

Cellular mast emissions survey

Le Marais Flats



Document details

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1 Executive summary

The Jersey Competition and Regulatory Authority or JCRA regularly monitors emission levels from the cellular masts in Jersey¹ 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, JCRA commissioned EM emission level surveys at all the sites within the island. The surveys were repeated in each subsequent year for all new sites and sites where major changes were made by the operators in the previous year. This report presents the results of the survey conducted at the Le Marais Flats site in 2023.

The Le Marais site was used by two operators at the time of the survey: Airtel and Sure. Surveys were nonetheless conducted at all cellular frequency bands (800, 900, 1800, 2100 and 2600MHz) for all mobile cellular technologies (GSM, 3G and 4G) 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 very low and well below 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 – Cumulative exposure quotient

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
Le Marais Flats	800	0.04713	Sure	825	1.39003E-05	1/ 71941
	900	0.1664	Sure	248	2.59092E-05	1/ 38596
	1800	0.1539	Sure	379	0.000123761	1/ 8080
	2100	0.005429	Airtel	11236	5.038E-07	1/ 1984915
	2600	0.009993	JT	6104	1.20477E-06	1/ 830037
Total Site EQ					0.000165279	1/ 6050

The results show that the total EQ was measured at 1/6050 and therefore remains well below the ICNIRP guidelines.

The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the three main operators: Airtel in red, Sure in dark blue, and Jersey Telecom in light blue. The graphs are also supported by the equivalent statistical figures derived from the measured levels at the site for added clarity.

¹ 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.

2 Site details

2.1 Site location

Figure 1 – Map of the site area



Site name:	Le Marais Flats
Site address:	Le Petit Marais, St Clement, Jersey
Site latitude:	49.168088
Site longitude:	-2.077794

2.2 Site description

Operators:	Airtel, Sure
Antenna types:	Directional
Approximate height:	42m
Site type:	Rooftop
Description:	The antennas are located on the top of the building. Access by the public is restricted

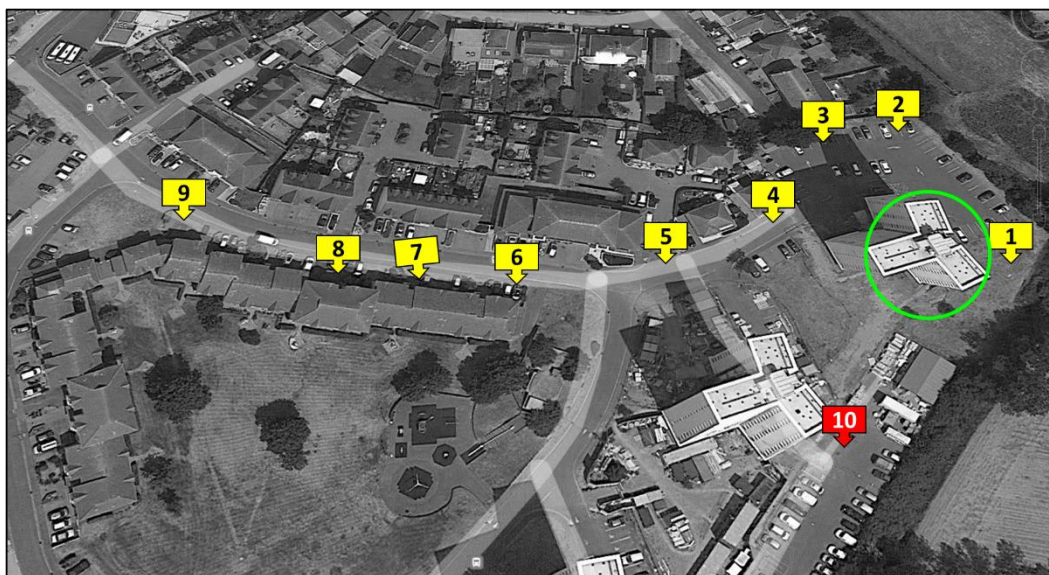
2.3 Site photo

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



2.4 Test location

Figure 3 – Survey area with spot measurement markers



The green circle indicates the approximate antenna locations, the yellow numbered pins are intermediate locations measured at during the peak search and the red pin is the spot where the highest spot search reading was obtained and where the detailed survey was carried out.

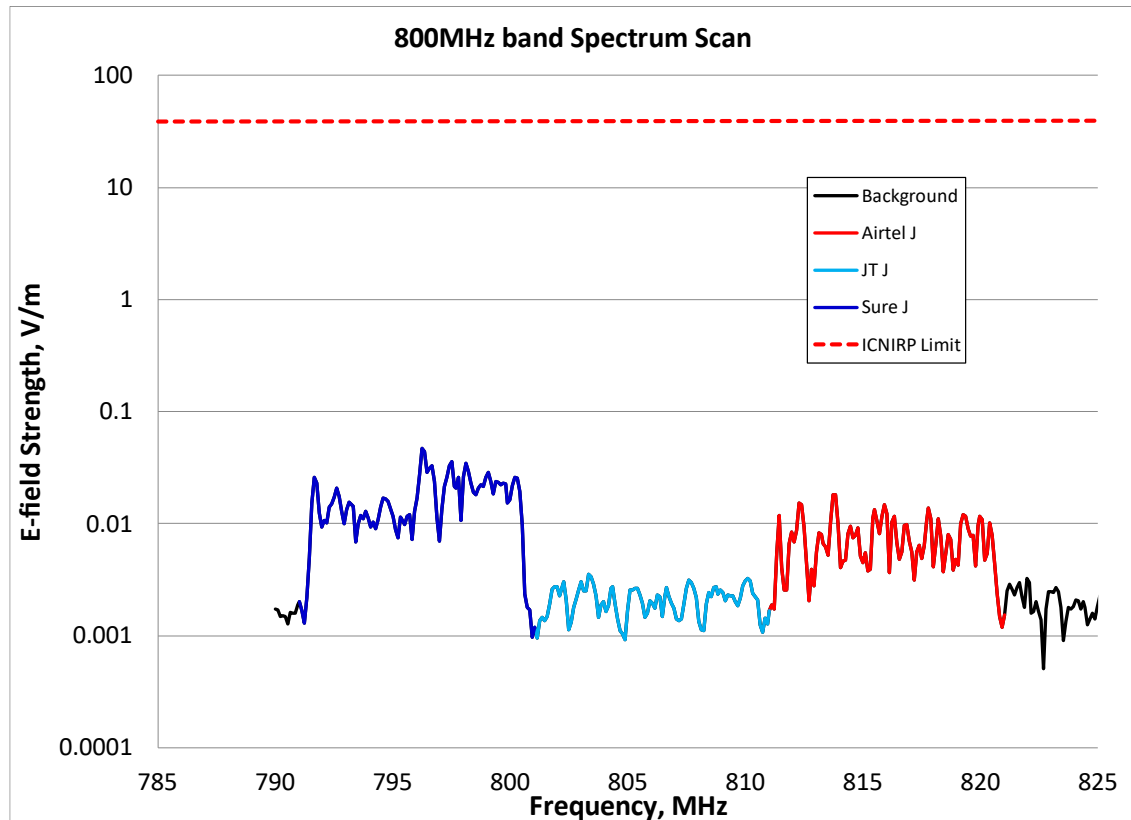
As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch. The reported spectrum scans were taken at the peak location (shown in red above) where the highest readings were recorded. The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

3 Survey results

3.1 800MHz band

The graph for the 800MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

Figure 4 – 800MHz band spectrum scan



The red line on the scan represents the Airtel activity, the light blue is JT and the dark blue is Sure. ICNIRP's reference level for the *General Public* is also shown as the straight dashed line at the top of the graph. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used throughout this report.

No field level recorded across the band was higher than 0.04713 V/m (Sure), which is 825 times smaller than the ICNIRP Guideline Reference Level.

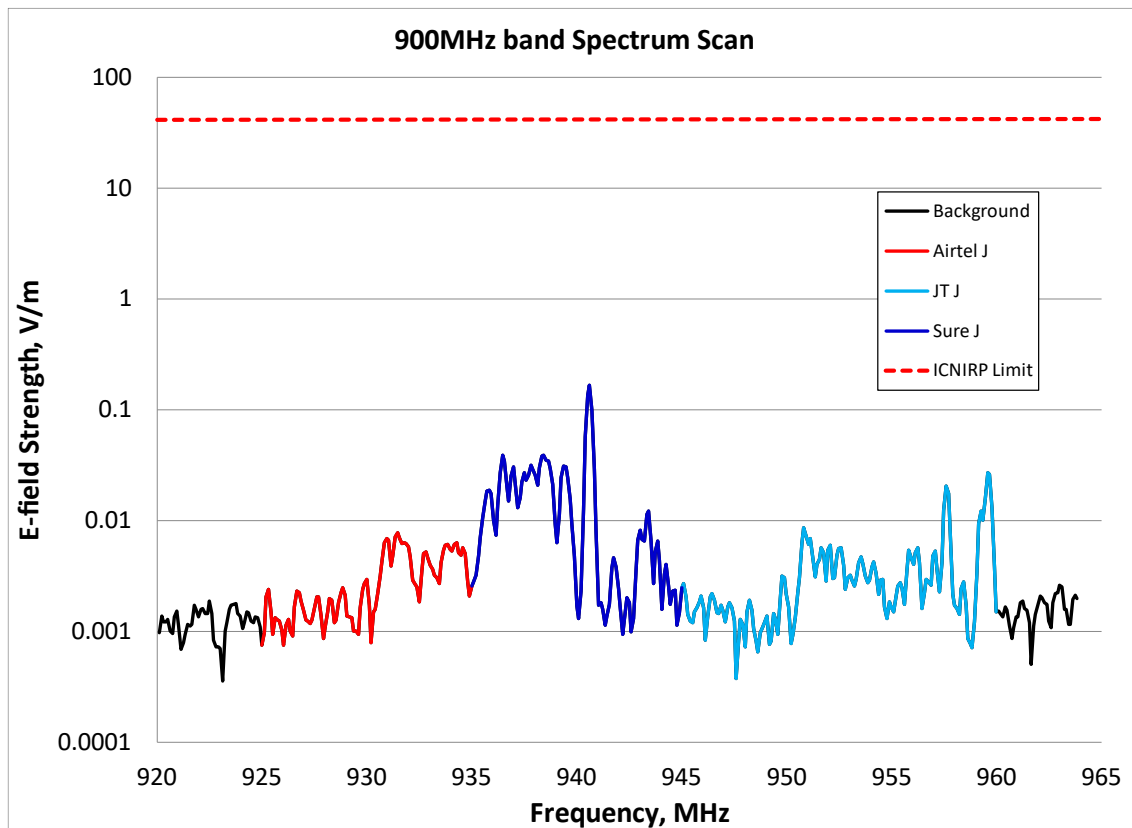
Table 2 – 800MHz band exposure quotient at Le Marais Flats

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
Le Marais Flats	Airtel	800	0.01818	2139	2.10717E-06	1/ 474571
	JT		0.003553	10946	1.50499E-07	1/ 6644573
	Sure		0.04713	825	1.16426E-05	1/ 85891
total band EQ					1.39003E-05	1/ 71941

3.2 900MHz band

The graph for the 900MHz activity is shown below.

Figure 5 – 900MHz band spectrum scan



No field level recorded across the band was higher than 0.1664 V/m (Sure), which is 248 times smaller than the ICNIRP Guideline Reference Level.

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

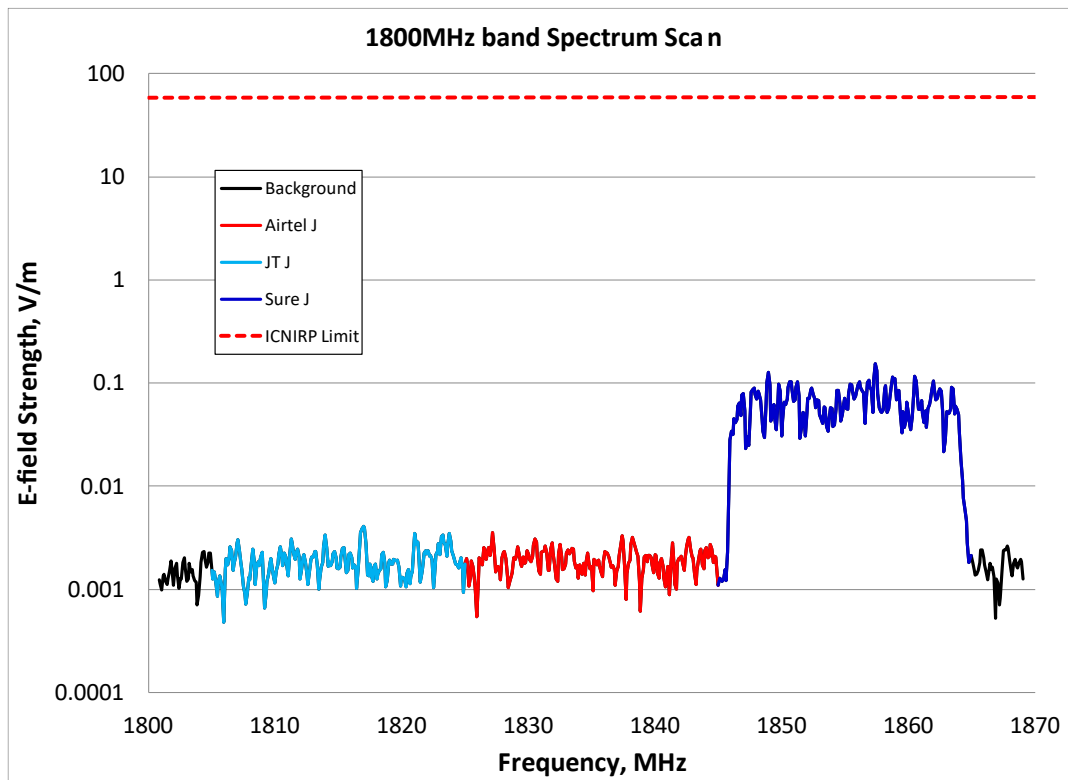
Table 3 – 900MHz band exposure quotient at Le Marais Flats

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
Le Marais Flats	Airtel	900	0.007842	5260	3.47339E-07	1/ 2879030
	JT		0.02721	1516	1.22026E-06	1/ 819495
	Sure		0.1664	248	2.43416E-05	1/ 41082
total band EQ					2.59092E-05	1/ 38596

3.3 1800MHz band

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

Figure 6 – 1800MHz spectrum scan



No field level recorded across the band was higher than 0.1539 V/m (Sure), which is 379 times smaller than the ICNIRP Guideline Reference Level.

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

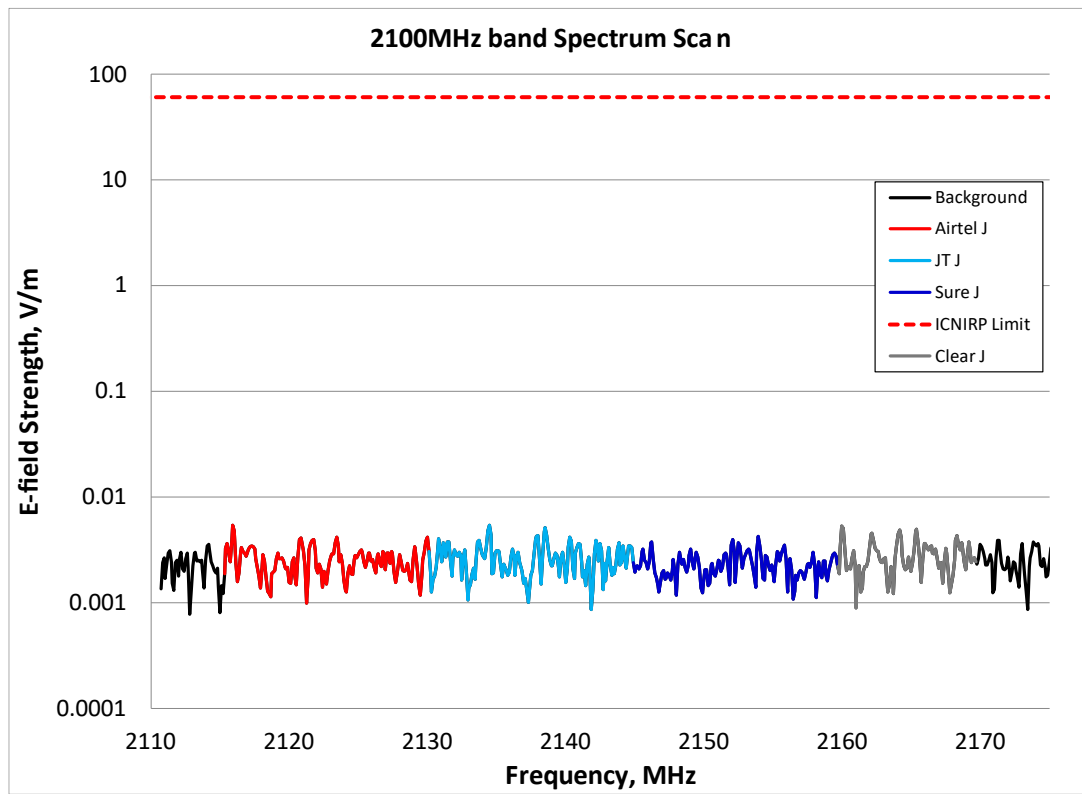
Table 4 – 1800MHz band exposure quotient at Le Marais Flats

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
Le Marais Flats	Airtel	1800	0.003556	16405	1.08825E-07	1/ 9189037
	JT		0.004075	14316	1.10306E-07	1/ 9065689
	Sure		0.1539	379	0.000123542	1/ 8094
total band EQ					0.000123761	1/ 8080

3.4 2100MHz band

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

Figure 7 – 2100MHz band spectrum scan



No activity was recorded across this band on the day of the survey.

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

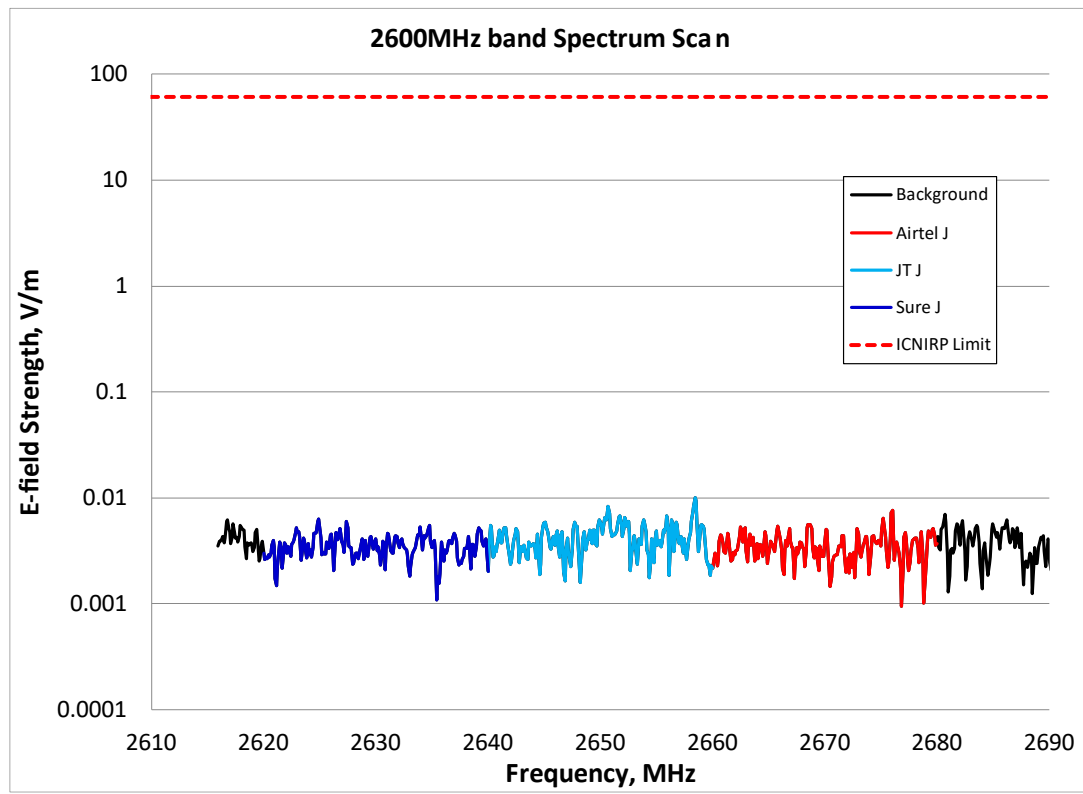
Table 5 – 2100MHz band exposure quotient at Le Marais Flats

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
Le Marais Flats	Airtel	2100	0.005429	11236	1.34517E-07	1/ 7433997
	Clear		0.005309	11490	1.11228E-07	1/ 8990529
	JT		0.005396	11305	1.48618E-07	1/ 6728671
	Sure		0.00421	14489	1.09437E-07	1/ 9137689
total band EQ					5.038E-07	1/ 1984915

3.5 2600MHz band

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

Figure 8 – 2600MHz band spectrum scan



No activity was recorded across this band on the day of the survey.

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

Table 6 – 2600MHz band exposure quotient at Le Marai Flats

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
Le Marais Flats	Airtel	2600	0.007546	8084	3.49121E-07	1/ 2864335
	JT		0.009993	6104	5.11848E-07	1/ 1953705
	Sure		0.006251	9758	3.43797E-07	1/ 2908696
total band EQ					1.20477E-06	1/ 830037

END