

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:	20/08/2024	Time Survey completed:	12:55
Survey address:	Manchester M5		

Measurement equipment		Serial number	Calibration Date
Meter	Keysight Fieldfox N9915A Spectrum Analyser	MY56072592	26/02/2024
Probe	Agos Aria-6000 Antenna	ARIA-6000	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:	12:04
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01243
174-230 MHz	0.01377
470-694 MHz	0.01056
700 MHz	0.00165
800 MHz	0.01877
900 MHz	0.04135
1400 MHz	0.00054
1800 MHz	0.01449
1900 MHz	0.00026
2100 MHz	0.00370
2300 MHz	0.00115
2600 MHz TDD	0.00051
2600 MHz FDD	0.00057
3.4 GHz	0.00349
3.8 GHz	0.00684
Others	0.19258
Total	0.32264

Location 2

Measurement time:	12:12
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01209
174-230 MHz	0.01369
470-694 MHz	0.01044
700 MHz	0.00157
800 MHz	0.01065
900 MHz	0.01772
1400 MHz	0.00057
1800 MHz	0.04278
1900 MHz	0.00026
2100 MHz	0.00377
2300 MHz	0.00076
2600 MHz TDD	0.00048
2600 MHz FDD	0.00036
3.4 GHz	0.00319
3.8 GHz	0.00666
Others	0.18857
Total	0.31355

Location 3

Measurement time:	12:24
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01190
174-230 MHz	0.01310
470-694 MHz	0.01013
700 MHz	0.00145
800 MHz	0.00518
900 MHz	0.01337
1400 MHz	0.00053
1800 MHz	0.00699
1900 MHz	0.00025
2100 MHz	0.01096
2300 MHz	0.00067
2600 MHz TDD	0.00049
2600 MHz FDD	0.00115
3.4 GHz	0.00314
3.8 GHz	0.00636
Others	0.18127
Total	0.26694

Location 4

Measurement time:	12:32
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01170
174-230 MHz	0.01322
470-694 MHz	0.01017
700 MHz	0.00151
800 MHz	0.00380
900 MHz	0.00577
1400 MHz	0.00053
1800 MHz	0.00590
1900 MHz	0.00025
2100 MHz	0.00238
2300 MHz	0.00053
2600 MHz TDD	0.00047
2600 MHz FDD	0.00040
3.4 GHz	0.00317
3.8 GHz	0.00638
Others	0.18238
Total	0.24856

Location 5

Measurement time:	12:41
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01179
174-230 MHz	0.01326
470-694 MHz	0.01013
700 MHz	0.00149
800 MHz	0.00440
900 MHz	0.01703
1400 MHz	0.00066
1800 MHz	0.00169
1900 MHz	0.00025
2100 MHz	0.00174
2300 MHz	0.00055
2600 MHz TDD	0.00050
2600 MHz FDD	0.00133
3.4 GHz	0.00328
3.8 GHz	0.00637
Others	0.18281
Total	0.25727

Location 6

Measurement time:	12:49
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01159
174-230 MHz	0.01297
470-694 MHz	0.01006
700 MHz	0.00149
800 MHz	0.02338
900 MHz	0.03452
1400 MHz	0.00050
1800 MHz	0.03454
1900 MHz	0.00025
2100 MHz	0.00285
2300 MHz	0.00107
2600 MHz TDD	0.00047
2600 MHz FDD	0.00044
3.4 GHz	0.00310
3.8 GHz	0.00632
Others	0.17875
Total	0.32230

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.