

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:	20/03/2024	Time Survey completed:	13:51
Survey address:	Manchester M17		

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:	12:57
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01007
174-230 MHz	0.01078
470-694 MHz	0.00848
700 MHz	0.01751
800 MHz	0.01087
900 MHz	0.00141
1400 MHz	0.00042
1800 MHz	0.02643
1900 MHz	0.00020
2100 MHz	0.01079
2300 MHz	0.00040
2600 MHz TDD	0.00036
2600 MHz FDD	0.00278
3.4 GHz	0.00288
3.8 GHz	0.00529
Others	0.14731
Total	0.25597

Location 2

Measurement time:	13:08
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01037
174-230 MHz	0.01151
470-694 MHz	0.00900
700 MHz	0.03727
800 MHz	0.01744
900 MHz	0.00069
1400 MHz	0.00045
1800 MHz	0.00557
1900 MHz	0.00021
2100 MHz	0.00280
2300 MHz	0.00044
2600 MHz TDD	0.00037
2600 MHz FDD	0.00184
3.4 GHz	0.00290
3.8 GHz	0.00574
Others	0.15750
Total	0.26409

Location 3

Measurement time:	13:15
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01061
174-230 MHz	0.01189
470-694 MHz	0.00920
700 MHz	0.00696
800 MHz	0.00467
900 MHz	0.00068
1400 MHz	0.00046
1800 MHz	0.01101
1900 MHz	0.00022
2100 MHz	0.00185
2300 MHz	0.00044
2600 MHz TDD	0.00038
2600 MHz FDD	0.00136
3.4 GHz	0.00280
3.8 GHz	0.00565
Others	0.16160
Total	0.22977

Location 4

Measurement time:	13:24
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01085
174-230 MHz	0.01205
470-694 MHz	0.00958
700 MHz	0.00374
800 MHz	0.00173
900 MHz	0.00068
1400 MHz	0.00046
1800 MHz	0.00457
1900 MHz	0.00022
2100 MHz	0.00161
2300 MHz	0.00044
2600 MHz TDD	0.00039
2600 MHz FDD	0.00102
3.4 GHz	0.00285
3.8 GHz	0.00570
Others	0.16542
Total	0.22130

Location 5

Measurement time:	13:36
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01107
174-230 MHz	0.01257
470-694 MHz	0.00994
700 MHz	0.01102
800 MHz	0.02217
900 MHz	0.00068
1400 MHz	0.00047
1800 MHz	0.01856
1900 MHz	0.00022
2100 MHz	0.00109
2300 MHz	0.00045
2600 MHz TDD	0.00040
2600 MHz FDD	0.00088
3.4 GHz	0.00288
3.8 GHz	0.00623
Others	0.16928
Total	0.26793

Location 6

Measurement time:	13:45
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01145
174-230 MHz	0.01258
470-694 MHz	0.00965
700 MHz	0.02750
800 MHz	0.01475
900 MHz	0.00124
1400 MHz	0.00049
1800 MHz	0.02240
1900 MHz	0.00023
2100 MHz	0.00701
2300 MHz	0.00046
2600 MHz TDD	0.00042
2600 MHz FDD	0.00586
3.4 GHz	0.00343
3.8 GHz	0.00642
Others	0.17209
Total	0.29596

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.