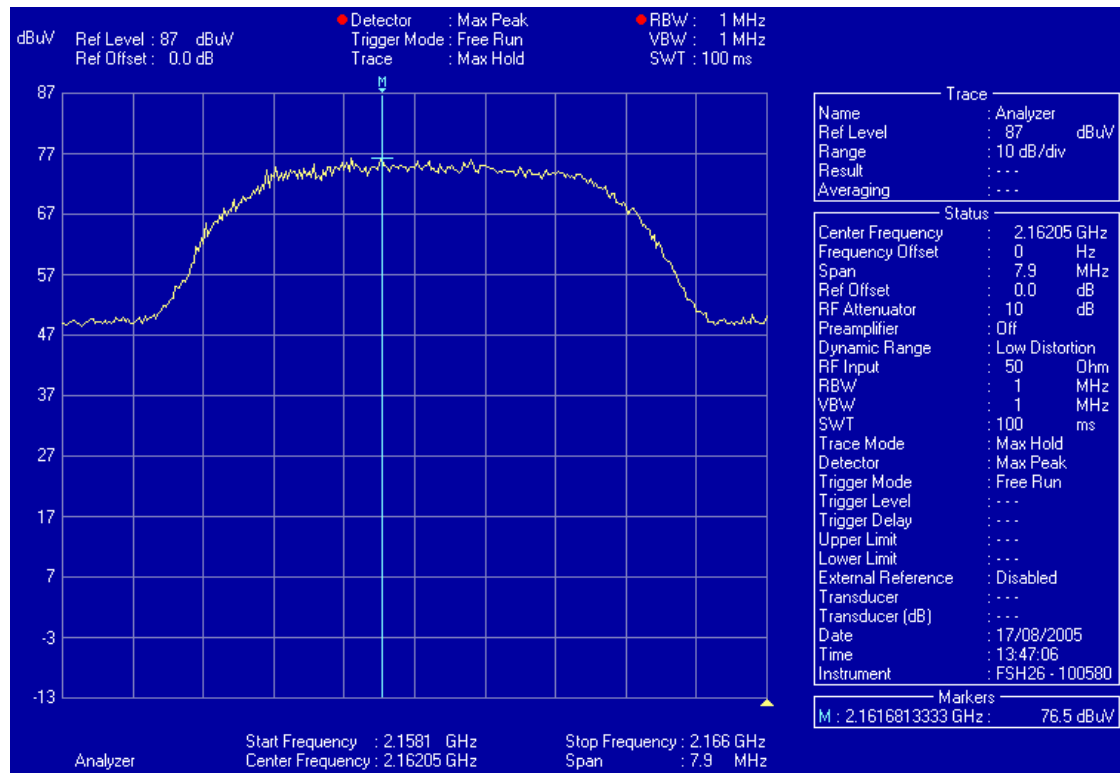
Location 2: Reception Classroom



Location 3: Back Playground



Location 4: Front Playground



Location 5: Playing Field

Annex

2G Mobile Phone Base-Station Audit

Mobile Phone Base-Station Audit

Audit site: Hazlewood Community Primary School
Caterbury Way
Woodlands Park
Wideopen Newcastle Upon Tyne
NE13 6JJ

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, Ofjel 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 Hazlewood Community Primary School on 17 August 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 Quotient	Relationship to ICNIRP Limit
Playing Field	2.55E-04	1/3922
Front Playground	1.72E-04	1/5819
Back Playground	5.04E-05	1/19854
Reception Class	1.97E-05	1/50638
The Nursery	7.73E-06	1/129357

Issued on behalf of Ofcom.

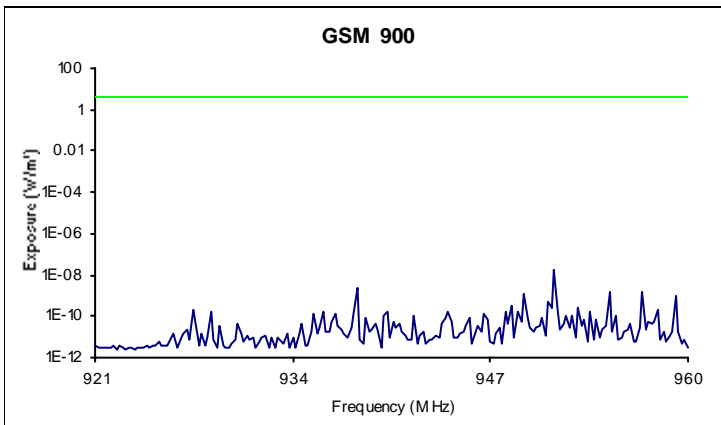
Issued by:

Received by:

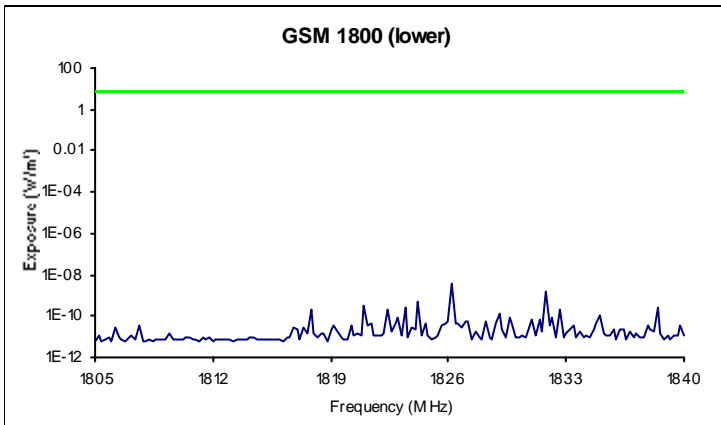
Mike Reynolds
Technical Investigation Officer

Site: Hazlewood Community Primary School
Location: The Nursery
NGR: NZ 2702 7121 **Taken from GPS**
Start Time: 17 August 2005 12:47:32
Officer: Mike Reynolds

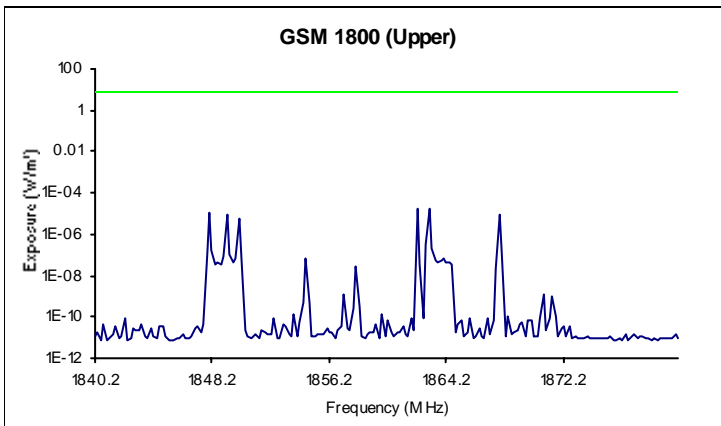
Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 833.643/005
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200
 Serial Number: 728264/025



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
951.200	1.76E-08	4.76	3.70E-09
938.200	2.52E-09	4.69	5.38E-10
954.800	1.58E-09	4.77	3.31E-10
957.000	1.55E-09	4.79	3.24E-10
949.200	1.24E-09	4.75	2.61E-10
959.200	1.05E-09	4.80	2.20E-10
950.800	5.07E-10	4.75	1.07E-10
948.400	3.18E-10	4.74	6.71E-11
952.800	2.67E-10	4.76	5.61E-11
951.000	2.48E-10	4.75	5.22E-11
Band Exposure Quotient:			6.90E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,826.200	3.83E-09	9.13	4.20E-10
1,831.800	1.61E-09	9.16	1.76E-10
1,824.200	4.81E-10	9.12	5.27E-11
1,821.000	3.39E-10	9.11	3.72E-11
1,823.400	2.89E-10	9.12	3.17E-11
1,838.400	2.84E-10	9.19	3.09E-11
1,832.600	2.23E-10	9.16	2.43E-11
1,822.400	2.19E-10	9.11	2.41E-11
1,817.800	2.03E-10	9.09	2.23E-11
1,829.000	1.22E-10	9.14	1.33E-11
Band Exposure Quotient:			1.16E-09



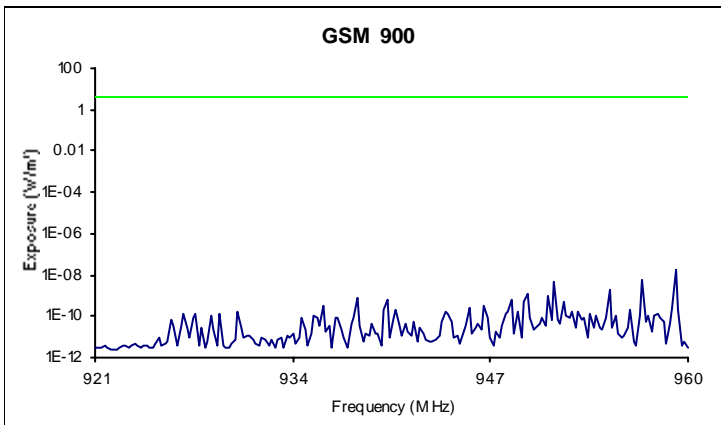
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,863.000	1.91E-05	9.31	2.05E-06
1,862.200	1.59E-05	9.31	1.70E-06
1,848.000	1.17E-05	9.24	1.27E-06
1,849.200	9.14E-06	9.25	9.88E-07
1,867.800	8.61E-06	9.34	9.22E-07
1,850.000	5.39E-06	9.25	5.83E-07
1,862.800	3.10E-07	9.31	3.33E-08
1,863.200	2.00E-07	9.32	2.15E-08
1,848.200	1.55E-07	9.24	1.68E-08
1,868.000	1.16E-07	9.34	1.24E-08
Band Exposure Quotient:			7.72E-06

Total number of measurements: 572

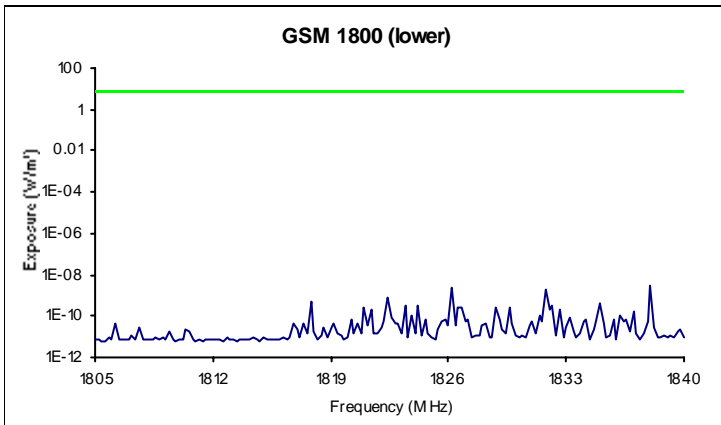
Total Band Exposure Quotient: 7.73E-06

Site: Hazlewood Community Primary School
Location: Reception Class
NGR: NZ 0000 0000 **Taken from GPS**
Start Time: 17 August 2005 13:02:50
Officer: Mike Reynolds

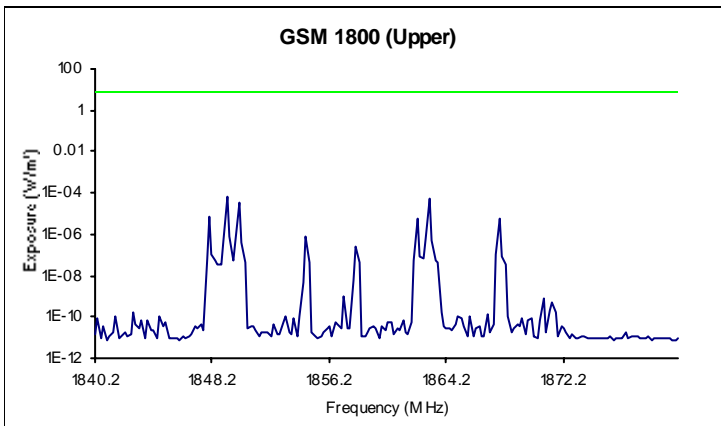
Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 833.643/005
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200
 Serial Number: 728264/025



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
959.200	1.83E-08	4.80	3.82E-09
957.000	6.04E-09	4.79	1.26E-09
951.200	4.96E-09	4.76	1.04E-09
954.800	2.04E-09	4.77	4.26E-10
949.400	1.27E-09	4.75	2.67E-10
950.800	9.66E-10	4.75	2.03E-10
938.200	7.98E-10	4.69	1.70E-10
948.400	6.49E-10	4.74	1.37E-10
940.200	5.68E-10	4.70	1.21E-10
951.800	5.57E-10	4.76	1.17E-10
Band Exposure Quotient:			9.44E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,838.000	2.90E-09	9.19	3.16E-10
1,826.200	2.65E-09	9.13	2.90E-10
1,831.800	1.73E-09	9.16	1.89E-10
1,822.400	8.73E-10	9.11	9.58E-11
1,817.800	5.22E-10	9.09	5.74E-11
1,835.000	3.63E-10	9.18	3.96E-11
1,823.400	3.56E-10	9.12	3.91E-11
1,832.200	3.30E-10	9.16	3.60E-11
1,824.200	2.90E-10	9.12	3.18E-11
1,826.800	2.59E-10	9.13	2.84E-11
Band Exposure Quotient:			1.69E-09



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,849.200	6.18E-05	9.25	6.68E-06
1,863.000	5.91E-05	9.31	6.34E-06
1,850.000	3.73E-05	9.25	4.03E-06
1,848.000	7.41E-06	9.24	8.02E-07
1,867.800	6.38E-06	9.34	6.83E-07
1,862.200	5.90E-06	9.31	6.33E-07
1,849.400	7.43E-07	9.25	8.04E-08
1,854.600	7.33E-07	9.27	7.90E-08
1,862.800	6.47E-07	9.31	6.95E-08
1,849.000	5.38E-07	9.24	5.82E-08
Band Exposure Quotient:			1.97E-05

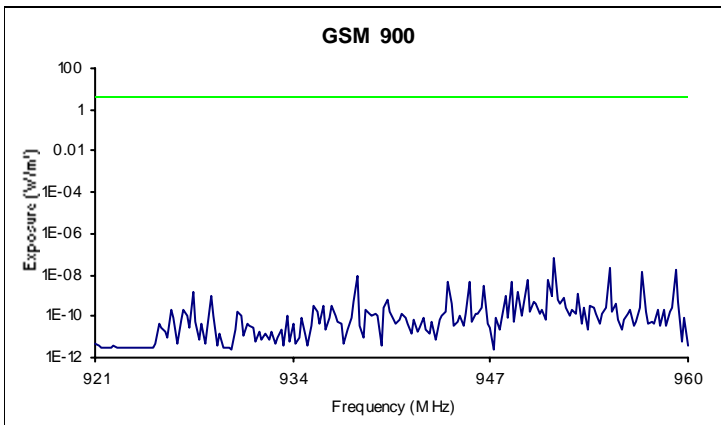
Total number of measurements: 572

Total Band Exposure Quotient:

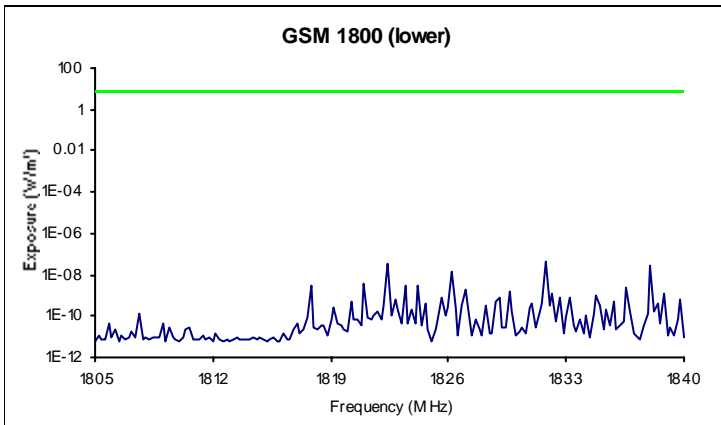
1.97E-05

Site: Hazlewood Community Primary School
Location: Back Playground
NGR: NZ 2364 7280 **Taken from GPS**
Start Time: 17 August 2005 13:18:14
Officer: Mike Reynolds

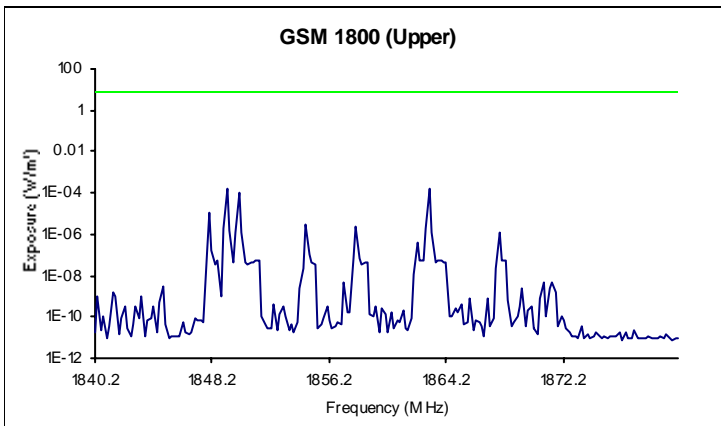
Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 833.643/005
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200
 Serial Number: 728264/025



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
951.200	6.39E-08	4.76	1.34E-08
954.800	2.23E-08	4.77	4.68E-09
959.200	1.92E-08	4.80	4.00E-09
957.000	1.48E-08	4.79	3.10E-09
938.200	9.82E-09	4.69	2.09E-09
949.400	6.51E-09	4.75	1.37E-09
950.800	5.31E-09	4.75	1.12E-09
945.600	4.67E-09	4.73	9.88E-10
944.200	4.55E-09	4.72	9.64E-10
948.400	4.19E-09	4.74	8.84E-10
Band Exposure Quotient:			3.85E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,831.800	3.87E-08	9.16	4.23E-09
1,822.400	3.64E-08	9.11	3.99E-09
1,838.000	2.83E-08	9.19	3.08E-09
1,826.200	1.49E-08	9.13	1.63E-09
1,821.000	3.55E-09	9.11	3.89E-10
1,824.200	3.25E-09	9.12	3.57E-10
1,817.800	3.14E-09	9.09	3.46E-10
1,823.400	2.96E-09	9.12	3.25E-10
1,836.600	2.64E-09	9.18	2.87E-10
1,827.000	1.88E-09	9.13	2.06E-10
Band Exposure Quotient:			1.71E-08



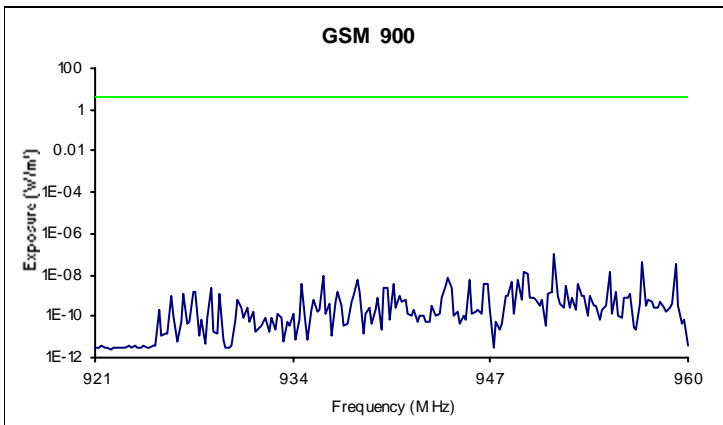
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,863.000	1.74E-04	9.31	1.87E-05
1,849.200	1.63E-04	9.25	1.76E-05
1,850.000	1.00E-04	9.25	1.08E-05
1,848.000	1.23E-05	9.24	1.33E-06
1,854.600	2.85E-06	9.27	3.07E-07
1,858.000	2.62E-06	9.29	2.82E-07
1,849.000	1.78E-06	9.24	1.93E-07
1,862.800	1.70E-06	9.31	1.83E-07
1,849.400	1.42E-06	9.25	1.53E-07
1,863.200	1.18E-06	9.32	1.27E-07
Band Exposure Quotient:			5.03E-05

Total number of measurements: 572

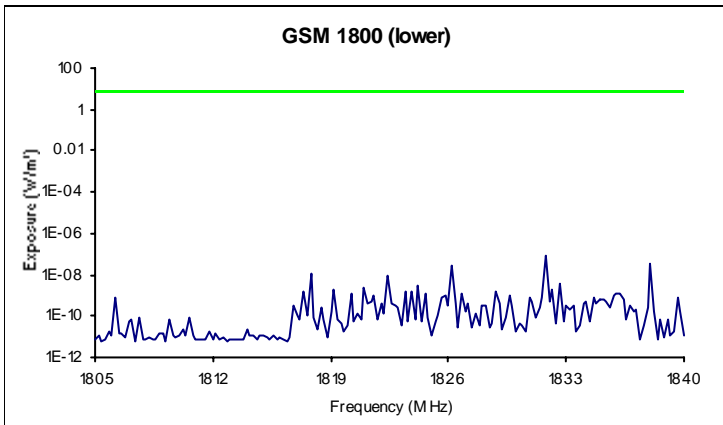
Total Band Exposure Quotient: 5.04E-05

Site: Hazlewood Community Primary School
Location: Front Playground
NGR: NZ 2370 7280 **Taken from GPS**
Start Time: 17 August 2005 13:39:51
Officer: Mike Reynolds

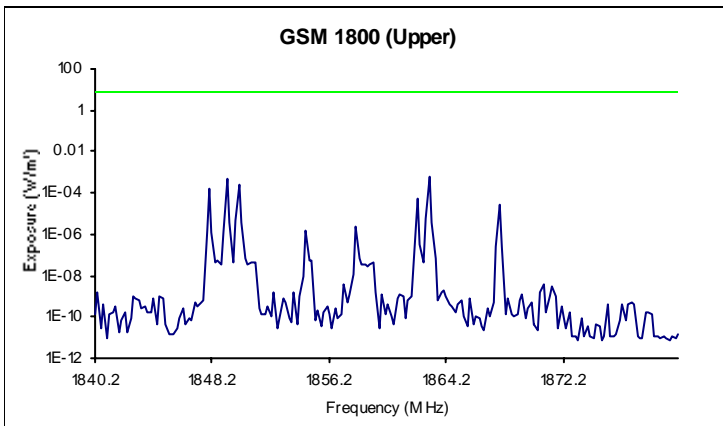
Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 833.643/005
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200
 Serial Number: 728264/025



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
951.200	1.16E-07	4.76	2.44E-08
957.000	3.90E-08	4.79	8.15E-09
959.200	3.19E-08	4.80	6.64E-09
949.200	1.39E-08	4.75	2.93E-09
954.800	1.28E-08	4.77	2.69E-09
949.400	1.13E-08	4.75	2.38E-09
936.000	8.51E-09	4.68	1.82E-09
944.200	6.58E-09	4.72	1.39E-09
938.200	5.92E-09	4.69	1.26E-09
945.600	5.75E-09	4.73	1.22E-09
Band Exposure Quotient:			7.29E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,831.800	8.09E-08	9.16	8.83E-09
1,838.000	3.18E-08	9.19	3.46E-09
1,826.200	2.71E-08	9.13	2.97E-09
1,817.800	1.14E-08	9.09	1.26E-09
1,822.400	8.73E-09	9.11	9.58E-10
1,832.600	4.06E-09	9.16	4.43E-10
1,824.200	3.11E-09	9.12	3.40E-10
1,821.000	2.57E-09	9.11	2.82E-10
1,819.200	1.94E-09	9.10	2.14E-10
1,832.200	1.81E-09	9.16	1.98E-10
Band Exposure Quotient:			2.31E-08



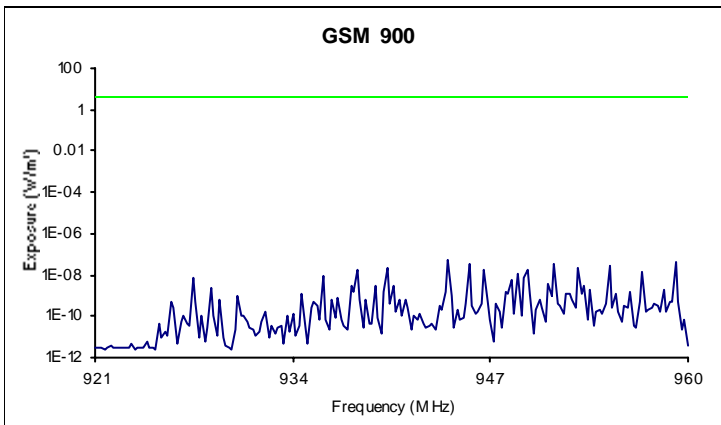
Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,863.000	5.51E-04	9.31	5.92E-05
1,849.200	4.80E-04	9.25	5.19E-05
1,850.000	2.76E-04	9.25	2.99E-05
1,848.000	1.70E-04	9.24	1.84E-05
1,862.200	5.76E-05	9.31	6.19E-06
1,867.800	2.85E-05	9.34	3.05E-06
1,862.800	5.51E-06	9.31	5.92E-07
1,849.800	4.38E-06	9.25	4.73E-07
1,850.200	3.64E-06	9.25	3.94E-07
1,849.400	3.48E-06	9.25	3.76E-07
Band Exposure Quotient:			1.72E-04

Total number of measurements: 572

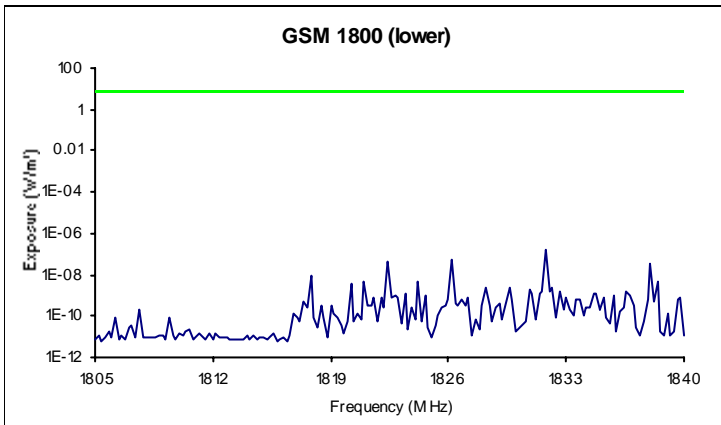
Total Band Exposure Quotient: **1.72E-04**

Site: Hazlewood Community Primary School
Location: Playing Field
NGR: NZ 2370 7276 **Taken from GPS**
Start Time: 17 August 2005 13:52:12
Officer: Mike Reynolds

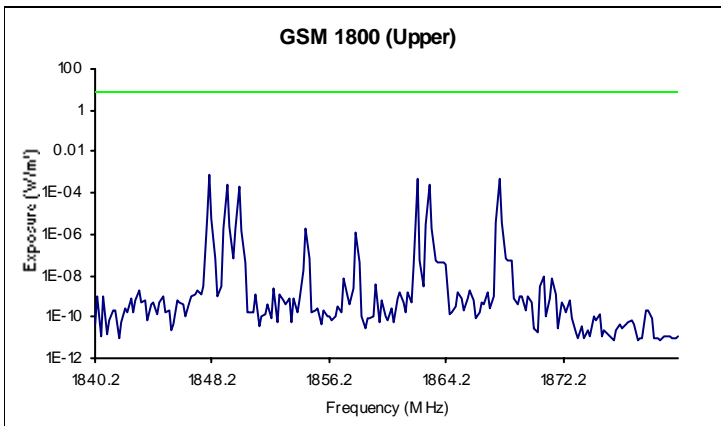
Receiver:
 Manufacturer: ROHDE&SCHWARZ
 Model: EB200
 Serial Number: 833.643/005
Antenna:
 Manufacturer: Rohde & Schwarz
 Model: HE200
 Serial Number: 728264/025



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
944.200	5.47E-08	4.72	1.16E-08
959.200	3.92E-08	4.80	8.17E-09
951.200	3.85E-08	4.76	8.09E-09
945.600	3.80E-08	4.73	8.03E-09
954.800	2.88E-08	4.77	6.02E-09
952.800	2.17E-08	4.76	4.56E-09
940.200	2.06E-08	4.70	4.39E-09
949.400	1.92E-08	4.75	4.05E-09
946.600	1.86E-08	4.73	3.94E-09
938.200	1.83E-08	4.69	3.90E-09
Band Exposure Quotient:			8.76E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,831.800	1.73E-07	9.16	1.89E-08
1,826.200	5.17E-08	9.13	5.66E-09
1,822.400	4.48E-08	9.11	4.91E-09
1,838.000	3.49E-08	9.19	3.79E-09
1,817.800	8.46E-09	9.09	9.31E-10
1,838.400	5.04E-09	9.19	5.49E-10
1,824.200	4.49E-09	9.12	4.92E-10
1,821.000	4.46E-09	9.11	4.90E-10
1,820.200	3.46E-09	9.10	3.80E-10
1,832.200	2.44E-09	9.16	2.67E-10
Band Exposure Quotient:			4.13E-08



Frequency (MHz)	Maximum Exposure (W/m²)	ICNIRP Limit (W/m²)	Frequency Exposure Quotient
1,848.000	7.08E-04	9.24	7.66E-05
1,867.800	4.52E-04	9.34	4.84E-05
1,862.200	4.47E-04	9.31	4.80E-05
1,863.000	2.70E-04	9.31	2.90E-05
1,849.200	2.52E-04	9.25	2.72E-05
1,850.000	2.00E-04	9.25	2.16E-05
1,847.800	7.08E-06	9.24	7.66E-07
1,848.200	5.37E-06	9.24	5.81E-07
1,867.600	3.84E-06	9.34	4.12E-07
1,868.000	3.51E-06	9.34	3.76E-07
Band Exposure Quotient:			2.55E-04

Total number of measurements: 572

Total Band Exposure Quotient: 2.55E-04

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