

Cellular Mast Emissions Survey: Field 931 (Jersey)



DOCUMENT DETAILS

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Executive Summary

CICRA regularly monitors radiowave emissions from the cellular masts in the Bailiwicks of Guernsey and Jersey 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 emissions from the sites comply with internationally recognised standards and guidelines regarding Health & Safety limits for the public.

In 2017, CICRA commissioned iWireless Solutions to conduct the emission surveys at all sites within the two Bailiwicks. This report is for the Field 931 site located in Jersey.

The Field 931 site was used by one operator at the time of the survey: Airtel J. Surveys were however 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.

The survey established that the emissions around this 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 that were recorded around the site following a peak search. In most other locations, the levels were lower. The recorded values are only true at the time of testing and can go up or down depending on the level of user activity on the cell.

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

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 931	800	0.01725	Airtel J	2255	2.27648E-06	1/ 439275
	900	0.3492	Airtel J	118	0.000158914	1/ 6293
	1800	0.001368	JT J	42644	7.12812E-08	1/ 14028953
	2100	0.002131	Airtel J	28625	1.38771E-07	1/ 7206101
	2600	0.002151	Airtel J	28359	1.2463E-07	1/ 8023752
Total Site EQ					0.000161525	1/ 6191

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/6191 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 J in red, Sure J in dark blue, and Jersey Telecom J in light blue.

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

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location



Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow 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

As part of the peak search procedure, spot measurements were taken at locations around the site, 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 6 minutes as advised by ICNIRP.

2. Survey Results

2.1 800 MHz Band

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

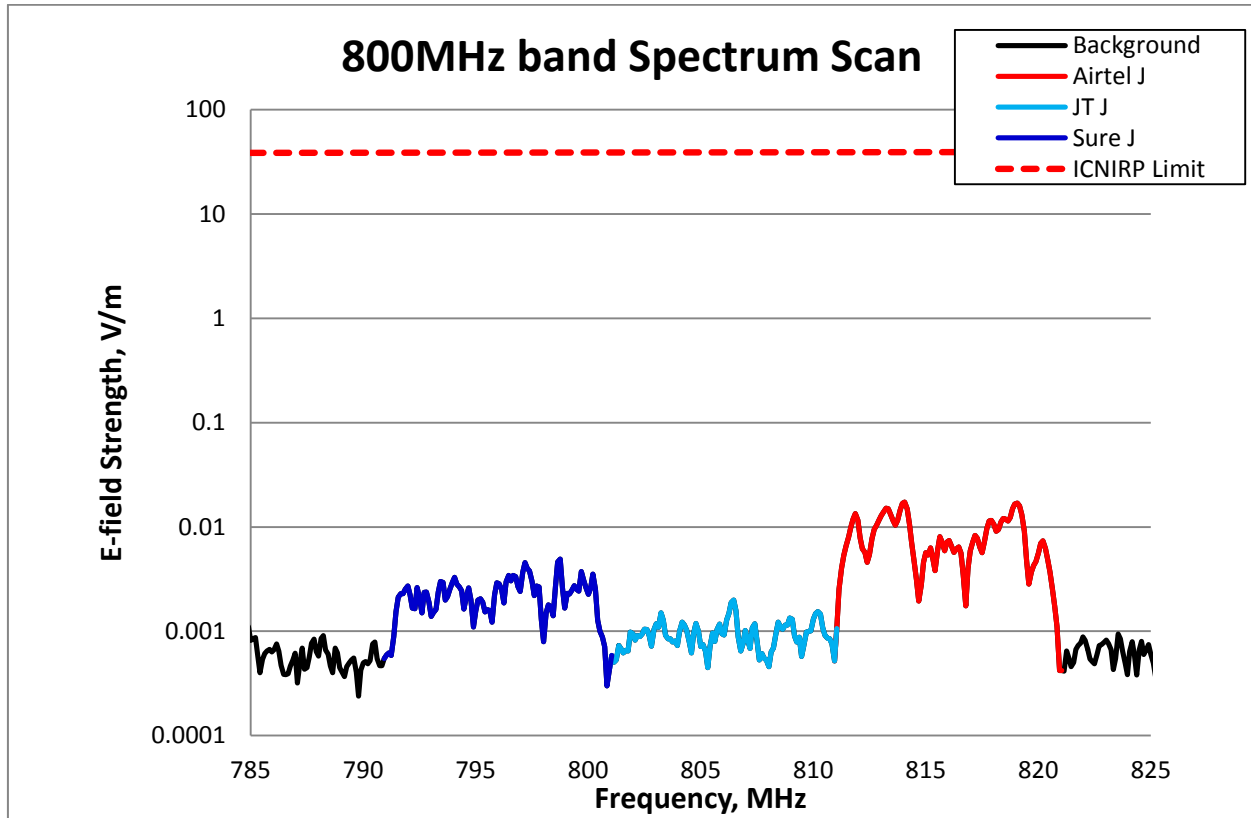


Figure 4 - 800MHz band Spectrum Scan

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 0.01725 V/m (Airtel J), which is 2255 times smaller than the ICNIRP Reference level. The Exposure Quotient results for the 800MHz band are shown below:

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
Field 931	Airtel J	800	0.01725	2255	2.09859E-06	1/ 476510
	JT J		0.001989	19553	2.54342E-08	1/ 39317137
	Sure J		0.00492	7905	1.52453E-07	1/ 6559398
total band EQ					2.27648E-06	1/ 439275

Table 2– 800MHz band Exposure Quotient at Field 931

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

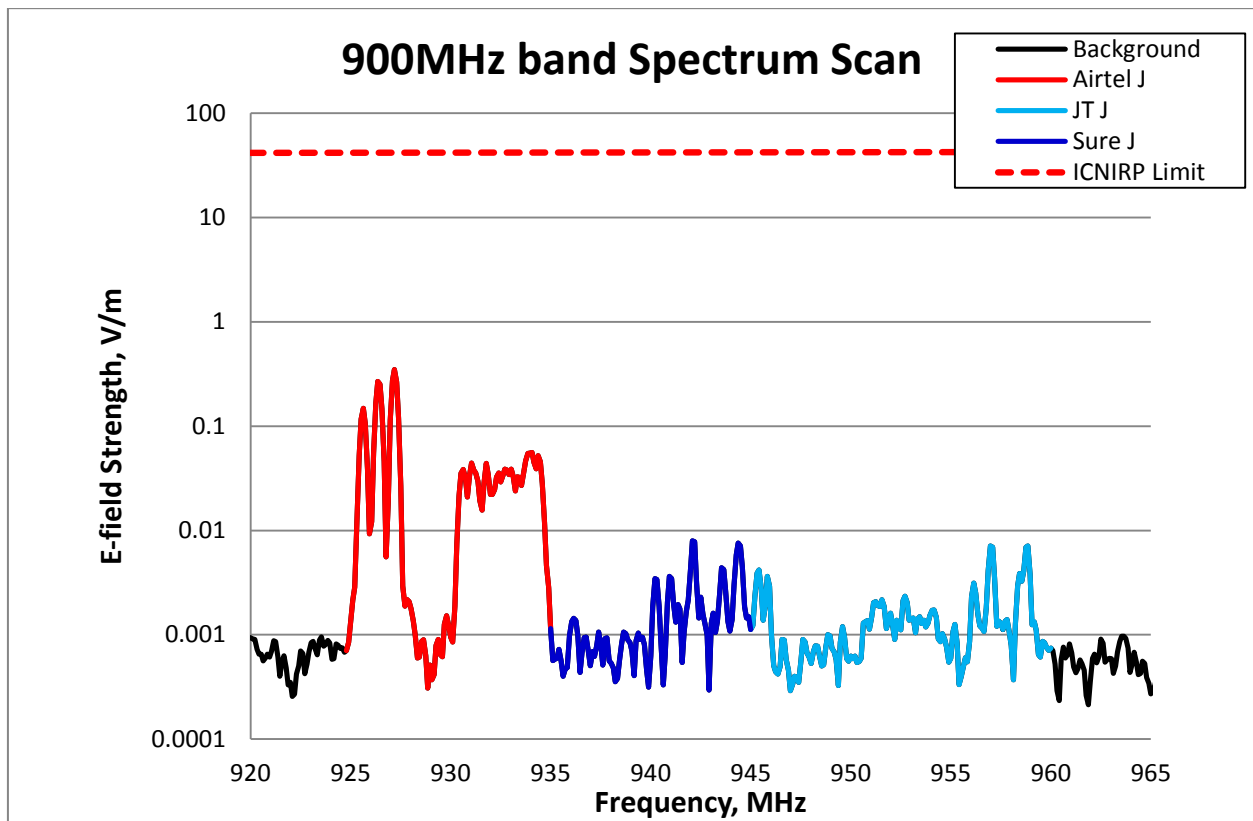


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3492 V/m (Airtel J), which is 118 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz band are shown below:

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 931	Airtel J	900	0.3492	118	0.00015863	1/ 6304
	JT J		0.007088	5820	1.44032E-07	1/ 6942888
	Sure J		0.007981	5169	1.39515E-07	1/ 7167690
total band EQ					0.000158914	1/ 6293

Table 3– 900MHz band Exposure Quotient at Field 931

2.3 1800 MHz Band

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

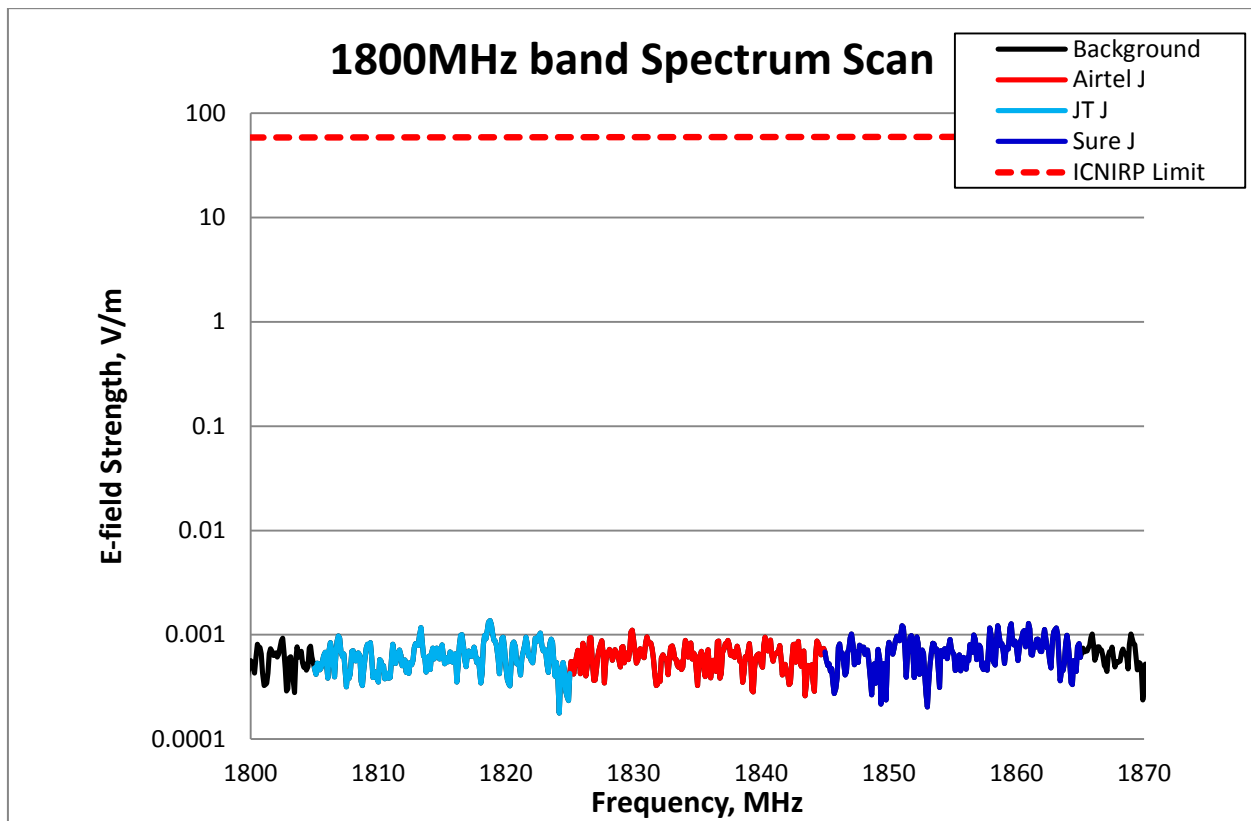


Figure 6 - 1800MHz Spectrum Scan

No activity was recorded in the 1800MHz as no operator appears to transmit in this band at this site.

The Exposure Quotient results for the 1800MHz band are shown below:

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 931	Airtel J	1800	0.001111	52508	2.12457E-08	1/ 47068286
	JT J		0.001368	42644	2.27627E-08	1/ 43931554
	Sure J		0.001281	45540	2.72727E-08	1/ 36666639
total band EQ					7.12812E-08	1/ 14028953

Table 4 – 1800MHz band Exposure Quotient at Field 931

2.4 2100MHz Band

The graph for the UMTS activity around the site is shown below:

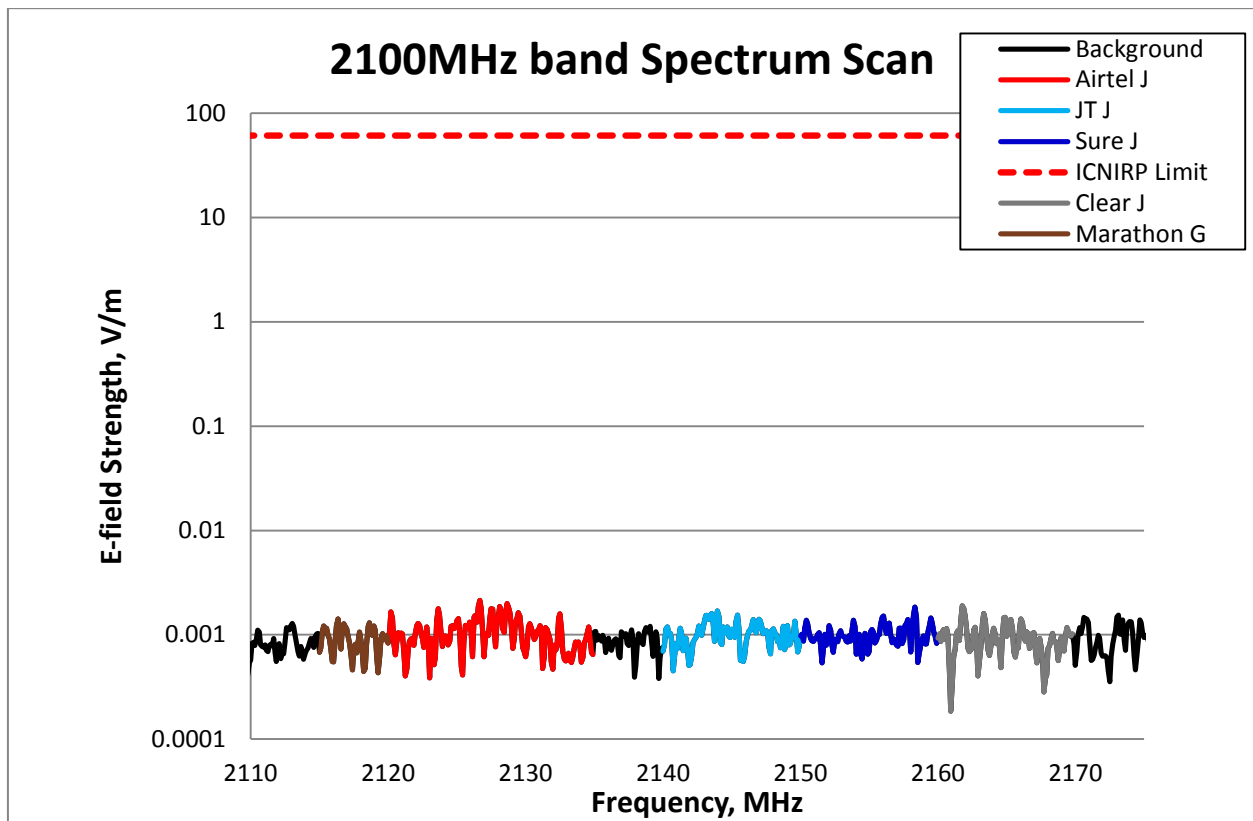


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz as no operator appears to transmit in this band at this site.

The Exposure Quotient results for the 2100MHz band are shown below:

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 931	Airtel J	2100	0.002131	28625	4.65242E-08	1/ 21494203
	Clear J		0.001897	32156	2.43422E-08	1/ 41080979
	JT J		0.001697	35946	2.87703E-08	1/ 34758030
	Marathon J		0.001417	43049	1.16023E-08	1/ 86190062
	Sure J		0.001838	33188	2.75324E-08	1/ 36320886
total band EQ					1.38771E-07	1/ 7206101

Table 5 – 2100MHz band Exposure Quotient at Field 931

2.5 2600MHz band

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

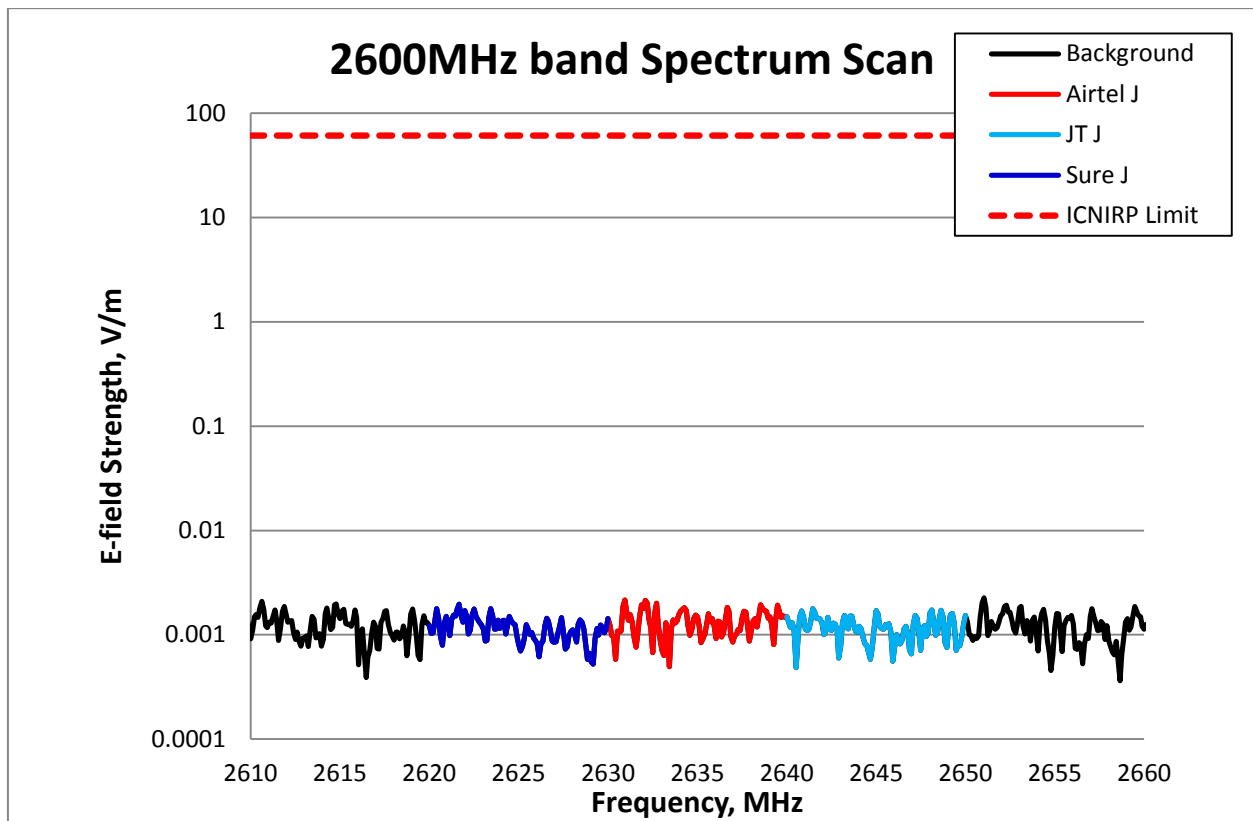


Figure 8 – 2600MHz band Spectrum Scan

No activity was recorded in the 2600MHz as no operator appears to transmit in this band at this site.

The Exposure Quotient results for the 2600MHz band are shown below:

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 931	Airtel J	2600	0.002151	28359	4.94116E-08	1/ 20238155
	JT J		0.001773	34405	3.77599E-08	1/ 26483091
	Sure J		0.001967	31012	3.74584E-08	1/ 26696276
total band EQ					1.2463E-07	1/ 8023752

Table 6 – 2600MHz band Exposure Quotient at Field 931

End