

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:	18/07/2024	Time Survey completed:	12:17
Survey address:	Manchester M27		

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:	11:11
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00932
174-230 MHz	0.01057
470-694 MHz	0.00834
700 MHz	0.00178
800 MHz	0.00336
900 MHz	0.00070
1400 MHz	0.00041
1800 MHz	0.04214
1900 MHz	0.00020
2100 MHz	0.00515
2300 MHz	0.00045
2600 MHz TDD	0.00037
2600 MHz FDD	0.00018
3.4 GHz	0.00206
3.8 GHz	0.00473
Others	0.14119
Total	0.23096

Location 2

Measurement time:	11:19
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01022
174-230 MHz	0.01131
470-694 MHz	0.00885
700 MHz	0.00212
800 MHz	0.01629
900 MHz	0.00093
1400 MHz	0.00044
1800 MHz	0.02377
1900 MHz	0.00022
2100 MHz	0.00182
2300 MHz	0.00047
2600 MHz TDD	0.00040
2600 MHz FDD	0.00020
3.4 GHz	0.00225
3.8 GHz	0.00521
Others	0.15260
Total	0.23708

Location 3

Measurement time:	11:34
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01116
174-230 MHz	0.01253
470-694 MHz	0.00957
700 MHz	0.00183
800 MHz	0.00416
900 MHz	0.00087
1400 MHz	0.00048
1800 MHz	0.01179
1900 MHz	0.00024
2100 MHz	0.00146
2300 MHz	0.00050
2600 MHz TDD	0.00043
2600 MHz FDD	0.00022
3.4 GHz	0.00254
3.8 GHz	0.00590
Others	0.16924
Total	0.23293

Location 4

Measurement time:	11:47
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01166
174-230 MHz	0.01318
470-694 MHz	0.01015
700 MHz	0.00200
800 MHz	0.00913
900 MHz	0.00115
1400 MHz	0.00051
1800 MHz	0.01098
1900 MHz	0.00025
2100 MHz	0.00275
2300 MHz	0.00057
2600 MHz TDD	0.00046
2600 MHz FDD	0.00024
3.4 GHz	0.00276
3.8 GHz	0.00637
Others	0.18139
Total	0.25354

Location 5

Measurement time:	11:59
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01218
174-230 MHz	0.01367
470-694 MHz	0.01035
700 MHz	0.00441
800 MHz	0.03046
900 MHz	0.00078
1400 MHz	0.00054
1800 MHz	0.08460
1900 MHz	0.00026
2100 MHz	0.00557
2300 MHz	0.00056
2600 MHz TDD	0.00047
2600 MHz FDD	0.00025
3.4 GHz	0.00287
3.8 GHz	0.00658
Others	0.18660
Total	0.36016

Location 6

Measurement time:	12:11
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01183
174-230 MHz	0.01317
470-694 MHz	0.01017
700 MHz	0.00206
800 MHz	0.00541
900 MHz	0.00080
1400 MHz	0.00051
1800 MHz	0.03978
1900 MHz	0.00025
2100 MHz	0.00543
2300 MHz	0.00056
2600 MHz TDD	0.00046
2600 MHz FDD	0.00024
3.4 GHz	0.00276
3.8 GHz	0.00637
Others	0.18204
Total	0.28185

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.