

# 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>	25/06/2024	<b>Time Survey completed:</b>	13:53
<b>Survey address:</b>	Manchester M17		

Measurement equipment		Serial number	Calibration Date
<b>Meter</b>	Keysight Fieldfox N9915A Spectrum Analyser	MY56072599	25/01/2024
<b>Probe</b>	Agos Aria-6000 Antenna	ARIA-6000	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 five locations and are presented in the following pages of this report.



## Location 1

<b>Measurement time:</b>	10:44
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.00996
174-230 MHz	0.01116
470-694 MHz	0.00889
700 MHz	0.00285
800 MHz	0.00493
900 MHz	0.00202
1400 MHz	0.00043
1800 MHz	0.00611
1900 MHz	0.00021
2100 MHz	0.00151
2300 MHz	0.00053
2600 MHz TDD	0.00038
2600 MHz FDD	0.00085
3.4 GHz	0.00226
3.8 GHz	0.00516
Others	0.14997
<b>Total</b>	<b>0.20721</b>

## Location 2

<b>Measurement time:</b>	13:20
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01210
174-230 MHz	0.01378
470-694 MHz	0.01049
700 MHz	0.00541
800 MHz	0.00772
900 MHz	0.00108
1400 MHz	0.00054
1800 MHz	0.00857
1900 MHz	0.00026
2100 MHz	0.00389
2300 MHz	0.00058
2600 MHz TDD	0.00048
2600 MHz FDD	0.00128
3.4 GHz	0.00296
3.8 GHz	0.00666
Others	0.18854
<b>Total</b>	<b>0.26433</b>

### Location 3

<b>Measurement time:</b>	<b>13:30</b>
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01253
174-230 MHz	0.01386
470-694 MHz	0.01073
700 MHz	0.00498
800 MHz	0.00941
900 MHz	0.00110
1400 MHz	0.00054
1800 MHz	0.01236
1900 MHz	0.00026
2100 MHz	0.00297
2300 MHz	0.00059
2600 MHz TDD	0.00049
2600 MHz FDD	0.00193
3.4 GHz	0.00311
3.8 GHz	0.00683
Others	0.19135
<b>Total</b>	<b>0.27302</b>

#### Location 4

<b>Measurement time:</b>	13:38
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01248
174-230 MHz	0.01412
470-694 MHz	0.01071
700 MHz	0.01002
800 MHz	0.01960
900 MHz	0.00137
1400 MHz	0.00055
1800 MHz	0.04454
1900 MHz	0.00027
2100 MHz	0.00865
2300 MHz	0.00061
2600 MHz TDD	0.00049
2600 MHz FDD	0.02543
3.4 GHz	0.00302
3.8 GHz	0.00683
Others	0.19391
<b>Total</b>	<b>0.35261</b>

## Location 5

Measurement time:	13:48
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01249
174-230 MHz	0.01403
470-694 MHz	0.01084
700 MHz	0.00354
800 MHz	0.00679
900 MHz	0.00569
1400 MHz	0.00054
1800 MHz	0.01022
1900 MHz	0.00027
2100 MHz	0.00260
2300 MHz	0.00062
2600 MHz TDD	0.00049
2600 MHz FDD	0.00219
3.4 GHz	0.00310
3.8 GHz	0.00719
Others	0.19305
<b>Total</b>	<b>0.27365</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.*