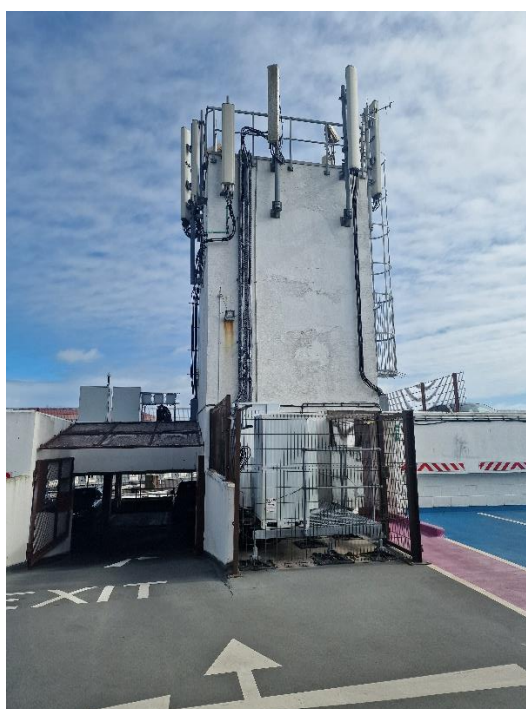


## Cellular mast emissions survey: Sand Street Car Park



### Document details

|                          |                                 |                      |
|--------------------------|---------------------------------|----------------------|
| Document name            | Cellular mast emissions survey: | Sand Street Car Park |
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| Reviewed and approved by | Bachir Belloul                  |                      |

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## 1 Executive summary

The Jersey Competition and Regulatory Authority or JCRA regularly monitors emission levels from the cellular masts in Jersey<sup>1</sup> to ensure the mobile network operators who operate their services from those masts comply with their license obligations in terms of power levels and that the levels from the sites meet the internationally recognised standards and guidelines regarding health and safety limits for the public.

In 2017, the JCRA commissioned surveys to measure the electromagnetic field (EMF) emission levels at all the sites hosting mobile telecommunication equipment within the island. Further surveys have been conducted in each subsequent year focussing on new sites, those where significant changes have been made by the operators or those where the public have raised concerns to the JCRA in the previous year. This report presents the results of the survey conducted at the Sand Street Car Park site in 2025.

In 2025, the Jersey mobile network operators have launched their first commercial 5G. This year's audits therefore include the frequency bands used for 5G, noting however that not all sites currently have 5G transmitting equipment.

The Sand Street Car Park site was used by multiple operators at the time of the survey: Airtel, JT and Sure. Surveys were conducted at all cellular frequency bands (700, 800, 900, 1800, 2100, 2600 and 3400MHz) for all mobile cellular technologies (2G, 3G, 4G and 5G) and for all three cellular operators as a routine procedure. Even though the reported levels are expected to be predominantly emitted from this site, the test equipment does not discriminate between nearby sites which means that the levels are cumulated over all site emissions detected by the test instrument.

The survey established that the emission levels around the site were within the safety limits for the public advised by internationally recognised standards.

The values shown hereafter are the maximum levels recorded around the site following a peak search. The levels were found to be lower at all the other locations round this site. The recorded values are true at the time of testing and can go up or down depending on the level of user activity on the site.

The total Exposure Quotient (EQ) for the site recorded across all detected cellular frequency bands is given at the bottom of the summary table below. A total EQ close to 1 (one) for the site would mean that emission levels approach the safety limit advised by ICNIRP in their guidelines.

**Table 1 – Total EQ by frequency band**

| Site Name            | Band [MHz] | Max E-field in band [V/m] | Operator at Max E-field | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|------------|---------------------------|-------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | 700        | 0.03663                   | JT                      | 1062                                 | 4.90615E-05            | 1/ 20383                   |
|                      | 800        | 1.795                     | Sure                    | 22                                   | 0.066309435            | 1/ 15                      |
|                      | 900        | 9.444                     | JT                      | 4                                    | 0.239314145            | 1/ 4                       |
|                      | 1800       | 2.249                     | JT                      | 26                                   | 0.060261619            | 1/ 17                      |
|                      | 2100       | 2.034                     | JT                      | 30                                   | 0.033494481            | 1/ 30                      |
|                      | 2600       | 1.015                     | JT                      | 60                                   | 0.009183488            | 1/ 109                     |
|                      | 3400       | 0.02351                   | Sure                    | 1654                                 | 3.3554E-05             | 1/ 29803                   |
| <b>Total Site EQ</b> |            |                           |                         |                                      | <b>0.408645784</b>     | <b>1/ 2</b>                |

<sup>1</sup> Prior to 1 July 2020, the JCRA and the Guernsey Competition & Regulatory Authority coordinated their activities in the Channel Islands as the Channel Islands Competition Regulatory Authorities (CICRA). Earlier reports may refer to CICRA rather than JCRA.

The results show that the total EQ was measured at 40.8% of ICNIRP's *General Public* Reference Levels (or less than 1/2) and the site therefore remains safe.

The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the operator. On each plot, the solid red line represents the Airtel activity, the light blue is JT, the dark blue is Sure, the light grey is Clear (Clear only operates in the 2100MHz band) and the green line is Newtel (Newtel only operates a license in the 3400MHz band). Note however that not all operators are present in each frequency band but the colour assigned to each operator remains the same throughout.

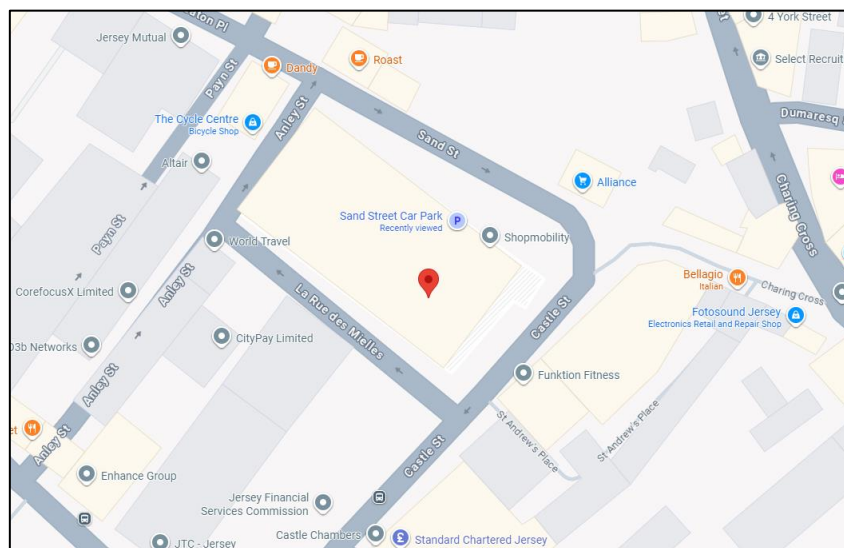
ICNIRP's *General Public* Reference Level is also shown as the dashed line at the top of the graphs. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used on the plots throughout this report.

The graphs are also supported by the equivalent statistical tables derived from the measured levels at the site for added clarity.

## 2 Site details

### 2.1 Site location

**Figure 1 – Map of the site area**



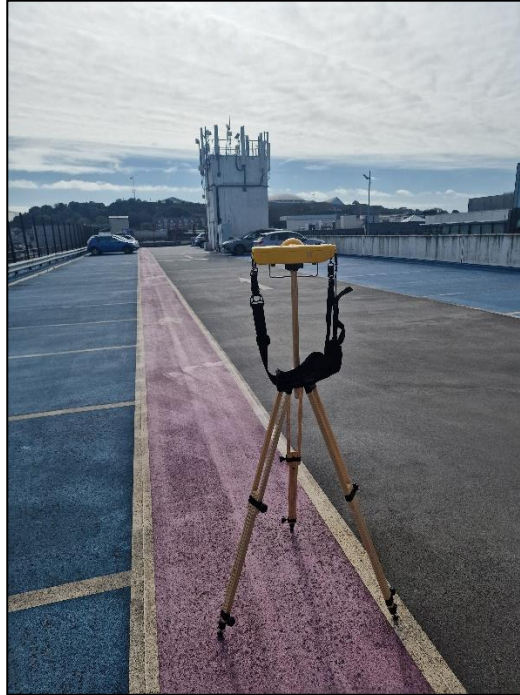
|                 |                      |
|-----------------|----------------------|
| Site name:      | Sand Street Car Park |
| Site address:   | Sand Street car park |
| Site latitude:  | 49.185125            |
| Site longitude: | -2.110508            |

### 2.2 Site description

|                     |                                                                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operators:          | Airtel / JT / Sure                                                                                                                                                                                      |
| Antenna types:      | Multiple Directional Antennas                                                                                                                                                                           |
| Approximate height: | 40m                                                                                                                                                                                                     |
| Site type:          | Rooftop                                                                                                                                                                                                 |
| Description:        | The antennas at Sand Street Car Park are mounted above the building's stairwell access on the rooftop. Access to the antennas or getting within close proximity to them requires use of a climbing aid. |

## 2.3 Site photo

**Figure 2 – Location of the peak where emission levels were measured.**



## 2.4 Test location

**Figure 3 – Survey area with spot measurement markers**



As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch.

The blue triangle is the antenna location, yellow lines are the walk route, the green circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out.

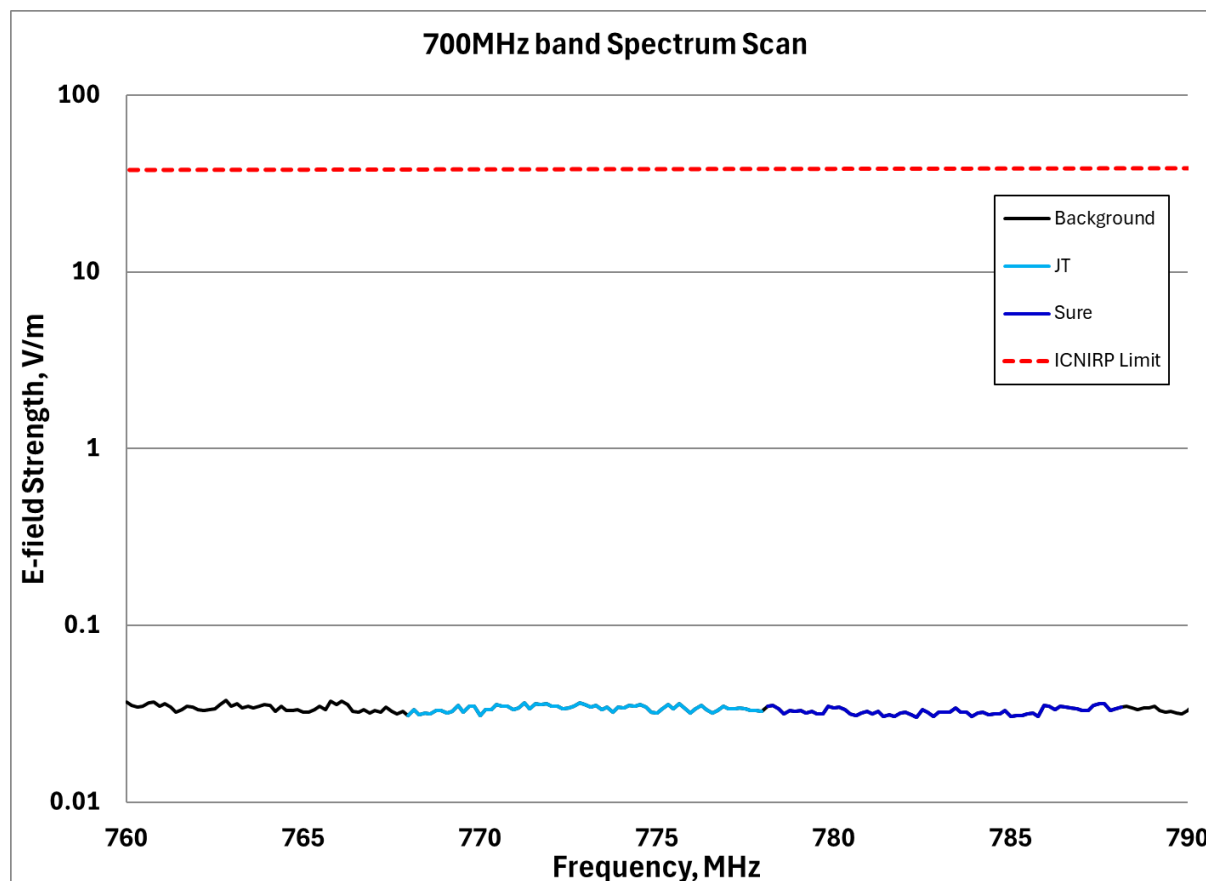
The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

### 3 Survey results

#### 3.1 700MHz band

The graph for the 700MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

**Figure 4 – 700MHz band spectrum scan**



No meaningful activity was recorded at this site on the 700MHz band. The EQ results for the band are shown below.

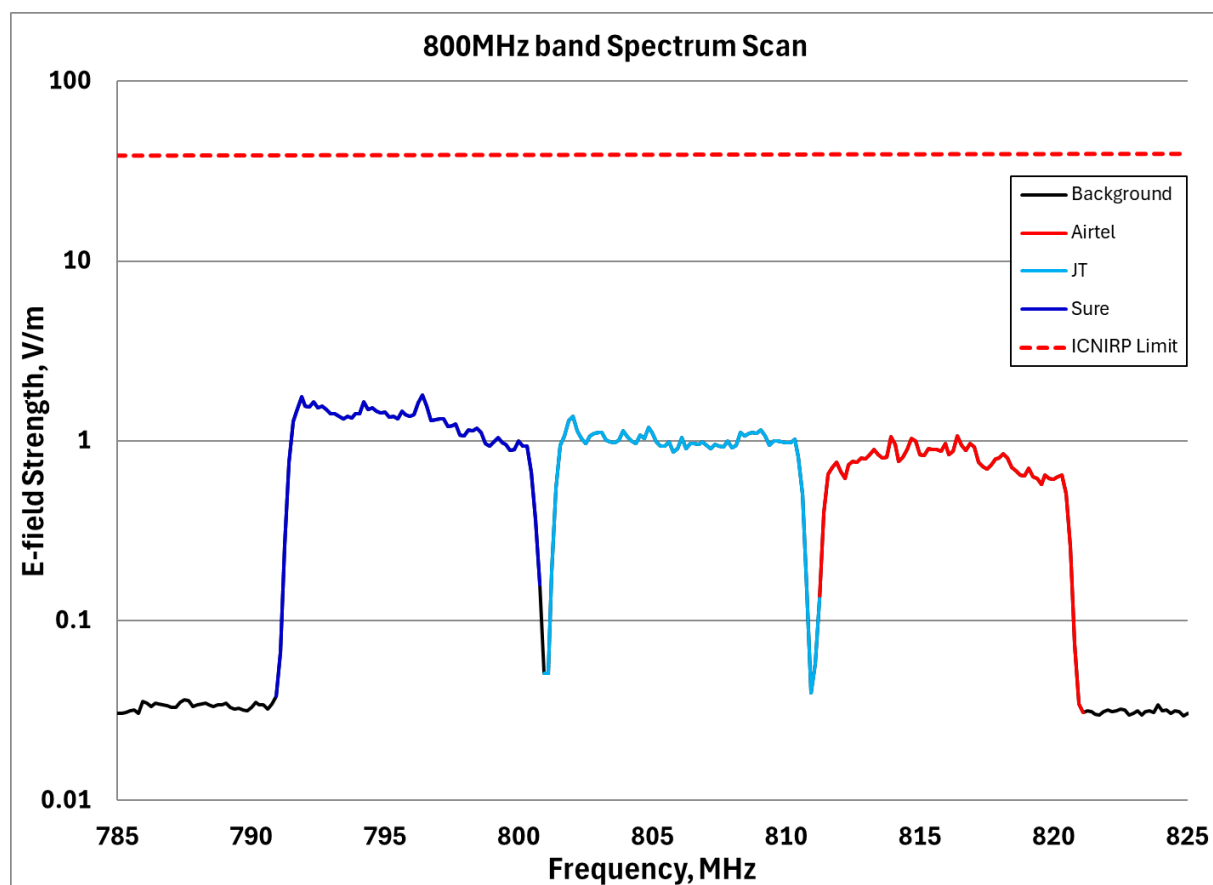
**Table 2 – 700MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator      | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|---------------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | JT            | 700        | 0.03663                    | 1062                                 | 2.56101E-05            | 1/ 39047                   |
|                      | Sure          |            | 0.03622                    | 1074                                 | 2.34514E-05            | 1/ 42641                   |
|                      | total band EQ |            |                            |                                      |                        | 4.90615E-05                |

### 3.2 800MHz band

The graph for the 800MHz activity is shown below.

**Figure 5 – 800MHz band spectrum scan**



No field level recorded across the band was higher than 1.795 V/m (Sure), which is 22 times smaller than the ICNIRP Reference Level.

The EQ results for the 800MHz band are shown below.

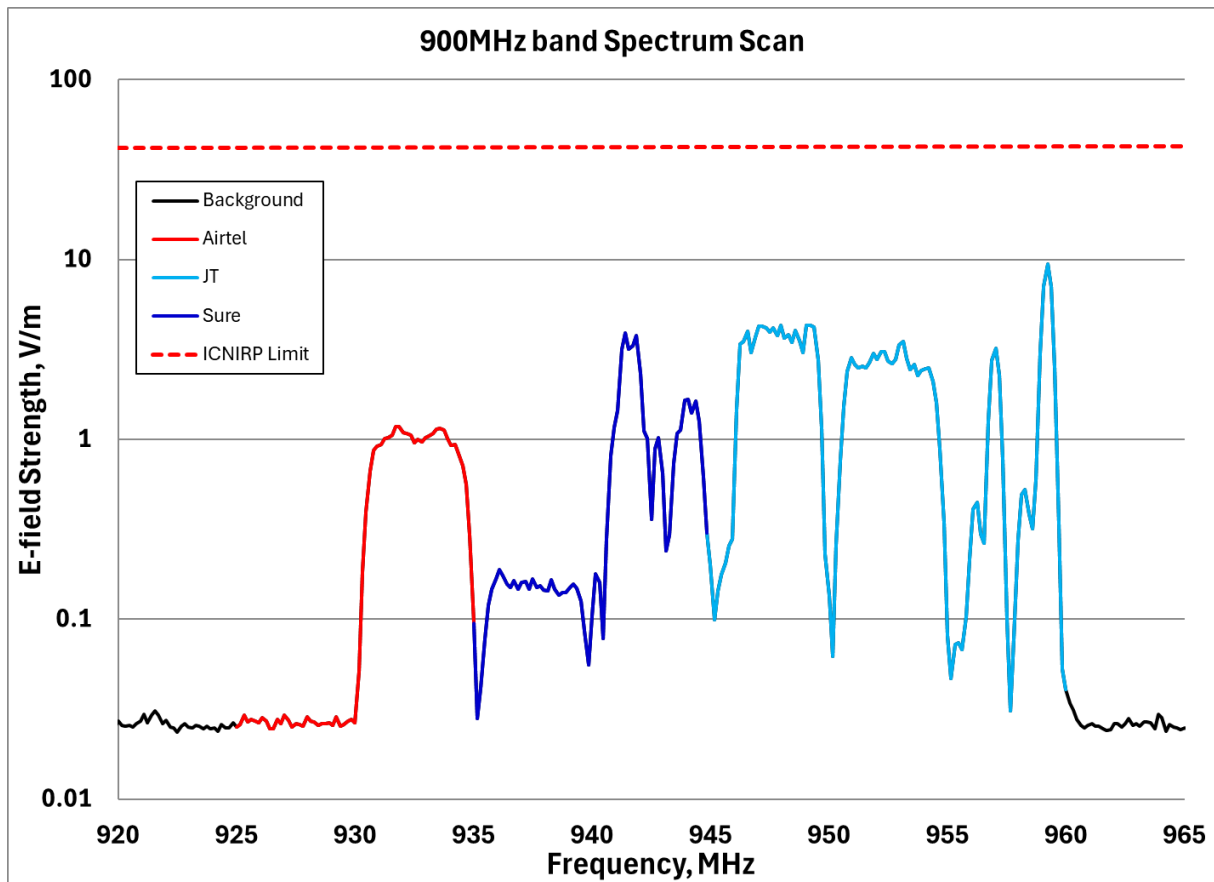
**Table 3 – 800MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator      | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|---------------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Airtel        | 800        | 1.068                      | 36                                   | 0.0120806              | 1/ 83                      |
|                      | JT            |            | 1.368                      | 28                                   | 0.020167051            | 1/ 50                      |
|                      | Sure          |            | 1.795                      | 22                                   | 0.034061784            | 1/ 29                      |
|                      | total band EQ |            |                            |                                      | 0.066309435            | 1/ 15                      |

### 3.3 900MHz band

The graph for the 900MHz activity is shown below.

**Figure 6 – 900MHz band spectrum scan**



No field level recorded across the band was higher than 9.444 V/m (JT), which is 4 times smaller than the ICNIRP Reference Level.

The EQ results for the 900MHz band are shown below.

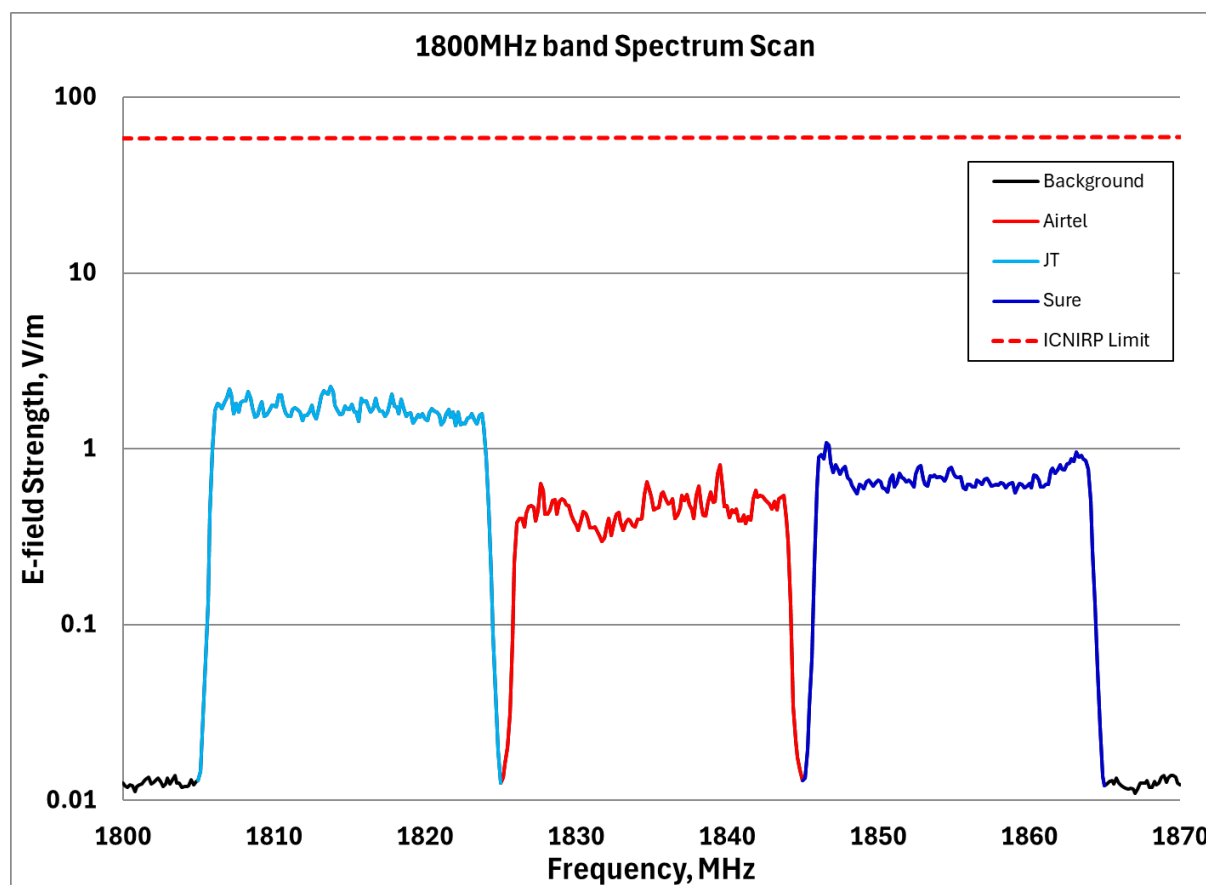
**Table 4 – 900MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator      | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|---------------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Airtel        | 900        | 1.179                      | 35                                   | 0.007652934            | 1/ 131                     |
|                      | JT            |            | 9.444                      | 4                                    | 0.206107857            | 1/ 5                       |
|                      | Sure          |            | 3.899                      | 11                                   | 0.025553354            | 1/ 39                      |
|                      | total band EQ |            |                            |                                      | 0.239314145            | 1/ 4                       |

### 3.4 1800MHz band

The graph for the 1800MHz activity around the site is shown below.

**Figure 7 – 1800MHz spectrum scan**



No field level recorded across the band was higher than 2.249 V/m (JT), which is 26 times smaller than the ICNIRP Reference Level.

The EQ results for the 1800MHz band are shown below.

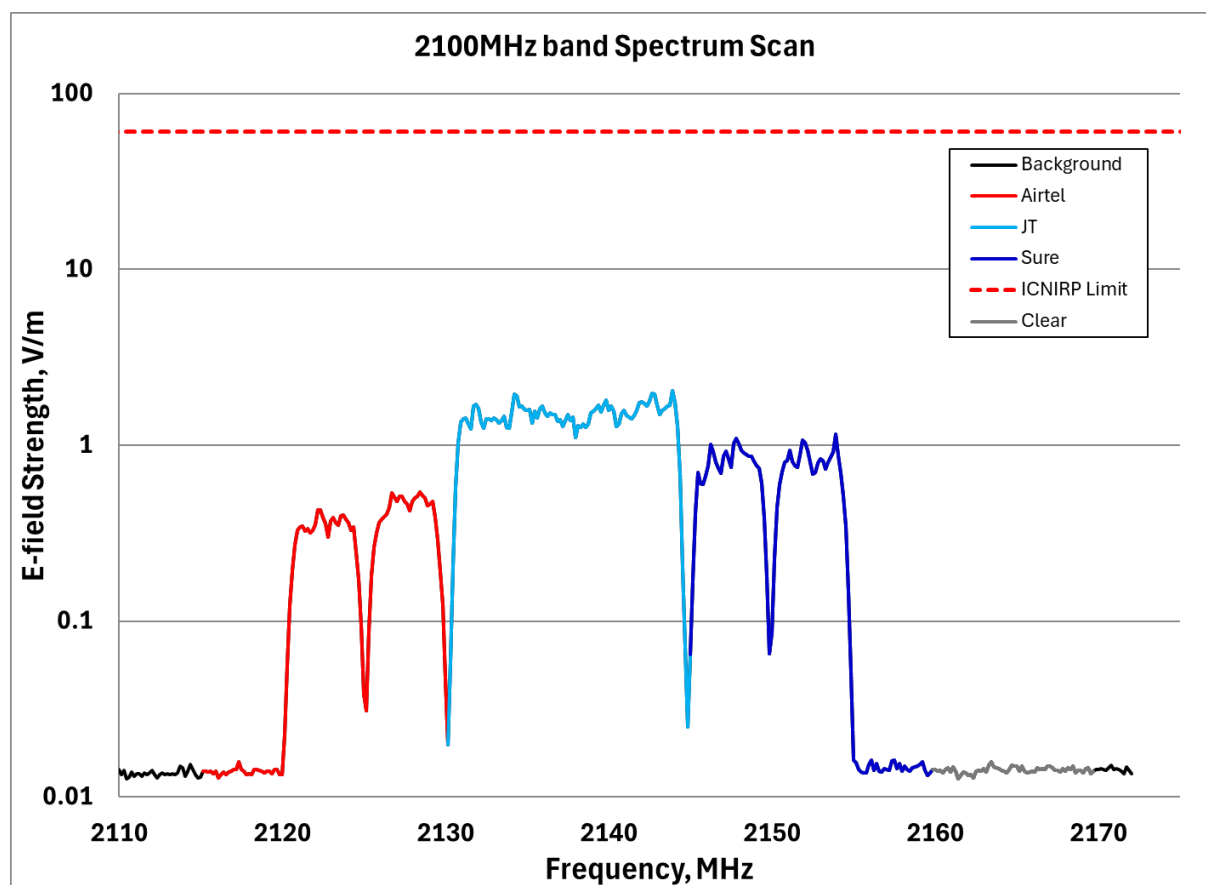
**Table 5 – 1800MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|----------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Airtel   | 1800       | 0.8093                     | 72                                   | 0.003620845            | 1/ 276                     |
|                      | JT       |            | 2.249                      | 26                                   | 0.048401541            | 1/ 21                      |
|                      | Sure     |            | 1.079                      | 54                                   | 0.008239233            | 1/ 121                     |
| total band EQ        |          |            |                            |                                      | 0.060261619            | 1/ 17                      |

### 3.5 2100MHz band

The graph for the 2100MHz band activity around the site is shown below.

**Figure 8 – 2100MHz band spectrum scan**



No field level recorded across the band was higher than 2.034 V/m (JT), which is 30 times smaller than the ICNIRP Reference Level.

The EQ results for the 2100MHz band are shown below.

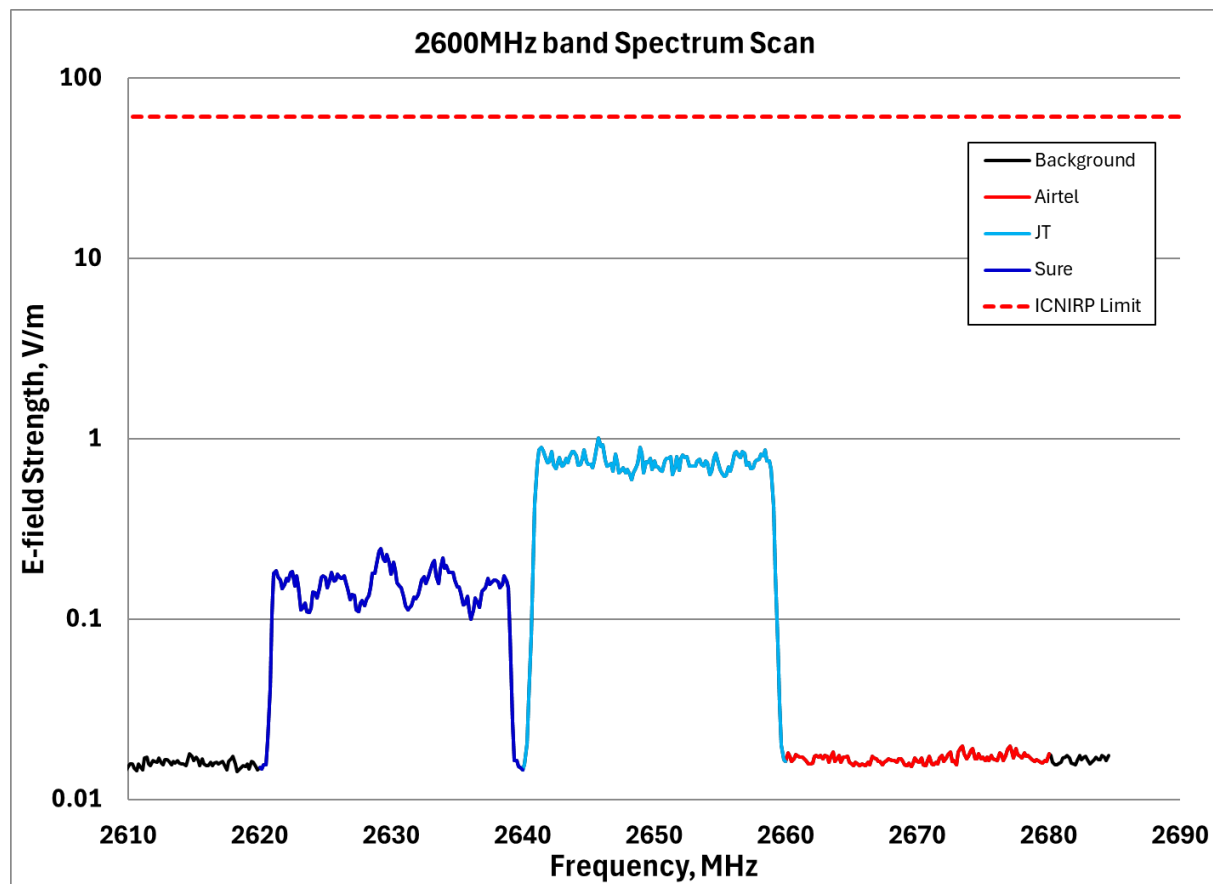
**Table 6 – 2100MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|----------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Airtel   | 2100       | 0.5426                     | 112                                  | 0.001165346            | 1/ 858                     |
|                      | Clear    |            | 0.01584                    | 3851                                 | 1.74002E-06            | 1/ 574705                  |
|                      | JT       |            | 2.034                      | 30                                   | 0.027381475            | 1/ 37                      |
|                      | Sure     |            | 1.155                      | 53                                   | 0.00494592             | 1/ 202                     |
| total band EQ        |          |            |                            |                                      | 0.033494481            | 1/ 30                      |

### 3.6 2600MHz band

The graph for the 2600MHz band activity around the site is shown below.

**Figure 9 – 2600MHz band spectrum scan**



No field level recorded across the band was higher than 1.015 V/m (JT), which is 60 times smaller than the ICNIRP Reference Level.

The EQ results for the 2600MHz band are shown below.

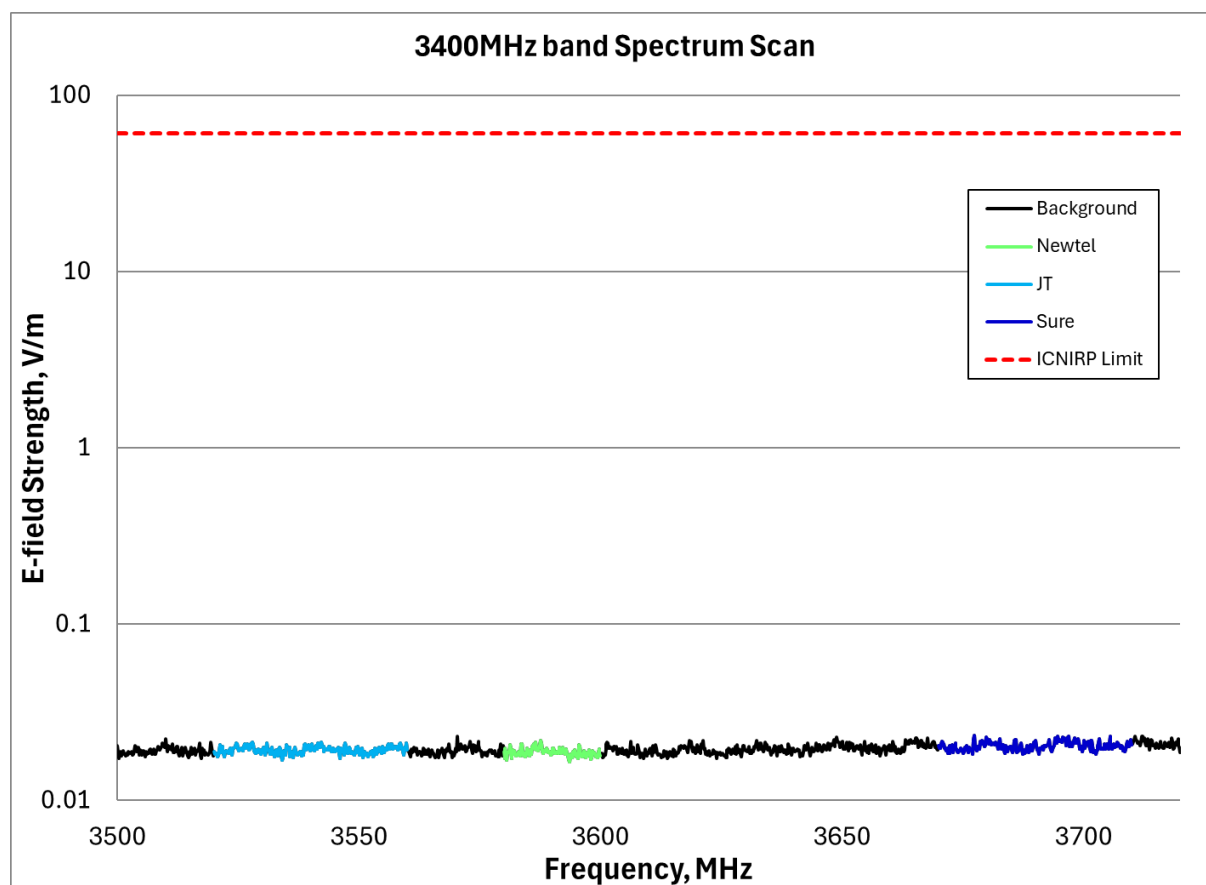
**Table 7 – 2600MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator      | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|---------------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Airtel        | 2600       | 0.01984                    | 3075                                 | 4.91098E-06            | 1/ 203625                  |
|                      | JT            |            | 1.015                      | 60                                   | 0.008780871            | 1/ 114                     |
|                      | Sure          |            | 0.2468                     | 247                                  | 0.000397706            | 1/ 2514                    |
|                      | total band EQ |            |                            |                                      | 0.009183488            | 1/ 109                     |

### 3.7 3400MHz band

The graph for the 3400-3800MHz band activity around the site is shown below.

**Figure 10 – 3400MHz band spectrum scan**



No meaningful activity was recorded at this site in the 3400MHz band. The EQ results for the band are shown below.

**Table 8 – 3400MHz band exposure quotient at Sand Street Car Park**

| Site Name            | Operator | Band [MHz] | Max E-field Strength [V/m] | ICNIRP Limit Relative to Max E-field | Band Exposure Quotient | Band EQ Relative to ICNIRP |
|----------------------|----------|------------|----------------------------|--------------------------------------|------------------------|----------------------------|
| Sand Street car park | Newtel   | 3400       | 0.02193                    | 1773                                 | 6.16973E-06            | 1/ 162082                  |
|                      | JT       |            | 0.02141                    | 1816                                 | 1.29724E-05            | 1/ 77087                   |
|                      | Sure     |            | 0.02351                    | 1654                                 | 1.44119E-05            | 1/ 69387                   |
| total band EQ        |          |            |                            |                                      | 3.3554E-05             | 1/ 29803                   |

END