

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:	29/01/2025	Time Survey completed:	11:44
Survey address:	Middlesbrough TS1		

Measurement equipment		Serial number	Calibration Date
Meter	Keysight Fieldfox N9915A Spectrum Analyser	MY50672594	04/11/2024
Probe	Agos Aria-6000 Antenna	6000-1024	30/03/2021
Cabling	1.7m cable	1383	12/11/2023

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 30 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:	10:55
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00692
174-230 MHz	0.00784
470-694 MHz	0.00641
700 MHz	0.00198
800 MHz	0.00473
900 MHz	0.01379
1400 MHz	0.00085
1800 MHz	0.01116
1900 MHz	0.00014
2100 MHz	0.00805
2300 MHz	0.00239
2600 MHz TDD	0.00026
2600 MHz FDD	0.00316
3.4 GHz	0.00202
3.8 GHz	0.00383
Others	0.10189
Total	0.17542

Location 2

Measurement time:	11:04
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00679
174-230 MHz	0.00820
470-694 MHz	0.00671
700 MHz	0.00362
800 MHz	0.01513
900 MHz	0.05540
1400 MHz	0.00171
1800 MHz	0.00940
1900 MHz	0.00014
2100 MHz	0.00684
2300 MHz	0.00583
2600 MHz TDD	0.00028
2600 MHz FDD	0.00098
3.4 GHz	0.00300
3.8 GHz	0.00442
Others	0.10774
Total	0.23618

Location 3

Measurement time:	11:11
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00731
174-230 MHz	0.00844
470-694 MHz	0.00694
700 MHz	0.00418
800 MHz	0.00472
900 MHz	0.00244
1400 MHz	0.00311
1800 MHz	0.00810
1900 MHz	0.00015
2100 MHz	0.00557
2300 MHz	0.00193
2600 MHz TDD	0.00028
2600 MHz FDD	0.00159
3.4 GHz	0.00414
3.8 GHz	0.00443
Others	0.11136
Total	0.17468

Location 4

Measurement time:	11:19
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00737
174-230 MHz	0.00865
470-694 MHz	0.00706
700 MHz	0.00287
800 MHz	0.00737
900 MHz	0.00922
1400 MHz	0.00036
1800 MHz	0.01346
1900 MHz	0.00015
2100 MHz	0.01364
2300 MHz	0.00118
2600 MHz TDD	0.00030
2600 MHz FDD	0.00224
3.4 GHz	0.00183
3.8 GHz	0.00405
Others	0.11435
Total	0.19409

Location 5

Measurement time:	11:27
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00751
174-230 MHz	0.00891
470-694 MHz	0.00713
700 MHz	0.00317
800 MHz	0.01314
900 MHz	0.02586
1400 MHz	0.00034
1800 MHz	0.00927
1900 MHz	0.00016
2100 MHz	0.01463
2300 MHz	0.00441
2600 MHz TDD	0.00030
2600 MHz FDD	0.00119
3.4 GHz	0.00235
3.8 GHz	0.00443
Others	0.11728
Total	0.22009

Location 6

Measurement time:	11:38
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00803
174-230 MHz	0.00906
470-694 MHz	0.00735
700 MHz	0.00214
800 MHz	0.00360
900 MHz	0.01512
1400 MHz	0.00062
1800 MHz	0.01328
1900 MHz	0.00016
2100 MHz	0.00592
2300 MHz	0.00159
2600 MHz TDD	0.00031
2600 MHz FDD	0.00239
3.4 GHz	0.00226
3.8 GHz	0.00456
Others	0.12068
Total	0.19707

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.