

Annual Radio Emissions Testing for 7 sites
between 15th – 18th June 2023

For

Dorset & Wiltshire Fire & Rescue

Bridfort Fire Station

Verwood Fire Station

Hamworthy Fire Station

Sherborne Fire Station

Christchurch Fire Station

Redhill Fire Station &

Winton Primary School

James O'Reilly
Director

JOR
Consultancy

Annual Radio
Emissions Test &
Assessment Survey of
Mobile Phone Masts

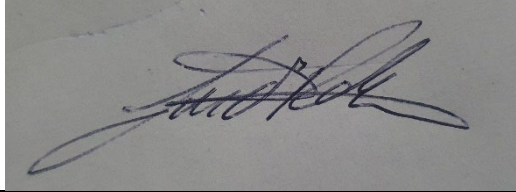
**2021 SITE SURVEY OF RADIO TRANSMISSIONS FROM MOBILE BASE STATIONS
AT THE FOLLOWING LOCATIONS:**

**BRIDPORT FIRE STATION
VERWOOD FIRE STATION
HAMWORTHY FIRE STATION
SHERBORNE FIRE STATION
CHRISTCHURCH FIRE STATION
REDHILL FIRE STATION
WINTON PRIMARY SCHOOL**

**ON BEHALF OF DORSET & WILTSHIRE FIRE & RESCUE
WITH RESPECT TO ICNIRP GUIDELINES - 2020 (WORKERS AND PUBLIC LIMITS)**

Report Number: JOR-CMEMF-0003A

TEST DATES: 15th-18th June 2023

Written & Approved by:		James O'Reilly Director
Date:	20-06-2023	

This test report shall not be reproduced in full or partial, without the written approval of JOR Consultancy.

The results in this report apply only to the locations tested.

The test results in this report are traceable to the national or international standards.

1 Revision Record

Issue Number	Issue Date	Revision History
A	20 th June 2023	Original

2 Customer Information

Company Name:	Dorset & Wiltshire Fire & Rescue
Contact Details	Laura Chance Building Services Compliance Officer Dorset & Wiltshire Fire and Rescue Service 01722 691744
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3 Test specification

Specification Reference:	ICNIRP Guidelines - 2020 (Workers and Public Limits)
Specification Title:	ICNIRP GUIDELINES FOR LIMITING EXPOSURE TO ELECTROMAGNETIC FIELDS (100 KHZ TO 300 GHZ)
Test Dates:	15th June 2023 to 18 th June 2023

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5 Introduction

JOR Consultancy are required to audit the level of RF Emissions from Mobile Phone Base stations sited on Bridport, Verwood, Hamworthy, Sherborne, Christchurch and Redhill Fire Stations and Winton Primary School. This is on an annual basis as per the contractual agreement.

We have measured the EMF exposure level at selected test locations using a field strength analyser with an isotropic probe following a procedure based on the in-situ RF exposure measurement method set out in section B.3.1.2 of IEC 62232:2017.

For Bridport (EE), Verwood (EE), Hamworthy (EE) and Redhill (EE, O2 & Vodafone) the GSM were 1800 for the installations. For Sherborne (Telefonica/O2) the GSM was 900 for the installations. Winton Primary School required additional measurements due to the close proximity to Redhill Fire Station mobile network antenna.

All levels have been measured and compared inline with the accordance of below:

- National Radiological Protection Board (NRPB)
- The International Commission on Non-Ionising Radiation Protection (ICNIRP).

As recommended within the Stewart Report the ICNIRP limits are those, which have been selected to demonstrate acceptance of the sites.

6 High- Level methodology

In this section we set out the high-level methodology we have used to measure general public exposure to EMF near 5G-enabled mobile base stations.

We have measured the EMF exposure level at selected test locations using a field strength analyser with an isotropic probe following a procedure based on the in-situ RF exposure measurement method set out in section B.3.1.2 of IEC 62232:20176 .

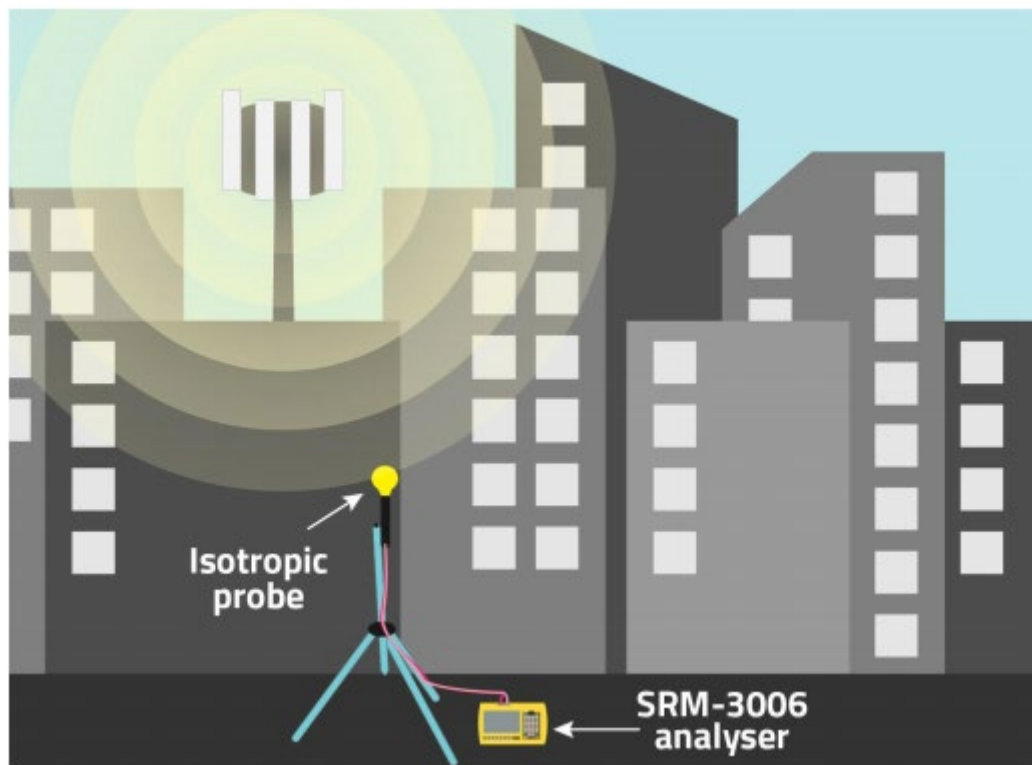
The measurements were conducted over the individual frequency bands used for mobile base station (downlink) transmissions as well as across all other frequency bands between 420 MHz to 6 GHz (see

Frequency Bands covered in this report

Frequency Band	Frequency Range	Technology
900MHz	925-960Mhz	2G, 3G, 4G
1800MHz	1085-1880MHz	2G, 4G
2100MHz	2110-2170MHz	3G, 4G

We used a field strength analyser (Narda SRM-3006), 9 connected to an isotropic electric field (E-field) probe, to carry out the measurements. As illustrated in Figure 3.1 below, the probe is mounted on a tripod at a height of 1.5m above ground level. The use of an isotropic probe means that the measurement result is not affected by the direction of signal arrival and the polarisation of the measured field.

Below shows the Narda SRM-3006 field strength analyser connected to an isotropic E-field probe mounted on a tripod 1.5m above ground level



The SRM-3006 analyser together with the probe has an overall operating frequency range from 30 MHz to 3 GHz. This is sufficient to cover all the frequency bands tested in this report.

At the Time of use all test equipment was in calibration and further detail can be provided on request.

7 Test Environment

7.1 General

All measurements were taken in a test environment that consisted of the following:

- An area at least 5 meters from any reflective surfaces
- In “line of Sight“ from the associated antenna
- 3 different locations around the associated antenna to provide accurate readings

7.2 Site Details

The site parameters and relevant information for the test site including measurement positions, which were predetermined and verified at the time of test are included in Appendix A for clarification

7.3 Climatic Conditions

Details of the climatic conditions at each test site are as follows:

<i>Temperature</i>	<i>Relative Humidity</i>	<i>Air Pressure</i>	<i>Conditions</i>
15 °C to 25 °C	40 % to 70 %	1010 mb to 1020 mb	Sunny

8 Measurement Modes

The measurements were taken with the base stations operating in the transmit/receive mode.

9 Test Results

9.1 Transmission Levels (RF)

At selected positions around Bridport, Verwood, Hamworthy, Sherborne, Christchurch and Redhill Fire Stations and Winton Primary School, the levels of RF transmissions generated from the transmitting antenna, associated with the mobile phone base stations, were measured over a period and duration of time.

Using a calibrated Narda SDM-3306 and antenna, orientated for maximum pick-up to obtain absolute measurements, enabled us to gather discreet frequency measurements from each site.

9.2 Summary of Results

9.2.1 Verwood highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	91.5	94.56	92.58	Complied
GSM 1800	1790-1870	120.37	124.82	112.38	Complied
UMTS DL	2000-2200	110.88	117.03	105.76	Complied

9.2.2 Bridport highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	96.90	96.28	95.46	Complied
GSM 1800	1790-1870	123.07	125.03	110.30	Complied
UMTS DL	2000-2200	116.83	114.77	103.87	Complied

9.2.3 Sherborne highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	127.17	123.95	121.12	Complied
GSM 1800	1790-1870	93.70	93.77	94.07	Complied
UMTS DL	2000-2200	119.86	119.99	115.99	Complied

9.2.4 Chistchurch highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	125.64	122.42	117.83	Complied
GSM 1800	1790-1870	94.40	95.75	95.32	Complied
UMTS DL	2000-2200	120.35	121.35	112.87	Complied

9.2.5 Hamworthy highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	108.14	103.90	103.65	Complied
GSM 1800	1790-1870	115.26	111.93	118.46	Complied
UMTS DL	2000-2200	101.37	98.46	98.58	Complied

Summary of results continued

9.2.6 Redhill highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	118.93	116.93	115.86	Complied
GSM 1800	1790-1870	120.02	122.92	111.62	Complied
UMTS DL	2000-2200	118.70	122.31	113.21	Complied

9.2.7 Winton highest EMF results from all three positions

Service	Frequency Band range MHz	Position 1 Level dB μ V/M	Position 2 Level dB μ V/M	Position 3 Level dB μ V/M	Result
GSM 900	925-960	115.09	114.46	123.34	Complied
GSM 1800	1790-1870	116.21	116.27	122.74	Complied
UMTS DL	2000-2200	123.37	121.67	126.74	Complied

10 Conclusions

The maximum electric field levels measured at all locations were less than 1 V/m.

The Stewart report will have been satisfied based on the results showing the measurements indicating the levels of radio frequency transmissions at each site were within the NRPB & ICNIRP guidelines.

The Stewart report and the Governments reply advise the following:

- The ICNIRP limits be met for all base station installations in respect of the emission levels.
- Clearly defined exclusion zones are incorporated.
- Auditing of each base station with full installation details and the emission levels.
- A precautionary approach is used.

The levels of electromagnetic radiation were within the ICNIRP Guidelines (workers and public limits). This is correct based on the measurements indicated via the testing completed by JOR Consultancy.

11 Appendix A – Site Details

11.1 Locations

<i>Test Position</i>	<i>Station Name</i>	<i>Post Code</i>	<i>Free Standing</i>	<i>Attached to Tower</i>	<i>Separate Monopole</i>	<i>Network Operator</i>
1	Redhill	BH9 2SW	-	x	-	EE/O2/Vodafone
2	Hamworthy	BH15 4JN	-	x	-	EE
3	Verwood	BH31 7PU	-	x		EE
4	Sherborne	DT9 4HA	-	-	x	Telefonica O2
5	Bridport	DT6 3XA	-	x	-	EE
6	Winton	BH9 2TG	-	x	-	EE/O2/Vodafone
7	Christchurch	BH23 2LB	-	x	-	Vodafone

11.2 Photographs

Red Hill Fire station



Position 1



Position 2



Position 3

Photographs Continued

Winton Primary School



Position 1



Position 2



Position 3

Photographs Continued

Verwood Fire station



Position 1



Position 2



Position 3

Photographs Continued

Sherborne Fire station



Position 1



Position 2



Position 3

Photographs Continued

Bridport Fire station



Position 1



Position 2



Position 3

Photographs Continued

Christchurch Fire station



Position 1



Position 2



Position 3

Photographs Continued

Hamworthy Fire station



Position 1



Position 2



Position 3

