

Cellular Mast Emissions Survey: Paisnel (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	Paisnel (Jersey)
Survey Date:	09/06/2017 at 15:13	
Report issue Date	21/07/2017	
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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 Paisnel site located in Jersey.

The Paisnel site was used by one operator at the time of the survey: Sure 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
Paisnel	800	0.07041	Sure J	552	1.96158E-05	1/ 50979
	900	1.533	Sure J	27	0.001841437	1/ 543
	1800	0.3927	Sure J	149	0.00176722	1/ 566
	2100	0.1924	Sure J	317	0.000246193	1/ 4062
	2600	0.003531	Airtel J	17276	3.10719E-07	1/ 3218345
Total Site EQ					0.003874777	1/ 258

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/258 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.

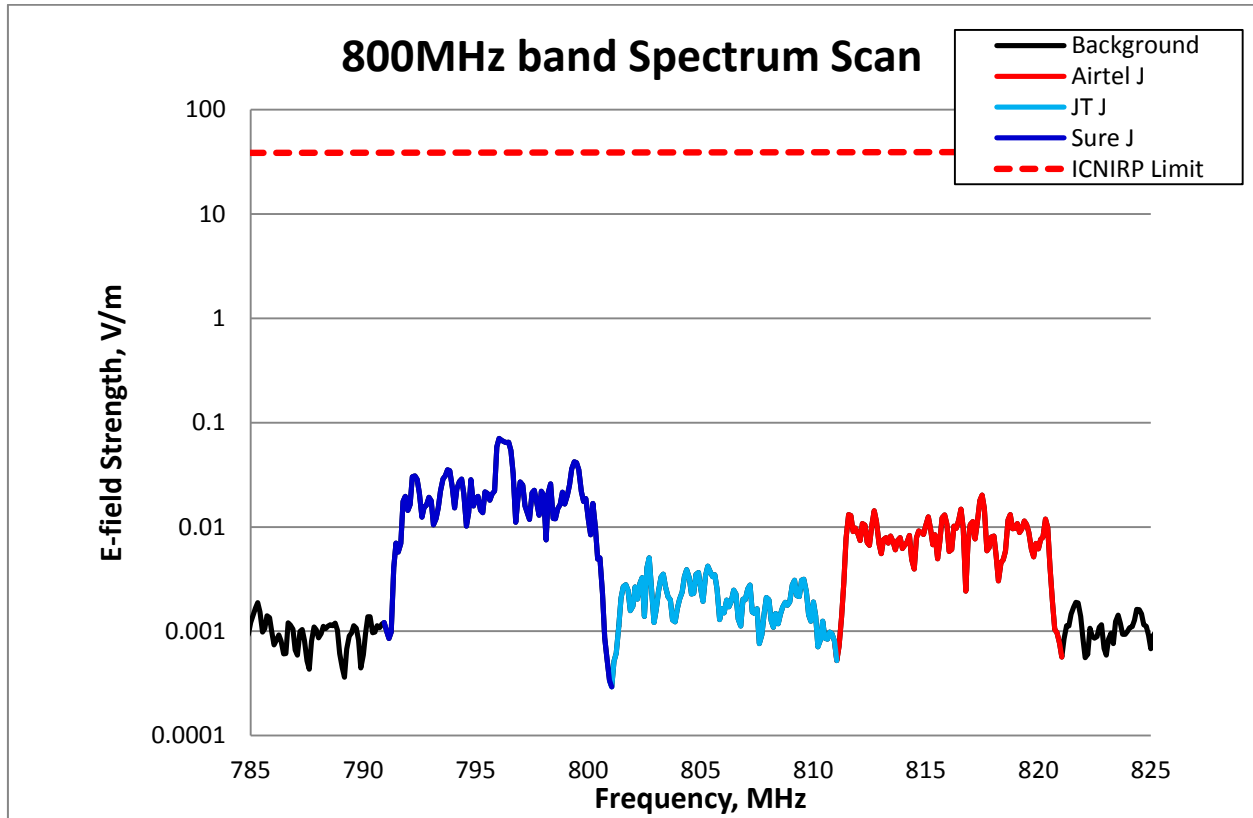


Figure 4 - 800MHz band Spectrum Scan

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 0.07041 V/m (Sure J), which is 552 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
Paisnel	Airtel J	800	0.02019	1926	2.05044E-06	1/ 487700
	JT J		0.00506	7686	1.33932E-07	1/ 7466471
	Sure J		0.07041	552	1.74314E-05	1/ 57368
total band EQ					1.96158E-05	1/ 50979

Table 2– 800MHz band Exposure Quotient at Paisnel

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

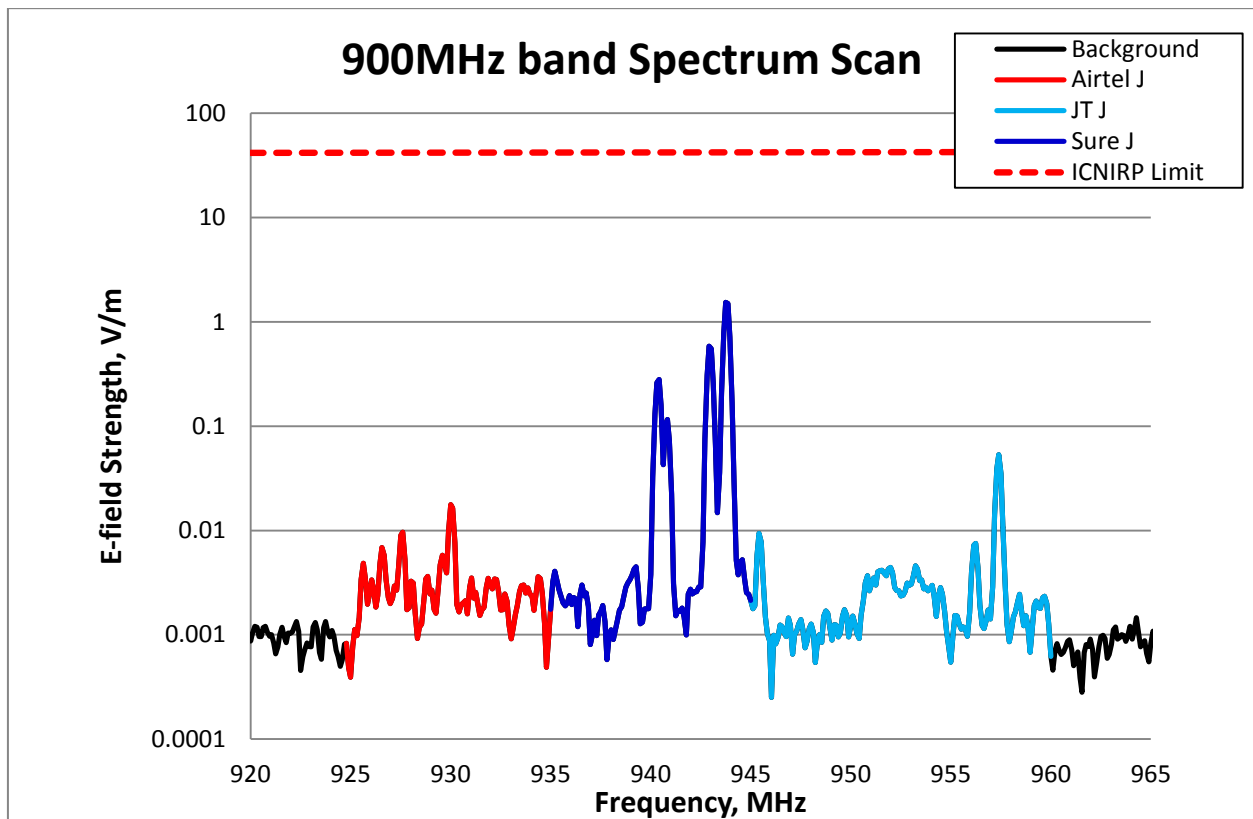


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.533 V/m (Sure J), which is 27 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz 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
Paisnel	Airtel J	900	0.01767	2334	4.37125E-07	1/ 2287675
	JT J		0.05318	776	1.83362E-06	1/ 545371
	Sure J		1.533	27	0.001839167	1/ 544
total band EQ					0.001841437	1/ 543

Table 3– 900MHz band Exposure Quotient at Paisnel

2.3 1800 MHz Band

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

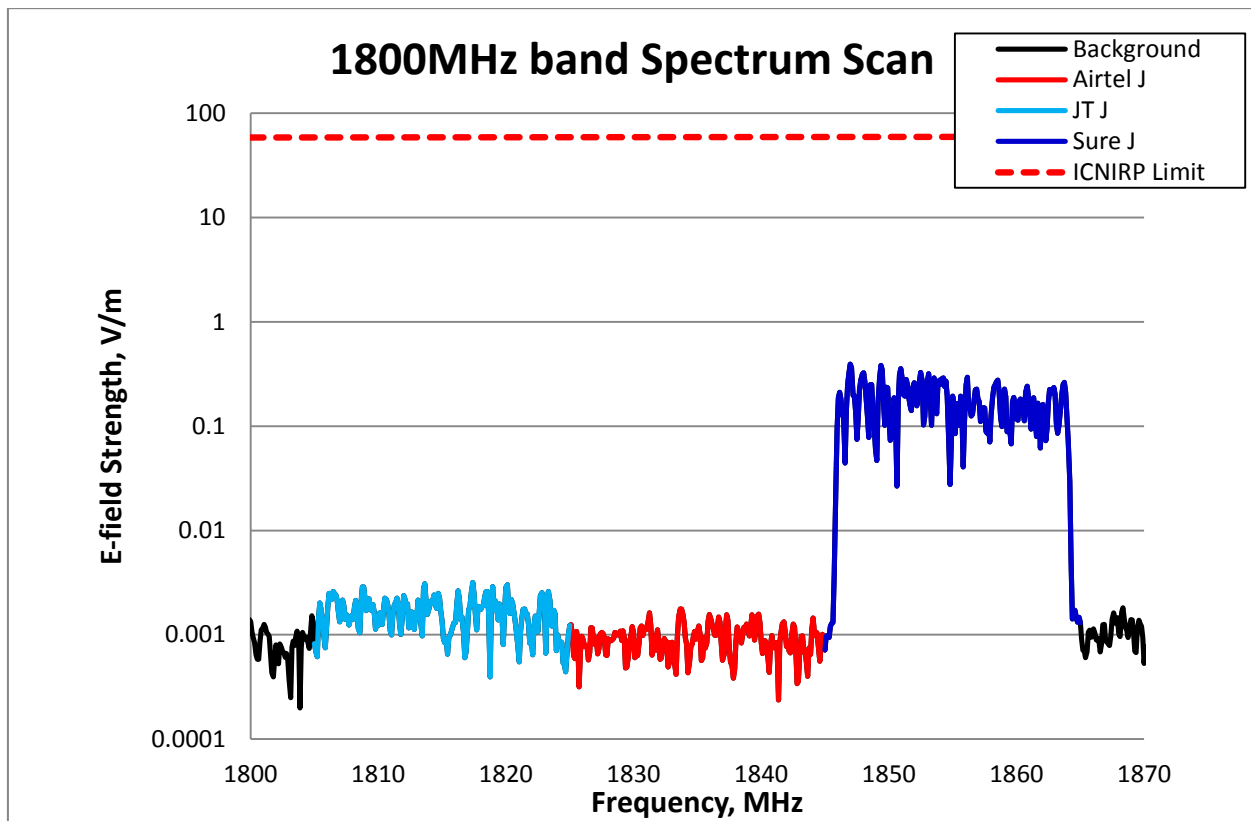


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.3927 V/m (Sure J), which is 149 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 1800MHz 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
Paisnel	Airtel J	1800	0.001764	33070	4.85267E-08	1/ 20607232
	JT J		0.003182	18333	1.55337E-07	1/ 6437606
	Sure J		0.3927	149	0.001767016	1/ 566
total band EQ					0.00176722	1/ 566

Table 4 – 1800MHz band Exposure Quotient at Paisnel

2.4 2100MHz Band

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

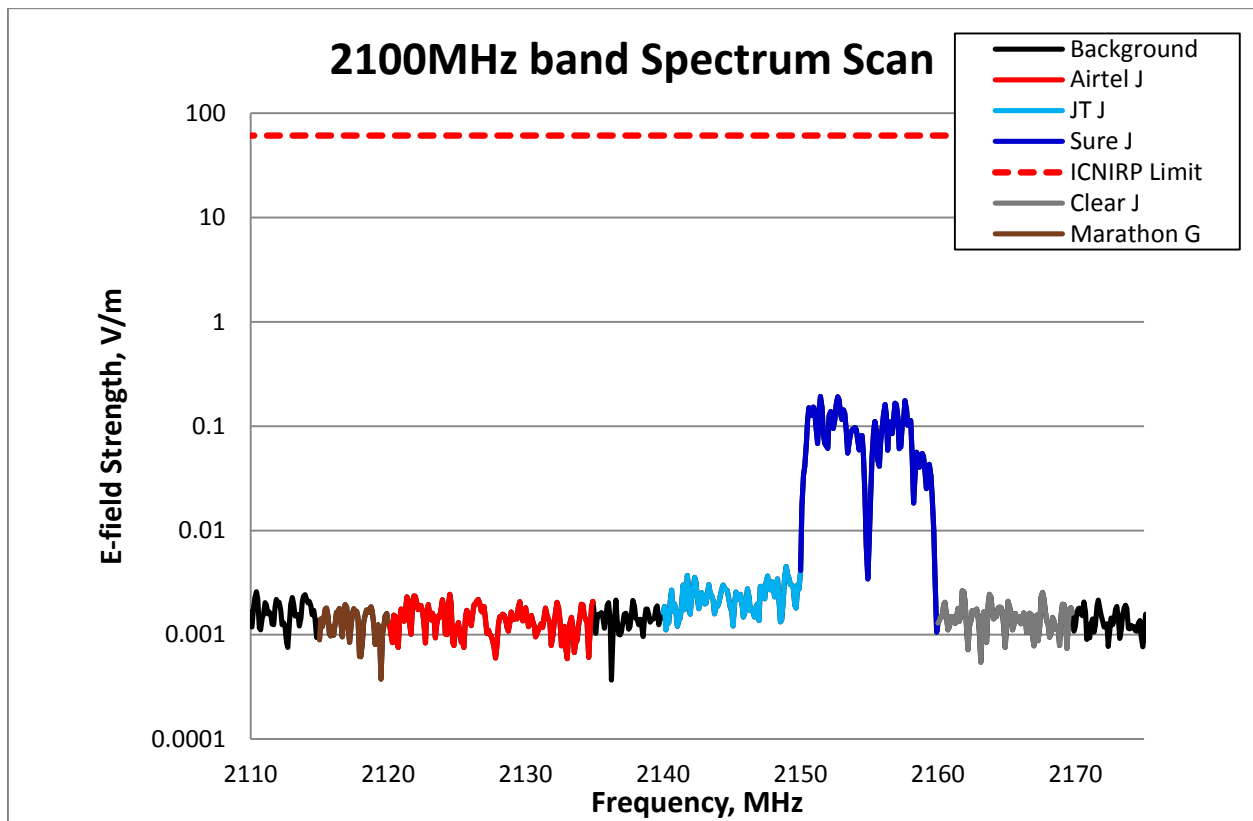


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1924 V/m (Sure J), which is 317 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2100MHz 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
Paisnel	Airtel J	2100	0.002452	24878	8.3188E-08	1/ 12020960
	Clear J		0.002646	23054	6.10423E-08	1/ 16382088
	JT J		0.004528	13472	1.53632E-07	1/ 6509044
	Marathon J		0.001954	31218	2.52981E-08	1/ 39528624
	Sure J		0.1924	317	0.00024587	1/ 4067
total band EQ					0.000246193	1/ 4062

Table 5 – 2100MHz band Exposure Quotient at Paisnel

2.5 2600MHz band

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

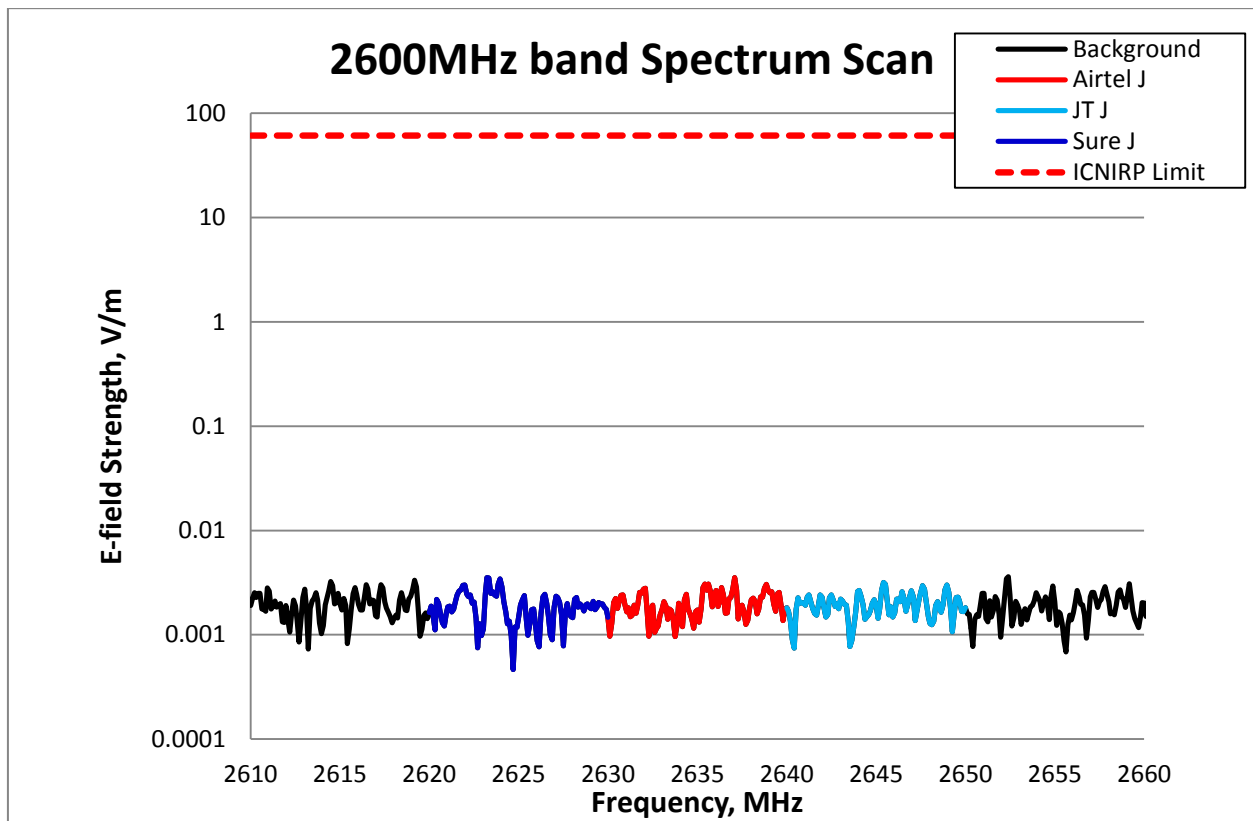


Figure 8 – 2600MHz band Spectrum Scan

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	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Paisnel	Airtel J	2600	0.003531	17276	1.07883E-07	1/ 9269260
	JT J		0.003163	19285	1.03808E-07	1/ 9633133
	Sure J		0.003525	17305	9.90268E-08	1/ 10098272
total band EQ					3.10719E-07	1/ 3218345

Table 6 – 2600MHz band Exposure Quotient at Paisnel

End