

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)¹, 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 floor² 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%.

Date of Survey:	12/03/2024	Time Survey completed:	12:25
Survey address:	Wigan WN5		

Measurement equipment		Serial number	Calibration Date
Meter	Keysight Fieldfox N9915A Spectrum Analyser	MY56072599	25/01/2024
Probe	Agos Aria-6000 Antenna	ARIA-6000-1156	25/09/2023
Cabling	1.7m cable	1459	25/09/2023

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

² 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

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

Measurement time:	11:35
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00911
174-230 MHz	0.01027
470-694 MHz	0.00810
700 MHz	0.00118
800 MHz	0.17217
900 MHz	0.05098
1400 MHz	0.00277
1800 MHz	0.00080
1900 MHz	0.00018
2100 MHz	0.02867
2300 MHz	0.00037
2600 MHz TDD	0.00112
2600 MHz FDD	0.00181
3.4 GHz	0.00258
3.8 GHz	0.00457
Others	0.13810
Total	0.43279

Location 2

Measurement time:	11:43
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00974
174-230 MHz	0.01095
470-694 MHz	0.00874
700 MHz	0.00155
800 MHz	0.02767
900 MHz	0.02169
1400 MHz	0.00209
1800 MHz	0.00234
1900 MHz	0.00020
2100 MHz	0.00769
2300 MHz	0.00040
2600 MHz TDD	0.00054
2600 MHz FDD	0.00214
3.4 GHz	0.00393
3.8 GHz	0.00520
Others	0.14813
Total	0.25299

Location 3

Measurement time:	11:51
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01026
174-230 MHz	0.01179
470-694 MHz	0.00926
700 MHz	0.00191
800 MHz	0.15723
900 MHz	0.19866
1400 MHz	0.00825
1800 MHz	0.00716
1900 MHz	0.00021
2100 MHz	0.03007
2300 MHz	0.00042
2600 MHz TDD	0.00217
2600 MHz FDD	0.00803
3.4 GHz	0.00427
3.8 GHz	0.00553
Others	0.15836
Total	0.61357

Location 4

Measurement time:	12:00
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01072
174-230 MHz	0.01207
470-694 MHz	0.00926
700 MHz	0.00130
800 MHz	0.01057
900 MHz	0.00869
1400 MHz	0.00132
1800 MHz	0.00094
1900 MHz	0.00022
2100 MHz	0.00945
2300 MHz	0.00044
2600 MHz TDD	0.00053
2600 MHz FDD	0.00077
3.4 GHz	0.00308
3.8 GHz	0.00569
Others	0.16359
Total	0.23866

Location 5

Measurement time:	12:10
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01123
174-230 MHz	0.01265
470-694 MHz	0.00974
700 MHz	0.00185
800 MHz	0.07924
900 MHz	0.03251
1400 MHz	0.00284
1800 MHz	0.00409
1900 MHz	0.00023
2100 MHz	0.00772
2300 MHz	0.00046
2600 MHz TDD	0.00076
2600 MHz FDD	0.00164
3.4 GHz	0.00383
3.8 GHz	0.00605
Others	0.17271
Total	0.34755

Location 6

Measurement time:	12:19
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01146
174-230 MHz	0.01289
470-694 MHz	0.01000
700 MHz	0.00145
800 MHz	0.20169
900 MHz	0.09918
1400 MHz	0.00265
1800 MHz	0.00090
1900 MHz	0.00024
2100 MHz	0.03378
2300 MHz	0.00048
2600 MHz TDD	0.00112
2600 MHz FDD	0.00366
3.4 GHz	0.00379
3.8 GHz	0.00625
Others	0.17936
Total	0.56889

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.