

# 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)<sup>1</sup>, 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 floor<sup>2</sup> 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%.

<b>Date of Survey:</b>	28/08/2024	<b>Time Survey completed:</b>	13:55
<b>Survey address:</b>	Darlington DL1		

Measurement equipment		Serial number	Calibration Date
<b>Meter</b>	Keysight Fieldfox N9915A Spectrum Analyser	MY56072594	04/11/2024
<b>Probe</b>	Agos Aria-6000 Antenna	6000-1024	30/03/2021
<b>Cabling</b>	1.7m cable	1383	12/11/2023

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<sup>1</sup> <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>

<sup>2</sup> 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

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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

<b>Measurement time:</b>	13:05
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.00845
174-230 MHz	0.00996
470-694 MHz	0.00790
700 MHz	0.00350
800 MHz	0.02955
900 MHz	0.00445
1400 MHz	0.00128
1800 MHz	0.00250
1900 MHz	0.00018
2100 MHz	0.00161
2300 MHz	0.00077
2600 MHz TDD	0.00034
2600 MHz FDD	0.00097
3.4 GHz	0.00527
3.8 GHz	0.00506
Others	0.13159
<b>Total</b>	<b>0.21338</b>

## Location 2

<b>Measurement time:</b>	13:14
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.00887
174-230 MHz	0.01054
470-694 MHz	0.00825
700 MHz	0.00420
800 MHz	0.01338
900 MHz	0.00130
1400 MHz	0.00203
1800 MHz	0.00444
1900 MHz	0.00019
2100 MHz	0.00273
2300 MHz	0.00063
2600 MHz TDD	0.00036
2600 MHz FDD	0.00104
3.4 GHz	0.00504
3.8 GHz	0.00515
Others	0.14025
<b>Total</b>	<b>0.20842</b>

### Location 3

<b>Measurement time:</b>	13:22
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.00945
174-230 MHz	0.01124
470-694 MHz	0.00873
700 MHz	0.00580
800 MHz	0.01506
900 MHz	0.00163
1400 MHz	0.00320
1800 MHz	0.00306
1900 MHz	0.00020
2100 MHz	0.00320
2300 MHz	0.00067
2600 MHz TDD	0.00038
2600 MHz FDD	0.00085
3.4 GHz	0.00374
3.8 GHz	0.00563
Others	0.14902
<b>Total</b>	<b>0.22186</b>

#### Location 4

<b>Measurement time:</b>	<b>13:30</b>
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.00997
174-230 MHz	0.01155
470-694 MHz	0.00896
700 MHz	0.00229
800 MHz	0.00934
900 MHz	0.00289
1400 MHz	0.00139
1800 MHz	0.00216
1900 MHz	0.00021
2100 MHz	0.00220
2300 MHz	0.00060
2600 MHz TDD	0.00040
2600 MHz FDD	0.00031
3.4 GHz	0.00265
3.8 GHz	0.00547
Others	0.15441
<b>Total</b>	<b>0.21479</b>

## Location 5

<b>Measurement time:</b>	13:41
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01024
174-230 MHz	0.01196
470-694 MHz	0.00925
700 MHz	0.00789
800 MHz	0.02879
900 MHz	0.00591
1400 MHz	0.00357
1800 MHz	0.00331
1900 MHz	0.00021
2100 MHz	0.00344
2300 MHz	0.00082
2600 MHz TDD	0.00041
2600 MHz FDD	0.00074
3.4 GHz	0.00386
3.8 GHz	0.00602
Others	0.16040
<b>Total</b>	<b>0.25683</b>



## Location 6

Measurement time:	13:49
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01032
174-230 MHz	0.01217
470-694 MHz	0.00938
700 MHz	0.00326
800 MHz	0.02550
900 MHz	0.00358
1400 MHz	0.00252
1800 MHz	0.00442
1900 MHz	0.00022
2100 MHz	0.00926
2300 MHz	0.00063
2600 MHz TDD	0.00042
2600 MHz FDD	0.00108
3.4 GHz	0.00418
3.8 GHz	0.00591
Others	0.16246
<b>Total</b>	<b>0.25531</b>

*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.*