

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:	03/09/2024	Time Survey completed:	12:36
Survey address:	Berwick on Tweed TD15		

Measurement equipment		Serial number	Calibration Date
Meter	Keysight Fieldfox N9915A Spectrum Analyser	MY50672594	02/11/2024
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 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:	11:42
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00866
174-230 MHz	0.01004
470-694 MHz	0.00793
700 MHz	0.00139
800 MHz	0.00161
900 MHz	0.00054
1400 MHz	0.00038
1800 MHz	0.00105
1900 MHz	0.00018
2100 MHz	0.00055
2300 MHz	0.00041
2600 MHz TDD	0.00034
2600 MHz FDD	0.00019
3.4 GHz	0.00194
3.8 GHz	0.00455
Others	0.13348
Total	0.17325

Location 2

Measurement time:	11:57
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00919
174-230 MHz	0.01073
470-694 MHz	0.00847
700 MHz	0.00136
800 MHz	0.00211
900 MHz	0.00061
1400 MHz	0.00045
1800 MHz	0.00702
1900 MHz	0.00020
2100 MHz	0.00114
2300 MHz	0.00044
2600 MHz TDD	0.00037
2600 MHz FDD	0.00020
3.4 GHz	0.00213
3.8 GHz	0.00500
Others	0.14418
Total	0.19361

Location 3

Measurement time:	12:06
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00948
174-230 MHz	0.01097
470-694 MHz	0.00863
700 MHz	0.00170
800 MHz	0.00365
900 MHz	0.00063
1400 MHz	0.00047
1800 MHz	0.01146
1900 MHz	0.00020
2100 MHz	0.00129
2300 MHz	0.00046
2600 MHz TDD	0.00038
2600 MHz FDD	0.00022
3.4 GHz	0.00220
3.8 GHz	0.00510
Others	0.14658
Total	0.20337

Location 4

Measurement time:	12:13
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00945
174-230 MHz	0.01125
470-694 MHz	0.00879
700 MHz	0.00182
800 MHz	0.00681
900 MHz	0.00067
1400 MHz	0.00046
1800 MHz	0.02348
1900 MHz	0.00020
2100 MHz	0.00108
2300 MHz	0.00047
2600 MHz TDD	0.00039
2600 MHz FDD	0.00021
3.4 GHz	0.00225
3.8 GHz	0.00524
Others	0.15037
Total	0.22293

Location 5

Measurement time:	12:22
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00987
174-230 MHz	0.01164
470-694 MHz	0.00902
700 MHz	0.00139
800 MHz	0.00269
900 MHz	0.00062
1400 MHz	0.00044
1800 MHz	0.00322
1900 MHz	0.00021
2100 MHz	0.00079
2300 MHz	0.00048
2600 MHz TDD	0.00040
2600 MHz FDD	0.00021
3.4 GHz	0.00232
3.8 GHz	0.00545
Others	0.15517
Total	0.20393

Location 6

Measurement time:	12:30
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.00986
174-230 MHz	0.01161
470-694 MHz	0.00907
700 MHz	0.00290
800 MHz	0.01219
900 MHz	0.00062
1400 MHz	0.00045
1800 MHz	0.00833
1900 MHz	0.00021
2100 MHz	0.00211
2300 MHz	0.00048
2600 MHz TDD	0.00040
2600 MHz FDD	0.00021
3.4 GHz	0.00235
3.8 GHz	0.00546
Others	0.15518
Total	0.22142

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.