

# 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>	19/03/2024	<b>Time Survey completed:</b>	12:43
<b>Survey address:</b>	Caernarfon LL55		

Measurement equipment		Serial number	Calibration Date
<b>Meter</b>	Keysight Fieldfox N9915A Spectrum Analyser	MY56072599	25/01/2024
<b>Probe</b>	Agos Aria-6000 Antenna	6000-1024	30/03/2021
<b>Cabling</b>	1.7m cable	1383	12/10/2023

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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>	11:54
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01352
174-230 MHz	0.01277
470-694 MHz	0.00977
700 MHz	0.00211
800 MHz	0.00324
900 MHz	0.00208
1400 MHz	0.00249
1800 MHz	0.00524
1900 MHz	0.00023
2100 MHz	0.00145
2300 MHz	0.00047
2600 MHz TDD	0.00041
2600 MHz FDD	0.00023
3.4 GHz	0.00303
3.8 GHz	0.00610
Others	0.17469
<b>Total</b>	<b>0.23785</b>

## Location 2

<b>Measurement time:</b>	12:03
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01294
174-230 MHz	0.01308
470-694 MHz	0.00996
700 MHz	0.00320
800 MHz	0.00261
900 MHz	0.00153
1400 MHz	0.00402
1800 MHz	0.00334
1900 MHz	0.00024
2100 MHz	0.00134
2300 MHz	0.00048
2600 MHz TDD	0.00042
2600 MHz FDD	0.00024
3.4 GHz	0.00318
3.8 GHz	0.00630
Others	0.17965
<b>Total</b>	<b>0.24252</b>

### Location 3

<b>Measurement time:</b>	<b>12:11</b>
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01193
174-230 MHz	0.01341
470-694 MHz	0.01016
700 MHz	0.05120
800 MHz	0.11938
900 MHz	0.03724
1400 MHz	0.01838
1800 MHz	0.01446
1900 MHz	0.00024
2100 MHz	0.00310
2300 MHz	0.00049
2600 MHz TDD	0.00044
2600 MHz FDD	0.00025
3.4 GHz	0.00365
3.8 GHz	0.00645
Others	0.18670
<b>Total</b>	<b>0.47749</b>

#### Location 4

<b>Measurement time:</b>	12:19
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01235
174-230 MHz	0.01337
470-694 MHz	0.01025
700 MHz	0.00920
800 MHz	0.00969
900 MHz	0.00432
1400 MHz	0.01419
1800 MHz	0.01498
1900 MHz	0.00025
2100 MHz	0.00511
2300 MHz	0.00049
2600 MHz TDD	0.00044
2600 MHz FDD	0.00025
3.4 GHz	0.00451
3.8 GHz	0.00654
Others	0.18643
<b>Total</b>	<b>0.29234</b>

## Location 5

<b>Measurement time:</b>	<b>12:27</b>
<b>Frequency band</b>	<b>Percentage of the ICNIRP reference levels for general public exposure</b>
87.5-108 MHz	0.01224
174-230 MHz	0.01376
470-694 MHz	0.01042
700 MHz	0.00701
800 MHz	0.01336
900 MHz	0.00243
1400 MHz	0.00385
1800 MHz	0.00517
1900 MHz	0.00025
2100 MHz	0.00174
2300 MHz	0.00051
2600 MHz TDD	0.00045
2600 MHz FDD	0.00026
3.4 GHz	0.00339
3.8 GHz	0.00671
Others	0.19114
<b>Total</b>	<b>0.27270</b>



## Location 6

Measurement time:	12:37
Frequency band	Percentage of the ICNIRP reference levels for general public exposure
87.5-108 MHz	0.01523
174-230 MHz	0.01423
470-694 MHz	0.01074
700 MHz	0.00218
800 MHz	0.00276
900 MHz	0.00228
1400 MHz	0.00270
1800 MHz	0.00587
1900 MHz	0.00026
2100 MHz	0.00247
2300 MHz	0.00052
2600 MHz TDD	0.00046
2600 MHz FDD	0.00027
3.4 GHz	0.00388
3.8 GHz	0.00698
Others	0.19727
<b>Total</b>	<b>0.26808</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.*