

# ICNIRP Measurement Report

This report presents the results of measurements of electromagnetic field emission levels in the vicinity of mobile base stations. Results are presented as percentages of the power density reference levels for general public exposure in the 1998 edition of the Guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP)<sup>1</sup>, with figures provided for individual frequency bands used for base station (downlink) transmissions as well as an overall figure for all other frequency bands between 30 MHz to 6 GHz. The total percentage equals the sum of all individual percentages.

The power density reference levels in the ICNIRP Guidelines are the root mean square (rms) values averaged over six minutes. In this report, we have measured the average E-field strength over a six-minute period in each measurement location.

We have applied a measurement threshold of 3dB above the system noise floor<sup>2</sup> of the measurement equipment, below which any E-field strength levels measured are deemed not sufficiently above the system noise floor to be valid. In the results tables below, measurement results are shown to a precision of four decimal places. Results which are not sufficiently above the system noise floor to record as a valid measurement are shown as a dash (-). Results which are too small to register to four decimal places are shown as 0.0000%.

<b>Date of Survey:</b>	27/06/2024	<b>Time Survey completed:</b>	14:02
<b>Survey address:</b>	Warrington WA1		

Measurement equipment		Serial number	Calibration Date
<b>Meter</b>	Keysight Fieldfox N9915A Spectrum Analyser	MY56072592	06/03/2024
<b>Probe</b>	Agos Aria-6000 Antenna	ARIA-6000-1156	25/09/2023
<b>Cabling</b>	1.7m cable	1459	25/09/2023

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<sup>1</sup> <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>

<sup>2</sup> The noise floor of the measurement equipment is the level of background noise that is present before detecting any external signals. In other words, it indicates the absolute minimum level of detectable signals.

## Broadcast bands covered by this report

Frequency Band	Frequency Range	Technology*
	87.5-108 MHz	FM Radio
	174-230 MHz	DAB
	470-694 MHz	Digital TV

## Mobile bands covered by this report

Frequency Band	Frequency Range	Technology*
700 MHz	738-788 MHz	4G, 5G
800 MHz	791-821 MHz	4G
900 MHz	925-960 MHz	2G, 3G, 4G
1400 MHz	1452-1492 MHz	4G (Supplementary downlink)
1800 MHz	1805-1880 MHz	2G, 4G
1900 MHz	1900-1920 MHz	4G
2100 MHz	2110-2170 MHz	3G, 4G
2300 MHz	2350-2390 MHz	4G
2600 MHz TDD	2570-2620 MHz	4G
2600 MHz FDD	2620-2690 MHz	4G
3.4 GHz	3410-3680 MHz	5G, 4G
3.8 GHz	3680-4200 MHz	Various
Others**		

\* This is an indication of the type of technologies typically deployed in these bands; not all frequency bands and technologies may be in use at all locations. \*\* All other frequencies between 420 MHz and 6 GHz.

## Survey locations

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The survey was conducted within the area shown in the map below. Measurements were taken at six locations and are presented in the following pages of this report.



## Location 1

<b>Measurement time:</b>	12:57
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01028
174-230 MHz	0.01160
470-694 MHz	0.00919
700 MHz	0.00177
800 MHz	0.01153
900 MHz	0.00835
1400 MHz	0.00415
1800 MHz	0.00297
1900 MHz	0.00022
2100 MHz	0.00335
2300 MHz	0.00044
2600 MHz TDD	0.00039
2600 MHz FDD	0.00024
3.4 GHz	0.00274
3.8 GHz	0.00530
Others	0.15452
<b>Total</b>	<b>0.22704</b>

## Location 2

<b>Measurement time:</b>	13:08
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01084
174-230 MHz	0.01209
470-694 MHz	0.00942
700 MHz	0.00303
800 MHz	0.12838
900 MHz	0.02619
1400 MHz	0.00652
1800 MHz	0.00428
1900 MHz	0.00023
2100 MHz	0.00515
2300 MHz	0.00046
2600 MHz TDD	0.00042
2600 MHz FDD	0.00060
3.4 GHz	0.00296
3.8 GHz	0.00575
Others	0.16459
<b>Total</b>	<b>0.38092</b>

### Location 3

Measurement time:	13:20
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01146
174-230 MHz	0.01304
470-694 MHz	0.00997
700 MHz	0.00415
800 MHz	0.02141
900 MHz	0.00526
1400 MHz	0.00492
1800 MHz	0.02788
1900 MHz	0.00025
2100 MHz	0.00559
2300 MHz	0.00049
2600 MHz TDD	0.00045
2600 MHz FDD	0.00080
3.4 GHz	0.00304
3.8 GHz	0.00618
Others	0.17685
<b>Total</b>	<b>0.29173</b>

#### Location 4

<b>Measurement time:</b>	13:34
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01212
174-230 MHz	0.01362
470-694 MHz	0.01039
700 MHz	0.00335
800 MHz	0.04041
900 MHz	0.01127
1400 MHz	0.00135
1800 MHz	0.00371
1900 MHz	0.00026
2100 MHz	0.00306
2300 MHz	0.00052
2600 MHz TDD	0.00047
2600 MHz FDD	0.00115
3.4 GHz	0.00342
3.8 GHz	0.00670
Others	0.18611
<b>Total</b>	<b>0.29790</b>

## Location 5

<b>Measurement time:</b>	13:46
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01245
174-230 MHz	0.01401
470-694 MHz	0.01071
700 MHz	0.00632
800 MHz	0.01905
900 MHz	0.00111
1400 MHz	0.00797
1800 MHz	0.01324
1900 MHz	0.00027
2100 MHz	0.00552
2300 MHz	0.00053
2600 MHz TDD	0.00049
2600 MHz FDD	0.00028
3.4 GHz	0.00391
3.8 GHz	0.00680
Others	0.19291
<b>Total</b>	<b>0.29558</b>



## Location 6

<b>Measurement time:</b>	13:56
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01254
174-230 MHz	0.01392
470-694 MHz	0.01088
700 MHz	0.00229
800 MHz	0.01032
900 MHz	0.00479
1400 MHz	0.00519
1800 MHz	0.00491
1900 MHz	0.00027
2100 MHz	0.00296
2300 MHz	0.00053
2600 MHz TDD	0.00049
2600 MHz FDD	0.00031
3.4 GHz	0.00346
3.8 GHz	0.00672
Others	0.19081
<b>Total</b>	<b>0.27037</b>

*Disclaimer: The results detailed in this report apply only to the tests made at the reported time, using the test equipment detailed. They do not indicate that on another date an identical set of results would be achieved, due to changes in local environmental conditions or other factors which may or may not have an effect on the measurement results obtained at that future time.*